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Shattuck Lecture.

A CRUSADE AGAINST SYPHILIS AND GONORRHEA.*

BY FREDERIC HENRY GERRISH, M.D., LL.D., PORTLAND, ME.

A few years ago, in conversation with a distinguished Fellow of this Society, whose knowledge of syphilis is profound, I asked his opinion as to the prevalence of that disease in this community. A look of great seriousness came into his face, and, after a significant pause, he said, "Of course, you know that nobody can answer that question with precision; but sometimes I would not avouch for anybody's freedom from syphilis outside of my immediate family." This statement was not intended to imply that probably only one household was uncontaminated by the malady in question, for my friend is not such a cynic as Ricord, of whom Dr. Holmes said that he was "a skeptic as to the morality of the race in general, who would have submitted Diana to treatment with his mineral specifics, and ordered a course of blue-pills for the vestal virgins"; but was merely meant to convey the idea that, in moments of depression, induced by frequent discoveries of syphilis in cases where its existence could not fail to cause a shock of alarm and disgust, he felt himself secure against surprise at its revelation anywhere.

Doubtless every one present has seen in recent literature estimates of the prevalence of gonorrhea, some writers alleging that 80 or 90% of the adult male population either now has, or at some time has had, it. Without expressing confidence in the correctness of these figures, the most reluctant conservative must admit its wide distribution.

In the prescription of conditions under which the foundation establishing this lectureship is to be administered, one class of subjects particularly specified for treatment is diseases of the inhabitants of this commonwealth; and I have begun my essay as I have in order to show that the requirement of the benevolent founder is complied with, and that, by so much, the subject to which I have the honor to ask your attention to-night is justified.

In the discussion of any subject it is important to avoid exaggeration, and the necessity for this caution is proportionate to the gravity of the topic under consideration. Extravagance weakens rather than strengthens the effect of a statement, and, consequently, in the propositions presently to be submitted, it will be my endeavor to keep so clearly within the bounds of admitted truth that nobody who is acquainted with the matters presented will have an opportunity for dissent.

As these statements are to a large extent elementary, it may appear unnecessary, and even impertinent, to introduce them before this learned audience; but there have appeared so many articles, seemingly authoritative, in which the innocuousness of syphilis is asserted, and objection made to certain things on which there should be unanimity of opinion, that I deem it important to present them.

* Read before The Massachusetts Medical Society, June 7, 1910.

FACTS ABOUT SYPHILIS.

About syphilis, authorities are agreed upon the following points:

It is constitutional, affecting every organ and every tissue.

It is either acquired or inherited.

The first evidence of acquired syphilis (the initial lesion) is the chancre.

The secondary manifestations of the acquired form, as well as the chancre, are powerfully infectious.

The tertiary lesions, while not clinically infectious, have no tendency toward spontaneous cure, but always toward destruction of tissue.

The cause of syphilis is either a microscopic parasite, *spirocheta pallida*, or some microorganism in whose life-cycle spirocheta pallida is a phase.

The acquired form is usually conveyed in sexual congress, and hence the disease is commonly called venereal; but in many cases it is communicated by immediate contact other than sexual, or through the intermediation of clothing, utensils and other objects of common use among the individuals concerned. Probably 5% of cases are thus caused.

The poisonous discharges of syphilis cease to be infectious in twenty-four hours, and in a fourth of this time, if dried; otherwise, the disease would be vastly more prevalent.

If the acquired disease is treated early and properly, it is curable to this extent: First, that the patient can beget (or conceive) offspring who are not syphilitic; and, second, that in about three fourths of the cases the patient will have no tertiary manifestations; but it is impossible to predict with certainty the event in any given case — no guaranty of future immunity can honestly be given.

Specific treatment needs to be continued vigorously at least two years, and one cannot be confident of the patient's ability to procreate non-syphilitic children until two years have elapsed from cessation of treatment and after the last appearance of a syphilitic symptom. In properly treated cases the time from infection to the period of safe propagation of the species is five years.

Doubt of diagnosis can be dissipated by repeated, thoroughly skillful examinations for the spirocheta.

Syphilis is one of the commonest diseases. While its prevalence cannot be precisely determined, those best able to judge declare their belief that 10% of the community are affected by it.

Scheube, in 1902, after investigation on a large scale, declared that syphilis has become almost universally prevalent in tropical and subtropical countries. When introduced into a community previously free from it, the havoc which it creates is appalling. This is illustrated in the Sandwich Islands, to which syphilis was carried by the sailors of Captain Cook. The present native

population is but a fraction of what it was before the Caucasian invasion, and the enormous reduction is evidently due to the ravages of this disease. To this unfortunate people civilization spells syphilization.

Of the acquired form, 80% of cases begin between the ages of nineteen and thirty-five.

Aside from the mortality of syphilis, its effect upon the health of the community is profound. It is a large factor in the causation of various diseases which are not generally associated with it in the public mind, and, in addition to these frankly expressed manifestations, it is at the bottom of much lowered vitality, which renders the system less resistant to the attacks of any disease.

It is not often named in mortality statistics, but it is responsible for a vast number of fatal results reported under other names, and probably is surpassed in deadliness only by tuberculosis. The death-rate of syphilitics is nearly 50% above that of non-syphilitics at corresponding ages.

It effects its destructive work by causing degenerative changes in various tissues, particularly those of the arteries and of the central nervous system.

One attack of syphilis usually insures immunity for life. "In the present state of our art a second attack of syphilis is the only possible proof that the patient has recovered from his first attack." [1]

Hereditary syphilis differs in character in no wise from the acquired disease, but there is no chancre.

It is extremely fatal, destroying many children *in utero*, many others soon after birth and others still after years of apparent health.

FACTS ABOUT GONORRHEA.

Gonorrhea is commonly a local disease, but its poison occasionally enters the system and causes trouble at points far from its usual sites.

Practically it is almost exclusively venereal in origin, and it is acquired only through contagion.

In the male it attacks primarily the urethra, from which it may extend to the bladder, ureters and kidneys, and to the true genital passages, the seminal vesicles and the testicles.

In the female the same urinary track may be followed; but more frequently the genital passages are involved in the extension — the vagina, the cervix, the uterine body, the oviducts, from which the disease may travel to the pelvic peritoneum.

Mortuary lists rarely if ever include its name, but indirectly it probably causes more deaths than does acquired syphilis, being responsible for most of the suppurative salpingitis and a very large proportion of the cases of fatal peritonitis in women.

Short of destroying life, it greatly reduces capacity for work and causes an enormous amount of hopeless invalidism, especially in women.

In relation to the married state its consequences are momentous, in this respect rivaling syphilis. It is believed to be accountable for more than 40% of the barrenness in childless marriages. No other disease is as potent in the production of sterility. In the male this comes about through the obstruction of the genital canal, causing scarcity, death and entire absence of the seminal elements (oligospermia, azoöspermia, necrospermia), and interfering with, if not entirely preventing, fertile coition; in the female by clogging the genital passage at some point, preventing the lodgment of the ovum and establishing disease which makes impregnation impossible.

The infective material of gonorrhea attacks the conjunctiva with especial virulence. Of all the total blindness in this country, 15% is traceable directly to this disease. From one half to two thirds of the cases of ophthalmia neonatorum are of gonorrheal origin.

The prevalence of gonorrhea is enormous. No other disease of serious character is as frequent in the period of life between eighteen and forty years. Doctors who specialize on venereal are apt to say that 90% of adult males have had it; but, without taking as cynical a view as this, we must grant that it is shockingly common, particularly among men, and the highest social ranks present as great a proportion of cases as do the lowest.

Formerly it was considered a trivial malady; then came a period in which its gravity was exaggerated; and now we are able to take a judicial view of it, considering it neither of trifling account nor hopelessly intractable, but a disease of great seriousness in its bearings upon the individual and upon the community, hygienically, sociologically and economically.

Though it is commonly treated insufficiently and improperly, the bulk of the cases are ultimately cured in the sense that they cease to be contagious; but an appreciable residue continue to be a source of infection for a long time. The gonococci may retain their vitality for years.

Among married women, about a third of the cases of gonorrhea owe their origin to the husbands of the victims, many of the latter being unaware of the nature and source of their malady. To women it is a worse scourge than any other form of venereal.

In chronic cases a special and expert examination, repeatedly made, is necessary to determine the absence of the gonococcus.

To one who is not familiar with the results of the modern study of these two diseases, some of these statements will seem extreme and unwarrantable, but their moderation will be acknowledged by those who have looked carefully into the subject. Even if these conclusions as to the prevalence and influence of syphilis and gonorrhea were to be cut evenly in two, the moiety would present a picture of horrible ghastliness. One who wishes to make a deep impression in this matter does not need to exaggerate; he may safely discard half of his facts and still have so much left as to run considerable risk of being thought sensational.

To what is to be ascribed this grave condition, this wide distribution of two diseases demanding

[1] E. L. Keyes, Jr. (1908).

such a toll of health and life? The answer commonly given is Prostitution. While admitting a large measure of truth in this reply, it may well be insisted that other factors enter into the case, without the recognition of which no consideration of the subject approaches adequacy.

USUAL TREATMENT OF PROSTITUTION.

Prostitution is one of the chief banes of civilization. Every code of laws recognizes its existence and makes a show of dealing with it. The methods adopted are multitudinous in their details, but all practically resolve themselves into two systems, — suppression and regulation.

Suppression aims at forcible extinction. The brothels are emptied, their proprietors are fined and imprisoned, their inmates are punished in various ways. The authorities nowhere persist steadily in their efforts, contenting themselves with spasmodic displays of virtue, which are usually productive of more harm than good. The expulsion of the abandoned women from the brothels drives them to practise solicitation on the streets, which had previously been free from the appearance of vice; or sends them into hiding in all parts of the community, often into domestic service in decent families, where their influence is most corrupting. Even if the officers of the law could close every house of ill fame permanently, and could compel every quondam inmate to abandon her pernicious trade, the method would always fail from its inability to reach the vastly greater number of clandestines, who are less openly avowed prostitutes, but nearly, if not quite, as injurious elements of the population. Prostitution will never be stamped out as long as there is a demand for the service which it supplies.

Regulation is really a system of licensing, but the latter name is vehemently objected to by some advocates of the method, and others, still more squeamish, insist upon the euphemism of "toleration," on the ground that prostitution is not approved or legalized, but only permitted. The distinction is too subtle to be perceptible to the ordinary mind, particularly as, whatever designation is employed, the intent is the same, namely, to make intercourse with prostitutes safe; and the rules are identical, to wit, registration, examination, certification and medication.

The avowed purpose of regulation is to afford to any married man who wishes to commit adultery, and to any bachelor who desires to perpetrate fornication, opportunity to gratify his sensual longings without danger of contracting disease. The same statute-book which declares adultery and fornication to be crimes and prescribes penalties for their commission, offers, through regulation, peculiar inducements for their commission. It is as if the law against stealing were to be mated with one which put a premium upon theft, or as if the statute forbidding criminal abortion were followed immediately by one providing ready means for relieving women of the products of unwelcome conception.

But the practical provisions of regulation are always so faulty as to excite amazement that anybody with cerebral development above that of amphioxus should be beguiled into approval of them, or should think that they afford reasonable assurance of protection against venereal disease. Two counts of the indictment against regulation are sufficient for its condemnation: First, the infrequency of the examination of the women, and, second, the entire omission of examination of the men.

First, as regards the women. Suppose that a prostitute is examined and receives a certificate of health, and, also, that a chancre appears within a few hours upon some accessible part of her genital tract. The number of men whom she can infect before her next examination depends largely upon her opportunities. Acton reports the case of one woman who admitted that she sometimes received forty men in twenty-four hours. Doubtless this is exceptional, though quite credible; a harlot, who knows how to make her favors peculiarly acceptable, always has an abundance of followers. The most conservative will grant that a woman with an unrecognized chancre, who is in moderately active practise of her vocation, will probably infect one man a day for a week, at the end of which time the regular hebdomadal examination will reveal her condition, and her career as a scatterer of pestilence will be arrested for a time. Every one of the men whom she has infected felt a large degree of security after inspecting her card, but experienced what we often hear called the stinging rebuke of misplaced confidence.

Second, as regards the men. A woman passes her medical examination and is legally qualified for a week of debauchery. Immediately comes a patron who has had gonorrhea but, not having felt any symptoms or noticed any discharge for a long time, considers himself cured. Still, however, there linger in the crypts of his urethral mucosa some gonococci, and the violent congestion of the genitalia, combined with the exertion and friction of the coition, arouses these microbes from their quiescence, excites their reproductive activity and results in their expulsion from their lairs and their introduction into the torrent of semen. Immediately active gonorrhea is started in the woman, and before her next inspection she has communicated the disease to a number of her paramours.

But these illustrations, though legitimate and not uncommon, are subtle compared with the more usual methods by which the venereal diseases are disseminated under the license system. Men who know that they have one or more of these maladies in an active form — an initial lesion, a secondary eruption, a persistent gleet — do not hesitate to seek their pleasure with prostitutes. They despise the whole class, however necessary they consider their services; they are absolutely regardless of the rights of the women as fellow human beings; they are brutally indifferent to the evil results of their own conduct to anybody whomsoever. The women, however suspicious of the condition of their patrons, do not dare to protest or to demand an inspection of the

latter with reference to their possible diseases, well knowing that they will be promptly mauled into submission on the slightest display of such insubordination.

It is perfectly manifest that all efforts to keep the women free from disease are fruitless unless corresponding rules are applied to the men who use them.

Some years ago a titled English woman [2] drew down on herself tremendous animadversions because, finding that Parliament was loth to abolish the "contagious diseases act," and wishing to show the absurdity and injustice of the law, and to create sentiment against the legalization of vice, advocated a statute compelling equal examination of men and women; and yet her position was strictly logical and scientific.

If any one who is acquainted with the facts is still unconvinced of the futility of attempts at regulation, further counts in the indictment may be brought forward, conspicuous among them being the incompleteness of the examinations of the women. Every student of the subject knows that an ocular inspection, however carefully made, cannot satisfy the demands of modern medicine. There may be no discharge of sufficient amount to attract attention and yet the mucosa of the cervix may swarm with gonococci, which, in the intense congestion attending copulation, awake from their torpor, and the disease, of which they are the characteristic elements, receives a new lease of life with all its old virulence and capacity for evil. But in no license system of which I have ever heard is microscopic examination demanded, although it is impossible to obtain the data necessary for an opinion without it.

One more factor demands mention in rehearsing the failure of regulation — the impossibility of including nearly all of the prostitutes. In the cities where the method has had its most complete trial the authorities have been obliged to confess that they have succeeded in registering only a fraction of them. As a rule the women detest regulation with its abridgment of their freedom, its insistence upon examination, its quarantine when disease is discovered, the infamy which it implies, the obstacle which it imposes to their return to decency of life and its almost certain destruction of the chance of marriage, which with most women is vaguely or confessedly a cherished hope; and they evade inscription as far as they are able. Its alleged protection affords them no advantages commensurate with its drawbacks. Only the most abandoned of the fallen women are willing to admit that prostitution is their vocation; it seems less of a slavery if they can delude themselves with the thought that it is an avocation. Obviously the difficulties of complete enrollment are insurmountable, and practically the system has nowhere approached thoroughness. The clandestine prostitutes far outnumber the registered always and everywhere.

This opposition on the part of the women has a counterpart in the attitude of the majority of the patrons of prostitution. The average man is allured by the secrecy which he has with a clandestine harlot; there is less of the confessedly commercial element in the transaction; it partakes more of the charm of seduction. He loves to deceive himself with the thought that the woman is not absolutely common; that not every comer can obtain the favors which are granted him; that he possesses a charm that compels a yielding of the feminine nature. Of course everybody else knows that this view is vain in every sense of the word. That which here is most pertinent to this discussion is that the spread of venereal disease is, proportionately to their number, the same among the registered and the clandestines.

All of this leads to the inevitable conclusion that it is impossible to guarantee safety from venereal to the patron of harlotry. As saith the scripture, "A whore is a deep ditch and a narrow pit."

In spite of all these facts, it is common to hear regulation advocated as a remedy for the evils of prostitution by the uninformed, not only among non-medical men, but even within our profession. Without making any careful study of the numerous trials of the method, captivated by the thought of easy control by legal enactment, they give this often exploited and thoroughly discredited system their enthusiastic support, and, with facile confidence in the soundness of their views, apply epithets of contemptuous characterization to those who, knowing the teachings of much history in this matter, venture to expose the fallacy of schemes of regulation.

ETIOLOGY OF PROSTITUTION.

If these much-vaunted and long-tried methods are useless, and worse than useless, are our resources at an end? Can nothing be done to abolish prostitution, or at least to diminish its deplorable effects? Are we to fold our hands in helplessness and try to ignore this curse? That surely is not the attitude of the profession in other matters which concern it. Prostitution, often called the Social Evil, may well be regarded as a disease of the body social, an endemic of almost universal prevalence. Approaching it as is our established custom in dealing with disease, having made a diagnosis, we seek for the cause, and, having found it, we remove it, if possible.

The elements in the etiology of prostitution are somewhat numerous, but for the most part not difficult of detection. Foremost stands the natural desire of the male human being for sexual intercourse. If one is justified in ascribing motives to nature, it may fairly be said that, in her anxiety to provide for the preservation of the race, she has oversexed mankind. From puberty onward the sexual appetite is so strongly evident in man that individual and public restraints are necessary to keep its manifestations within due bounds. Its mere existence is not deemed a sufficient warrant for its unlimited gratification, and society has prescribed conditions for its legitimate exercise.

[2] Lady Henry Somerset.

This element does not obtain to a very large extent in the case of females. There are but few Messalinas, hopeless sexual perverts; the vast majority of women have no very pronounced physical sexual feelings; and a minority are altogether deficient in this respect. But, while woman does not have to fight as much as man against appetite, other things are operative in leading her into the paths of vice. Poverty, ignorance of a useful occupation, inability to get an honest living, insufficiency of wages to afford decent support, the herding of large families in small tenements so that the sexes are brought into physical intimacy as abominable as it is inevitable, evil training and immoral associates, overweening love of dress and display, the attractions of a life of indolence, seduction effected through representations of its harmlessness or through promise of marriage, — these are prominent factors in supplying recruits to the ranks of prostitution. But more potent than any and all of these is ignorance of the laws of being, and of the ethical principles which ought to guide conduct.

Until all the vicious tendencies inherent in human nature are eradicated, we cannot expect to see prostitution entirely abolished; and hence it is practically certain that the diseases which it is so largely instrumental in disseminating will continue to exist to some extent; but the dispelling of the ignorance by which prostitution is mainly fostered will result in such a diminution of the lamentable practise that cases of these maladies will become relatively infrequent, obviously to the social and economic benefit of the race.

THE RATIONAL TREATMENT OF PROSTITUTION.

Education, then, is the principal remedy for the disease, since ignorance is the principal cause; and this education should be primarily physiologic, especially as regards the function of reproduction. When should it begin? Just as soon as the child shows interest in the subject! Probably this will be on the advent of a new member of the family. "Where did the baby come from?" The answer usually given is as silly as it is untruthful, and full of evil influence on the future of the innocent inquirer. All the wretched fables that do duty on such occasions will soon be detected by the child, and from that moment he will have no faith in the word of his deceivers. He sees that he has encountered a most attractive mystery, and he is bound to solve it. His curiosity is immensely excited by the attitude of his parents. Receiving no aid from those whose duty it is to help him, he goes elsewhere and gets something that passes for information, but is distorted by vicious purposes and stained with filthy slime of the gutter. A very serious phase of the matter is that the confidence which the child should have in his parents is destroyed by their contemptible lying.

Suppose that the parents recognize the question as not only unobjectionable, but highly commendable, inasmuch as it concerns functions, ignorance of which is responsible for incalculable mischief, and tell him the truth. What harm can result from his learning that the baby came from its mother's body, in which it had been growing a long time? There is nothing indecent or obscene in the fact; there can be nothing objectionable in its plain statement. And there is very great advantage in this frankness; the child, instead of being crushed by a deceitful rebuff, is honored by being taken into his parents' confidence; no mystery is made of the process which is a commonplace incident, and, consequently, there is little probability of his giving too much thought to it. He is told that it is not best to talk outside about such matters, for it is the affair of the family only; and this gives him a feeling of dignity and fellowship which draws him into nearer and dearer relation to those who should be his best and closest friends.

As puberty approaches, with its vague and disturbing feelings and thoughts, its physical and psychic changes, the father should tell his son, the mother her daughter, the meaning of the new functions which are developing; and thus events which otherwise are likely to produce profound perturbation are anticipated and explained and the crisis is passed without alarm or trouble.

SEXUAL CONTINENCE.

That is the fitting time for warnings about the temptations to which both boys and girls are exposed, for instruction concerning practises which are productive of lifelong shame, disease and disaster. Then, too, may well be corrected the popular error that sexual intercourse is a hygienic necessity.

That this opinion is sincerely entertained by many persons is illustrated by the case of the wealthy lady, of whom I have heard, who was making a solicitous search for a nice, healthy girl to serve as mistress for her son, who had just reached the age of puberty. Granted the premise that sexual intercourse is essential to health, the woman's position was strictly logical; it was her maternal duty to provide means for the exercise of her son's procreative function in such a manner as would prevent his contracting any contagious disease. The bearing of such an arrangement upon the life of the other young person concerned is too obvious to require extended comment at this juncture. The belief in copulation as a health measure probably had its origin in the desire to place the onus of immoral acts upon other than the real reason, which is lust. At all events, it is utterly mistaken. If a man has been accustomed for a long time to unrestricted indulgence of his sexual appetite, he has put himself into an abnormal condition not properly to be taken as a standard. His state is comparable with that of a person who has contracted the alcohol habit or any other drug addiction; deprivation is torture, and gratification, by giving a sense of comfort, conveys the impression of being requisite for well-being. To a man, however, who has not thus misdirected his sexual function, who pursues a normal physical course, and who keeps his mind free from lewd imaginings, complete abstention

is not only free from harm, but even beneficial. Perfect continence is a requisite in the training for severe athletic trials; and the internal secretion of the testes, which is so essential for the development of the adolescent into real manhood, can hardly be supposed to be valueless in subsequent years. All the great authorities are in agreement on this point, that abstention hurts no normal man. Finally, it may be set down as certain that, next to education, the best safeguard against sexual vice is association with chaste and refined women.

Later, when maturity is near, the young people should be advised concerning the marriage-state, and instructed to the following effect:

Marriage between persons whose physical or mental condition is markedly imperfect should be discouraged, for manifest reasons.

Marriage should not be regarded as a state in which prostitution is legalized. That it is so considered by men generally is undeniable. The physical element in love, whether avowed or denied, is prominent in the thought of the male, and he is usually insistent upon his so-called rights. Commonly his exactions are granted by the female, but without real comprehension of them, and with a toleration which comes from a sense of duty or of policy; but a relation which is characterized by brutal demands on the one side and helpless submission on the other is very far from ideal.

The rights of the prospective offspring and the responsibilities of their parents are entitled to most solemn contemplation.

THE SANCTITY OF LIFE.

In some ways we display a wonderful regard for life. For example, a man is found dead, evidently slain in cold blood. He is a notorious malefactor, guilty of a multitude of heinous offenses absolutely devoid of the qualities which make for good citizenship, an active pest to society. And yet, although everybody who knows about him is avowedly glad of this death and believes that the safety of the community is enhanced by it, all the necessary machinery of the law is immediately put in motion to bring his murderer to punishment. Detectives search every possible place of concealment; a reward is offered for his apprehension; when captured he is scrupulously guarded against possible injury from an excited populace; at his trial the state furnishes him with a learned advocate and pays the cost of his witnesses; on conviction he is given a long period for repentance and preparation for eternal residence in paradise; and, finally, he is deprived of earthly existence by a merciful and expensive process. Many thousands of dollars are lavished on the case and people eagerly read the details of the affair as a matter of vital importance. Outraged society has demonstrated that no member, however low, bad and objectionable, can be deprived of his life with impunity; that even if that life has been utterly misused, is entirely unfit for continuance, and even a menace to every other life in its neighborhood, it must not wantonly be cut short, and, if so destroyed, shall be avenged.

Such insistence on the sacredness of life is eminently proper; but does not consistency demand that this sanctity should be recognized in some other way than by safeguarding life and punishing those who recklessly disregard its rights? Should we not consider life so sacred that it should not be bestowed unworthily, that it should not be begun except in conditions favorable to its development into a blessing and not a curse to its possessor and to society? If the beginning of life was more regarded, there would be fewer cases of its vicious and violent ending. When the things which are already well known about the physiology of generation duly impress the public mind, then will the people cease to limit their consideration of the sanctity of human life to the circumstances attending its cessation; then will they perceive that an even greater responsibility waits upon the performance of the acts which determine the inauguration of life; then will they wonder that a function so prodigious in its bearings, so almost infinite in the extent of its influence, ever should have been regarded by persons esteemed thoughtful and humane as a triviality, a subject for ribald jesting, a thing obscene, indecent and shameful; then will they appreciate the truth that the beginnings of life are so sacred that no statement can exaggerate their holiness, no preparation of body and mind be too perfect for the function installing them.

The progeny should not be unintended, or begotten when the parents are in other than favorable condition. Every child has a right to an inheritance of good physical and mental health, and is unlikely to have it if he is conceived when his father and mother are feeble or depressed in mind or body; every pregnancy should be a cause of rejoicing to all concerned, and then the little one will have a warm welcome ready for him, and the prospect of a felicitous disposition.

THE BEST SIZE OF A FAMILY.

If the married are careful to observe the rules already given, they will probably have no need of advice as to the size of their family; the good sense which has guided them in the other things will dominate their conduct in this. But so much has been said of late on this subject that it may pertinently be touched upon here.

We have heard a great deal about so-called "race-suicide," the implication always being that citizens owe it to the state to have large families. The leading apostle of this doctrine speaks with the confidence of one having authority, and not as the scribes. But prodigious personal popularity and exuberant willingness to criticise and advise on every subject within the entire range of human knowledge and speculation are not invariably associated with encyclopedic information and judicial cast of mind; and, at the risk of violent denunciation, one may venture to suggest that another opinion is worthy of entertainment. Both science and philosophy

have arrived at the opposite conclusion. Quality is much more desirable than quantity; indeed, the latter may be expected to diminish the former. As a rule, the highest physical types occur in the smallest families. Prof. Franz Boaz, of Columbia University, has plainly shown that improvement of physical development attends reduction in the size of families. "In other words, nature seems to be subtly protesting against overbreeding by stunting the growth of superfluous children."

Herbert Spencer, the greatest of philosophers, says:[3] "Further evolution, causing along with higher nature diminished fertility, and, therefore, smaller burdens on parents, may be expected to bring a state in which, far more than now, the pleasures of adult life will consist in raising offspring to perfection, while simultaneously furthering the immediate happiness of offspring."

"Only as fast as fertility diminishes, which we have seen it must do along with further mental development, can there go on such diminution of the labors required for efficiently supporting self and family that they will not constitute a displeasurable tax on the energies."

In addition to the injury to parents and children when the latter are too numerous, the augmentation of a family beyond the capacity of the parents properly to support and train imposes an unwarrantable burden upon those in the community who are more honest and provident and sufficiently high-minded to deny themselves indulgences to which their sense of right and justice objects. The intentional limitation of offspring within the bounds of suitable maintenance is a duty alike to the progeny and the community.

Doubtless members of reigning families in monarchies are impressed with the obligation to pay the price of their royalty in part, at least, by keeping the strain in existence, and the same may be true of other titled personages; but I am not aware that I have encountered a man who could truthfully say that he had begotten his children in response to a prompting of duty to society. Many men desire offspring from love of children, from an ambition to perpetuate their name, from a wish for heirs to their estate; many without any definite wish for them, accept what come with patience and find that toleration develops into affectionate enjoyment; many, unfortunately it must be said, regret the advent of the newcomers, and treat them as if they were unjustified intruders, viciously thrusting themselves into an already overburdened family; and all of these parents — those who welcome their progeny with delight, those who have to become reconciled to what was originally an unhappy fate and those who always abominate their self-imposed burdens — on occasion accept the plaudits of certain pseudo-philosophers for their activity in performing their duty as good citizens, and not infrequently swagger a little in complacent contemplation of their superiority to their childless associates. It may well be doubted, however, if any one of them had in mind for an instant a duty to the state in contracting marriage or in performing any act in that relation subsequently. It is not altogether pleasing to think, as we must, that most of us are accidents; to recognize the unquestionable fact that men who are scrupulously careful about the breeding of their dogs, their horses, their swine, their barnyard fowl, are absolutely careless about the generation of their own kind. Reason guides in all the other cases, and passion in the one which is of infinitely more importance. That a citizen has a duty to the community in the matter of offspring is perfectly plain, but it does not lie merely or mostly in the direction of numbers. He may, as Spencer remarks, "fitly discharge his indebtedness in some other way than by adding to the population." President Hall, of Clark University, says in a recent article: "Many intelligent people, whose constitutions are tainted or handicapped by disease, deliberately refuse to produce children upon whom it can be entailed. This is a species of intellectual and moral heroism as splendid as anything exploited in ancient song and story."

However earnestly one wishes his own country to become great in population, it is futile for him to urge his fellow citizens to consider it a duty to the state to beget a numerous offspring. Some governments have tried the experiment of offering a prize for every child in a family above a stated number; but the effect is the rewarding of improvidence and putting a premium on the production of individuals who are more likely to be a burden than a help to the nation. It is entirely safe to say that no honest and sensible man is actuated by the hope of pecuniary gain in adding to his family; the prize does not compensate for the increase of the expense of rearing the brood. It is well known that the feeble-minded are generally very prolific; but their contributions to the population markedly diminish the strength of society. *Homarus americanus* has a hundred thousand offspring a year, but nobody wishes to be classed with the lobster.

But there are those who preach the doctrine of great families, not as a duty to the state, but on what they consider higher grounds. They declare that so-called "race-suicide defeats the purpose of creation, which is to reap a crop of souls for heaven."[4] Such teleological perception, such acquaintance with the intents of omniscience and omnipotence, so far transcend any knowledge of mine that I must confess my incompetence to discuss the matter from that point of view.

HOW SEX-EDUCATION SHOULD BE GIVEN.

The teachers of the children should be their parents, and we, the trusted physicians, should teach those parents. Not only this, but we owe it to the community to insist upon the importance, the essentiality, of this instruction. Our profession as a whole has too long neglected this great

[3] The Principles of Ethics.

[4] Quoted from an address by Father Isidore in Holy Name Cathedral in Chicago, March 10, 1910. Bishop Canevin, in a letter to priests of the Pittsburg diocese, February, 1910, recommends early marriage, says that the primary end of marriage is that children may be born and educated, and speaks of the right of children to be born

duty. Some, indeed, have recognized and have done it; and in saying the things that I do in this hall, dedicated to and bearing the name of one of your greatest and best-beloved physicians, a man of saintly character as well as exalted attainments, I feel that my words are spoken in singularly appropriate surroundings, that I breathe an atmosphere of sympathy and encouragement; and, if it is permitted to the spirits of the dead to revisit the scenes of their earthly endeavors, I believe that the purpose, at least, of this lecture is receiving the benediction of the pure-minded and philanthropic John Ware. "In 1847-48 many meetings were held in Boston to consider what means might be employed to lessen immorality and promote the well-being of the young. A committee was appointed to cause a book to be perpared which should deter from vice by a just exposition of its nature, its dangers and its effects," [5] and Dr. Ware was requested to write it. How well he succeeded may be judged from the estimate put upon it by the committee, who pronounced it "accurate, clear and truthful, but never offensive to modesty nor suggestive of evil thoughts." In the card-catalogue of the great library in this beautiful building are listed a number of articles by Dr. Ware, but it is safe to say that no one of them has attracted anything like the attention given to this little book, which passed through many editions and stands as a monument to his virtue and his aspirations for the race.

Doubtless many medical men since that time have lived up to these principles; and, to show that this line of thought is still followed, I will quote a few passages from a very recent paper by one of your most honored and distinguished physicians, Dr. James J. Putnam. In his very valuable article on "Personal Impressions of Sigmund Freud and his Work," [6] he says:

"Most of these criticisms have centered really, whether the fact was admitted or concealed, on the prominence given by Freud to the sexual element in the causation of the psychoneuroses. This was considered as a disagreeable topic, on which we had closed our eyes so long that we thought we might permit ourselves to regard it as legitimately outlawed. Its vast literature, well known to be of great importance, was repulsive and should not be seen upon our shelves. It counted for but little that this immense subject was daily and hourly thrusting itself upon our notice, whether as the cause of terrible sufferings, of terrible crimes, of terrible misunderstandings and misjudgments, and that it has played a huge part in the history of religion and of civic progress; those who have ventured to study it scientifically have been, nevertheless, regarded widely as disturbers of the peace."

"The principal objection to the discussion of sex questions, or the prejudice against it, rests on the assumption that 'sexual' means 'sensual.'"

"Conventional morals, important as they are, as indicating standards towards which every one should, for certain reasons, strive, are often, in a wider sense, extremely narrow."

It is extraordinary that such aversion to the mention of matters sexual should obtain in a land which is invariably reckoned as Christian, in which, indeed, the great bulk of the people are considered and wish to be considered Protestant Christians, belonging to that ecclesiastical division that bases its belief upon the authority of the Bible; for this holy volume, translated into more languages and distributed more widely than any other in the whole world, assiduously kept before the community by the churches, and pressed upon the attention of the people by great organizations, whose sole purpose is its universal dissemination, treats affairs of sex in the frankest and most matter-of-course way. The organs of generation, the function of reproduction, the most intimate physical relations of men and women, the permitted and forbidden circumstances of sexual conduct, are all mentioned with a freedom which is surpassed in no book, which is much esteemed, excepting that other great oriental work, the "Arabian Nights' Entertainments," — the most marvelous and fascinating collection of romantic literature on earth, — and not in this in the expurgated versions most commonly known. From beginning to end the Bible unreservedly touches sexual subjects; and so marked is this fact that such a study of it as one would reasonably expect by those to whom it is constantly recommended as the most valuable and important book ever written, containing the profoundest wisdom, the most uplifting sentiments, the infallible code of ethics and the surest guide to immortal bliss, would so inevitably accustom them to familiar mention of everything relating to the processes of reproduction that there would be no shrinking from plain and necessary treatment of the subject. But everybody knows that this is not the case. The explanation must be found in the dense ignorance of the people concerning this great book. If they read it in any but the most perfunctory manner; if they attempted seriously to justify to their own minds the supreme place in their reverence which they unhesitatingly accord it; if they manifested in it anything approaching the interest that they show for the best seller among the trashy novels of the day, the result would be that they would not be shocked by the discussion of the vastly important questions in which the relations of the sexes are involved, for some knowledge of the generative functions would be so widely diffused that the education of the people which I advocate would be well begun. But to all but a minute minority the Bible is little if anything but a fetich — revered, kept in a place of honor, held to be a necessary part of the furnishings of a house, a talisman, a protection against evil spirits, a ticket to a reserved seat in the sempiternal choir, a fire-insurance policy on the soul. Parents give their children the Bible with the injunction, expressed or implied, to read and study it. Can such persons reasonably object to having their children given frank, pure and intelligible information about the functions on which

[5] Quoted from the preface of "The True Relation of the Sexes."
[6] Jour. Abnorm. Psychol., February, March, 1910.

the perpetuation of the species depends, whose abuse and perversions are responsible for a large part of the miseries of the race? The objection could not consistently be made by any man, whether Catholic or Protestant, who believes that he is made in the image of the God which he worships, for he can find no warrant for the idea that the resemblance embraces all other parts and stops short at the reproductive; but, on the contrary, he cannot fail to remember that his belief includes the acceptance of a begotten son of God.

The clergy is far from blameless in this matter, in that they avoid dealing in any way with the subjects here discussed. How refreshing it would be to hear from prominent pulpits sermons on such texts as the following:

"There is fornication among you," I Cor. 5 : 1. It is the "will of God that ye should abstain from fornication," I Thess. 4: 3. "Nor shall a fornicator inherit the kingdom of God," I Cor. 6: 9. "The man that committeth adultery, even he that committeth adultery, shall surely be put to death," Lev. 20: 10. "Whoso committeth adultery lacketh understanding," Prov. 23: 27. "When any man hath a running issue out of his flesh, because of his issue he is unclean," Lev. 15: 2.

On the other hand, the public almost universally shows in an unmistakable way that it has a salacious taste whenever a scandal involving sexual performances becomes the subject of judicial investigation. Pious Christian parents, who think it outrageously indelicate that any one should suggest instructing their children along lines necessary for the latter's protection from immorality, disease and death, devour with feverish eagerness all the shocking details of the lewd performances of a low and worthless creature who has lifted himself out of utter insignificance by the magnitude of his crimes. Day by day for months they greedily seize upon the newspapers, which present in ghastly minuteness tales of filthy vice, which can have only a demoralizing influence upon the community; and these family-journals grace the homes of the righteous and become potent factors in the education of their children.

TREATMENT OF SEXUAL CRIMES.

Even if we could banish every particle of the ignorance of the laws of life which enters so largely into the etiology of prostitution, there would still remain other causes demanding attention. These, however, are not technically within the domain of the physician and are properly left to the care of the moralist, the philanthropist, the sociologist and the economist.

But while every available agency is employed to the uttermost in the effort to right the wrong, the trouble remains and cannot be ignored. Even when the physician knows the source of a malady and is working wisely for its suppression, it is necessary to do something for the temporary relief of the patient. The body social is suffering with the disease called prostitution. The removal of the conditions causing it can be effected but slowly, and meantime active treatment is called for.

There are at present many laws against sexual crimes, but an element of weakness in some of them is the disproportion between the penalty and the offense: in some cases a major infraction bringing a light sentence, while a comparatively trivial one is severely punished. It is merely another instance of the inconsistency and unreasonableness of the usual attitude to matters sexual. Take, for example, the case of the poetic genius, who brought obloquy upon himself and a sudden and disgraceful end to a brilliant career, by his perpetration of a crime so abominable as to excite universal disgust. If he had seduced an ignorant and trusting maiden, or laid himself liable under the bastardy act, or been corespondent in a suit for divorce, he might still have been admitted to the houses of the great and opulent, and have continued to be the pet of lovers of poetry, the drama and astounding eccentricity. Apparently the blasting of an innocent young life, the imposition upon the community of an illegitimate child and the invasion and destruction of a previously happy home are offenses easily to be condoned; but a sexual act which does none of these things, and affects only the two participants, is worthy of years of incarceration at hard and ignoble labor and heart-breaking ostracism for life. The man was clearly a sexual pervert, and his act, revolting and filthy as it must seem to any normal mind, recalling the vices of Sodom and Gomorrah, bears no comparison with those with which it is contrasted, either in its physical, moral or social effects.

There is a great lack of appreciation of the relativity of sexual crimes on our statute-books, and a careful revision on lines of sense and justice is much needed. But public sentiment should not be content to let this class of offenses go unrebuked, as they commonly are now; it should open its eyes to the fact that adultery cannot be committed by one person only, and that the two who are always concerned in it are equally deserving of the penalty. If the public and the officers of the law were to take this view of such cases, and the same vigilance were to be manifested in bringing them to justice as is exercised in the enforcement of some laws of less importance, prostitution would receive a staggering blow.

A peculiar phase of this subject has recently attracted the attention of our national government, and Congress has published the report of a commission of investigation,[7] from which I I quote a few sentences. "The importation of women for immoral purposes has brought into the country evils worse than those of prostitution. In many cases the professionals who come here have been practically driven from their lives of shame in Europe on account of their loathsome diseases; the conditions of vice obtaining there have even lowered the standard of degradation of prostitution formerly customary here." "Both from the investigations of the commission and

[7] Senate Document No. 196, Sixty-First Congress, Second Session

those of the Bureau of Immigration, it is clear that there is a beginning, at any rate, of a traffic in boys and men for immoral purposes."

But this importation of women is not the worst crime which has lately been disclosed. "The recent examination of more than two hundred 'white slaves' by the officers of the United States District Attorney at Chicago has brought to light the fact that literally thousands of innocent girls from the country districts are every year entrapped into a life of hopeless degradation and slavery because parents in the country do not understand conditions as they exist and how to protect their daughters from the 'white slave' traders, who have reduced the art of ruining young girls to a national and international system." "The radical remedy is in the home. Every mother should teach her daughter the mystery of life. Ignorance is a poor protector of innocence." [8]

Nobody can escape the conviction that it is the clear duty of every citizen to give all possible assistance to the officers of the law in their efforts to exterminate this awful abomination.

In advocating the instruction of children by their parents, and of parents by physicians, I have assumed that our profession is already qualified for this important service. To speak with perfect frankness, however, it must be admitted that this assumption is not entirely correct; the profession itself needs education in this direction. The avoidance of the scientific discussion of sex matters has become a fixed habit and cannot be readily overcome. But, stupendous as is this whole task of education, it should not appall. It must be undertaken, and neglect to do our part will count to our lasting discredit.

A CAMPAIGN OF EDUCATION.

The first campaign of the crusade, then, must be entirely educational. Already organizations have been formed for this specific purpose; but, in my judgment, they are not destined to accomplish as much as could be done through a different agency. The profession and the public are much more likely to be influenced in the desired direction if the instruction is offered by a great society, which is long established and widely known and honored, conducted by famous men, powerfully equipped in personnel, in traditions of the best methods, in a record of large achievements and in financial resources. A committee of such a society, composed of earnest, well-poised, altruistic men, who are interested in the work, would first assemble the forces of the several associations committed to this service, and unify and coordinate their various activities so that no effort would be lost by a duplication of work. Then a scheme would be adopted for reaching the public through the press. The newspaper syndicates afford the most accessible paths to the desired audience. A single one of these supplies material to 4,700 weekly journals, which reach, according to a conservative estimate, three million readers every fortnight. A short article would be furnished to each syndicate every week, and a paper by some distinguished author once a year to each of the great monthly magazines of general scope. Nothing, of course, would be published that was not strictly true, properly stated and entirely free from tinge of sensationalism, for every word would have the sanction of the central authority.

Some one may ask if the public would favor or even endure such a series of articles. The answer is found in the demonstration that has already been sufficiently made. For example, a certain high-toned journal, designed expressly for the reading of women, and with a circulation of a million a month, has had more than one temperate but plain-spoken article on these topics, and this is not a solitary example. The people are more than ready for whatever we have to tell them along these lines. Approval of this method is already given by the BOSTON MEDICAL AND SURGICAL JOURNAL, whose utterances we all admit are *ex cathedra*, in a recent editorial, commending an article on "Preventable Blindness" in *McClure's*, saying, "It is an example of the way in which the modern magazine may be made the vehicle for disseminating among the people the kind of information which they should and must have before they can reasonably be expected to co-operate in great measures of public progress, measures for which we cannot hope success without such co-operation."

The profession would be reached to some extent by these papers and magazines; but it should be more particularly approached through the medical journals by means of signed articles from the recognized authorities. There is needed an incessant, tireless presentation of the subject, so long continued that the densest intellect will be penetrated, the dullest mind awakened, the most obstinate objector convinced.

SYPHILIS AND GONORRHEA SHOULD BE REPORTED.

In a year or two legislation would be sought and obtained. At first, it would probably be politic to ask only for the compulsory reporting of cases of syphilis in its contagious stages, and of gonorrhea, thus putting them on the plane of other communicable diseases. The profession knows that this is the correct course to pursue, that logic, consistency, duty as guardians of the public health demand it. In New York City, in 1900, there were reported 41,145 cases of tuberculosis, scarlatina, measles, diphtheria, variola and varicella; and the venereal morbidity, estimated conservatively, was 225,000. If that is thought too high, quarter it, and the result gives 15,000 more than the six other diseases; divide it by 5 and there is still a large excess of venereal. Syphilis and gonorrhea should be reported for exactly the same reason that the other infectious diseases are reported — because society has a right to protection from them. The fact that they are contracted so largely in the commission of acts which are not only immoral, but forbidden by law, is not only not a reason for concealing them, but an added reason for exposing them.

[8] Edwin A. Sims, United States District Attorney of Chicago, quoted in the *Outlook*, March, 1910.

In what other case is it ever alleged, as an extenuating condition, that infraction of law is an essential element in the offense? Syphilis and gonorrhea are acquired either innocently or in the pursuit of vicious indulgence. If innocently, the reporting should bring no shame; if viciously, the victim is estopped from demanding that measure of sympathy to which the burden of grave disease ordinarily entitles him; and the community has a right — it is its duty — to protect itself against his communicating his horrible malady to others. You and I, and those whom we hold most dear, are more worthy of protection than is the sensualist, whose moral perception is so blunted that he insists that we should suffer and die rather than that he should endure any curtailment of his iniquitous pleasures, or should incur the odium which his criminal conduct merits.

These views are opposed on various grounds, and the arguments against them will be met and answered.

It is objected that a law should be the expression of the deliberate will of the majority, and that the proposed statute is not called for. To this it is answered that, if the law-makers did nothing except in response to popular demand, the General Court would have but little to do. There was no such clamor for the establishment of your State Board of Health, the first in the country. A few sagacious and philanthropic men — a minute minority of the population, and almost the only persons in it who had a grounding of sanitary knowledge — persuaded the legislature of the value of the proposed statute, which proved to be of inestimable worth, especially in educating the people. There are countless cases in which the populace has derided, vilified, abused and injured men of advanced views, who have proposed wise schemes, which long afterward were adopted to the great advantage of the community. It is hardly thinkable that, if people generally knew, as they should know, of the perils of syphilis and gonorrhea they would not insist upon the suggested addition to the law.

A second objection asserts that the law would be useless, because, it is said, physicians would not report their cases. Doubtless this would be largely the fact at first, as it was with tuberculosis, and still is to some extent; but gradually the wisdom and necessity of the practice would penetrate and pervade the understanding, and compliance would become habitual.

Next, it is asserted that a law unenforced has an evil influence on the public regard for all law. It is true that a law needs the approval of a good part of the community in order to be thoroughly effective; but it does not follow that it is useless or harmful if it is not generally approved. The lack of sympathy may be due to failure of appreciation; and, if the law is sound, approval will grow just as comprehension enlarges. But, more than this, there is a distinct value in legal recognition, for every law is largely educational; it reminds the people of matters previously unconsidered, and, because it is a law, it comes to them with a predilection in its favor. As was said by your eminent Fellow, Dr. Arthur T. Cabot, at last year's meeting of the National Association for the Study and Prevention of Tuberculosis, "There can be no doubt that legislation looking to hygienic living had much to do with the decrease in tuberculosis which preceded the modern understanding of the disease, and the crusade against it." "The laws [are] often evaded." "Their full usefulness will not be reached until the public recognizes their necessity and demands their enforcement." "This enforcement, then, waits upon the education of the community." What is said here about tuberculosis applies equally to syphilis and gonorrhea. The law should require the reporting by householders, who know about cases in their families, and by all persons undertaking to treat these diseases, thus reaching charlatans and prescribing apothecaries.

It is, of course, objected that the code of ethics forbids the revelation of facts obtained in the privacy of the consulting-room, to which it may fittingly be replied that a code which prescribes protection of the guilty at the cost of the health and life of the innocent conspicuously requires revision. Our profession as a whole has too long given its tacit sanction to deeds which excite in its individual members abhorrence. We have permitted base men to take advantage of the provisions of our code and of our exaggerated and perverted notions of honor to shield themselves from the deserved consequences of their shameful acts. The adulterer has counted confidently on the grave-like silence of the physician, to whom he brings his case of venereal, knowing that, however base the relation which he purposes to sustain toward his trusting spouse, however reckless concerning the welfare of his possible progeny, and however frank in his expression of brutality in both these regards, the doctor may be depended upon to shield him by giving no warning to the party who is in such peril of wreck and disgrace. There certainly should be some way by which we can avoid becoming involuntary accomplices in crime; it should be impossible for any breaker of statute or social law to make us protectors of evildoers, particularly when, by such guardianship, we fail so strikingly in the foremost and most valuable of our functions — the prevention of disease.

How inconsistent is our attitude! A man suspected of leprosy, although pronounced by the highest authority on dermatologic matters to be free from the disease, is branded as a social outcast, subjected to constant inconvenience, discomfort and pecuniary loss, and deprived of his liberty for a long period, and all this in spite of the apparently well-grounded opinion of some experts that the malady is not contagious. Such a case is fresh in your minds. But a man in the acute stage of gonorrhea or syphilis, or even both of them, is allowed to roam without restriction among the people, possibly leaving his vile trail on every article and every person with whom he comes in contact, spreading the contagion of the most formidable diseases broadcast, and no one of

us utters a word of protest, except such as we speak into his regardless ears; no one is justified by the code in putting the richly merited "*cave canem*" upon him for all to read.

But we are asked if we should not be as close-mouthed as priests, who never reveal the secrets of the confessional. The cases are essentially different. A sinner confesses his misdeeds to a priest in order to obtain absolution, without which he does not expect to gain admission to paradise. Confession is a sacrament, enjoined in order that a guilty one, by acknowledging his offense, expressing repentance and avowing intention to avoid the sin in the future, may be forgiven by the earthly representative of the Deity. The Church insists that the father confessor shall keep inviolable the disclosure that is made to him, because, without confident assurance to that effect, the sinner might avoid confession, and thus, receiving no official forgiveness, would be in great danger of eternal damnation. It becomes to him a question between a chance of punishment while in the flesh and a far worse experience after death. The law sympathizes with the intent of the Church, and tolerates the sacerdotal attitude of silence.

When one goes to a physician, he seeks physical help. The intelligent patient reveals everything that he knows about his case to assist in the formation of a diagnosis; and he is aware that, if he is found to have certain diseases, the doctor is compelled by law to report the existence and nature of his case to the authorities, so that there may be no unnecessary diffusion of the malady. Naturally one prefers to have no publicity given to the fact of his ailment; but when a man comprehends the purpose of the law, when he appreciates that unless he sacrifices something of convenience, comfort and material good, his family his neighbors, his town, may suffer great loss in sickness and death, he yields obedience to these sane regulations. Thus the patient knowing that the law requires syphilis and gonorrhea to be reported to the board of health, the medical man is guilty of no branch of confidence in disclosing the character of the disease.

When the community has been educated to a proper appreciation of syphilis and gonorrhea, further legislation should be had, especially forbidding the marriage of persons in whom these diseases remain uncured; the making it a crime to communicate either of them; and the authorizing of a civil action in cases where a party who has been infected brings suit for damages.

How utopian this whole scheme seems to many of you I fully appreciate, for I have been arguing along this line for a third of a century and know that these views are not congruous with prevailing ideas and sentiments; but I am so thoroughly convinced of their correctness and of their ultimate adoption that I am content to leave the matter without further argument. Nothing that I have said is intended, or can be fairly interpreted, for the belittlement of any movement already undertaken for the stamping out of any disease. Our profession is capable of fighting many foes at once; and without diminishing the interest in any one of its campaigns, it can, and sooner or later certainly will, enlist heartily in the proposed crusade against syphilis and gonorrhea.

Original Articles.

HEMORRHAGE FROM THE KIDNEY.*

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THE origin of bleeding from the kidney can only be determined with accuracy (1) by surgical operation, or (2) by use of the cystoscope or segregator. Of these methods, the cystoscope is the more accurate, although errors have been recorded by both methods.

By the aid of the cystoscope we determine that the bleeding is coming from one of the kidneys, and what remains to determine is the probable cause of the hemorrhage. In some cases the amount of blood present is so large at all times that it is practically impossible to make a satisfactory cystoscopic examination.

DIAGNOSIS.

Before the cystoscope came into use, there were certain rules laid down for determining the source of hematuria.

1. *The color of the urine.* — In general it may be said that the brighter the blood, the nearer the source of the hemorrhage is to the meatus.

2. *The time of appearance of the blood.* Blood oozing from the urethra between the periods of urination is of urethral origin. Fluid blood passed at the beginning of urination comes from the prostatic urethra. When the first urine passed is clear and the second portion is bloody, the source is either the bladder or the prostate. Blood evenly mixed with the urine throughout the entire specimen is of renal origin.

3. *Shape of the clot.* — If the clot is long and narrow, resembling earthworms, it is supposed to be characteristic of renal hemorrhage. This, however, is very misleading. Large irregular clots suggest bladder origin.

4. *Facts learned from irrigating the bladder.* — If repeated washings of the bladder do not clear up the blood, the bleeding is probably of bladder origin. If the fluid returns clear after one or two washings, the bleeding is probably from the kidney.

5. *Microscopical examination of the urine.* — The appearance of blood, or numerous hyaline and granular casts, suggest renal origin of the hematuria. The finding of the eggs of the bilharzia is suggestive of bladder origin. Numerous crystals lead one to suspect stone. Tubercle bacilli, when found, are pathognomonic.

Cystoscopy. — The difficulties of making a satisfactory examination in the presence of hemorrhage have already been mentioned. Prolonged

* An address read before the Brooklyn Pathological Society, March, 1910.

rest, allowing only a small amount of fluid, the exhibition of sedatives, and ergot, may diminish the bleeding. If the bleeding is of bladder origin, great care must be used in irrigating. It is most important that the bladder should never be completely emptied, and only small amounts of fluid be used, injecting and withdrawing it slowly. If possible, do not irrigate more than once, and then attempt to make the examination.

If the vesical neck or prostate is the source of the bleeding, examine the base of the bladder first and then the trigone. Bleeding ulcerations, tumors and foreign bodies can be quickly detected, but the most confusing problem is to decide between the bleeding from an inflamed or ulcerated area near a ureter opening and bleeding actually coming from the ureter. Blood will sometimes settle slowly, and almost invisibly over a ureter opening, only to become evident as the urine swirls from the ureter and mixes with it. The mere contraction of the sphincter ureterica may produce the bleeding.

When inflammation of the bladder is not present, the recognition of blood spurting and oozing from an ureter mouth is unmistakable. With each contraction of the ureter a swirl of bloody urine is ejected into the bladder and the source of the hemorrhage is established.

It happens frequently, however, that at the time of examination no blood can be detected in the urinary efflux, either due to the temporary arrest of the bleeding or to the small amount mixed with the urine. In such cases there are generally characteristic appearances in the ureter mouths which attract attention. In renal varix, and renal tumors, these may be very slight. There is usually a slight blush to the tissues, an increase in the number of vessels crossing the lips of the opening, or a few scattered vesicles, or the mucous membrane may be slightly stained with blood pigment. In renal tumor there may be a puffiness surrounding the opening. If the renal pelvis is dilated, the orifice may appear darkly congested. Stone in the kidney pelvis does not usually cause much change in the ureteral opening, but the spasmodic contractions of the sphincter are more frequent.

Tubercular disease of the kidney usually produces characteristic changes which do not need description here.

ETIOLOGY.

Renal hematuria may be caused by trauma, drugs, certain foodstuffs and pathological conditions the result of disease.

Trauma. — When the hemorrhage is due to trauma, the history and the appearance of blood in the urine seldom calls for further examination; however, when the ureter has been divided, or the ureter has become plugged by a clot, blood does not appear in the urine.

Drugs. — The exhibition of cantharides and turpentine are the most common cause in this list. Of the foodstuffs, rhubarb, gooseberries, unripe apples and asparagus may all give rise to hematuria.

Hematuria of disease. — As an expression of intense congestion of the kidney in malignant fevers, the occurrence of hematuria needs no explanation.

Aside from this, the renal hematuria may be divided into

(1) Hematuria, without other symptoms, and

(2) Hematuria accompanied by definite clinical symptoms.

The most common causes of symptomless hematuria are, in the order of their occurrence,

(1) Acute and chronic nephritis.

(2) Calculus, renal tuberculosis and congestion of the kidney.

(3) Renal varix, an angiomatous disease of the papillæ renales.

(4) Papilloma, or malignant diseases of the kidney.

ACUTE AND CHRONIC NEPHRITIS.

Case I. *Bilateral renal hematuria. Chronic nephritis.*

A woman, aged fifty-five years, was referred to the writer by Dr. Louria. Her only symptom was the appearance of blood in the urine, evenly mixed with it. No clots were passed. There were absolutely no other subjective symptoms. The urine contained albumin and a few casts. *Cystoscopic examination* showed bloody urine coming from both ureter openings. Under medical treatment, the hemorrhage gradually disappeared. It is to be noted that there was no sudden increase of the bleeding at any time, and no clots were present, showing the even distribution of the blood cells. The condition was not affected by exercise.

Case II. *Unilateral renal hemorrhage. Interstitial and parenchymatous nephritis. Arteriosclerosis of kidney.*

Patient aged thirty-nine, male, Russian. No previous history of rheumatism, tuberculosis or hemophilia. Married fifteen years; six children; all well. Had measles when a child. Well until seven months ago, when he began to have pain in the sole of his left foot. He could not use the foot and could not sleep well on account of the continuous pain. This pain extended up as high as the middle of the thigh. The leg became cold and numb. Then the right leg became affected in a similar manner. His arms and hands then became affected. Treatment in the hospital improved his condition so that he was able to resume his work. During the period that he was in the hospital there was some spitting of blood and nose-bleed. There was a history of specific urethritis eighteen years ago, and also a history of a small ulcer situated near the meatus which remained for two months. There was no eruption.

Feb. 9, 1909, he noticed that his urine was red and that he was passing urine every two hours. Next day there was sudden severe pain on the right side posteriorly in the region of the kidney extending anteriorly downward to the groin. He had chills and fever. His urine was red for a few days, then there was an increased amount of urine which was normal in color for two days, when blood again appeared. Patient urinated every two hours, but there was no other symptom. He has never had a similar experience.

Examination of the heart showed the apex beat to be normal. No adventitious sounds or murmurs. The aortic second sound accentuated.

Arteries. — Temporal artery tortuous and visible. Brachial artery thickened and visible. Radial artery markedly thickened and tortuous. Femoral artery thickened with visible pulsation.

Pulse. — Small, slow, regular, and with high tension.

Liver and spleen. — Not palpable. *Reflexes.* — Present and normal.

Feb. 14, 1909, he had a severe attack of pain in the right lumbar region, and the muscles protecting the kidney region were rigid. There was extreme tenderness, especially at a point one inch below the intercostovertebral angle.

Urine. — Feb. 13, 1909, bloody, neutral, with large amount of albumin in proportion to the amount of blood present.

Feb. 19, 1909, amber; acid; reaction; 1015; moderate amount of albumin and few red blood cells and a few hyaline casts.

Feb. 20, 1909, no casts were found.

Blood examination. — Leucocytes, 11,000; polynuclear, 79%. Feb. 15, 1909, red blood count, 5,540,000; leucocytes, 16,000; polynuclear, 79%; hemoglobin, 120%. The red blood cells are very high in hemoglobin. Feb. 20, 1909, leucocytes, 17,000; polynuclear, 84%.

Blood pressure. — Feb. 14, 1909, 132 mm. of mercury. Feb. 19, 1909, 150 mm. of mercury.

Wassermann reaction. — Doubtful.

Feb. 20, 1909, *first operation.* Four-inch incision two inches above the crest of ileum, and evacuation of a retroperitoneal hematoma, extending down into the pelvis from the kidney region. This was drained. The blood from this hematoma was sterile. *Second operation* March 8, 1909, by Dr. Delatour. On account of persistent hemorrhage from the right kidney, with no other symptom excepting a slight increase in the temperature and progressive hematuria. The right kidney was removed. Following this operation, he made a temporarily good recovery.

Urine examination. — March 10, 1909, clear, acid, 1022, heavy trace of albumin, few pus cells, no red blood cells. March 12, 1909, clear, acid, 1020, heavy trace of albumin, few pus cells, no red blood cells. Urine, April 11, 1909, cloudy, acid, 1016, trace of albumin, few red blood cells, hyaline and granular casts. These casts were present until the end.

There developed symptoms of sepsis in other parts of the body, and April 10, 1909, an ischio-rectal abscess was evacuated.

The patient died a few weeks later of general septicemia. Examination of the kidney which was removed showed an advanced stage of arteriosclerosis of the vessels and chronic interstitial and parenchymatous nephritis.

RENAL VARIX.

In a recent article on this subject [1] the writer reported two personal cases of renal varix. To these, two additional cases may now be added.

CASE III. Patient referred by Dr. Harold Jewett. A man aged fifty years. Malaria and scarlet fever as a child; no venereal history. Four years previous to examination, without known cause, his urine became dark red or chocolate-colored. This discoloration of the urine lasted a month or two and then suddenly disappeared, and the urine became clear again.

Status praesens. — The patient had been drinking heavily. In October, 1908, he noticed the return of his former condition. There was no symptom other than a large amount of blood in the urine. This was more marked in the morning on rising, and cleared up somewhat as the day progressed. There was some increased frequency of urination during the day. He was very nervous and had lost considerably in weight. Physical examination showed his heart to be normal, his liver enlarged, but otherwise negative.

[1] Ann. Surg., May, 1909.

Examination of the urine showed the specimen to be loaded with blood, the cells sinking rapidly to the bottom of the glass container and the supernatant fluid retaining its red color, showing the presence of free hemoglobin.

Iron and quinine were administered in various forms; in November, the fluid extract of ergot in one-half dram dose every four hours was exhibited. At this time the urine was still loaded with blood. Two days after he began taking the ergot the urine became perfectly clear and remained so for two days; then it was more bloody than before. This continued for a number of days, and then, without any medication, the urine became clear again and remained so for a few days and the blood reappeared. Dec. 10, 1908, it was clear and remained clear the 10th, 11th, and the 12th of December, then the blood reappeared and was present off and on until April, 1909.

Cystoscopic examination showed blood coming from the left ureter.

The writer presented the history of the case before the Brooklyn Surgical Society and made a clinical diagnosis of renal varix.

May 1, 1909, the patient consulted Dr. Hugh Young, of Baltimore. He also found hemorrhage coming from the left kidney. He injected the pelvis of this kidney with 3 drams of a 1 in 500 adrenalin chloride solution. After a day or two the hemorrhage stopped and it did not return for about ten days. He returned to Brooklyn in the same condition as before.

Jan. 11, 1910, *cystoscopic examination* showed the left ureter opening normal in appearance and secreting blood-tinged urine at regular intervals. There were a moderate number of leucocytes, a few renal cells, with a few epithelial and red blood cells being excreted from the renal pelvis. Bacteriologic examination of the urine from the left kidney was negative. The renal pelvis was washed out with adrenalin chloride solution in order to check the hemorrhage temporarily.

Operation by the writer. — At the end of a week the left kidney was exposed and was found to be surrounded by a mass of fat and many fibrous bands which bound down the kidney. These were separated with much difficulty. In order to bring the kidney up out of the wound it was necessary to resect the twelfth rib. The kidney was somewhat congested and enlarged. It was bisected along Broedel's line, and the pelvis and all of the calyces were opened. The papillæ at the upper pole of the kidney were congested, and one of the lower papillæ showed on its surface a roughened, granulated mucosa, making it appear somewhat whiter than the other papillæ. After the kidney had been thoroughly inspected, and the varicose and congested condition of the papillæ noted and demonstrated to a number of the surgeons who were present, the two halves of the kidneys were brought together and sutured with two layers of mattress sutures, using No. 2 plain catgut. The capsule of the kidney was sutured with a separate catgut suture, a drain was inserted into the lower and central portions of the wound and the rest of the wound closed. The patient made an uneventful recovery, the blood disappearing from the urine within seven days after the operation.

A letter received from the patient three months after the operation stated that there had been no recurrence of the trouble, although the patient had continued the daily consumption of a large quantity of whiskey. It is now nine months since the operation and there has not been a trace of blood in the urine since that time.

The histories of these cases are very much alike. The patient, usually in good health, suddenly notices the presence of blood in the urine. There

is nothing to account for its presence; there has been no undue exercise, no injury, no infection, no history of renal colic; no pus cells, epithelial elements, crystals, tubercle bacilli or other abnormal ingredient found in the urine, other than blood, which is at first small in amount, then either increasing or decreasing, and oftentimes absent altogether; in some cases the amount of blood is influenced by exercise, while in others this plays no part. In two cases of my own, the quantity of blood seemed to be greater in the morning and to lessen as the day advanced. It occurs with varying frequency in both men and women over twenty-five years of age. Some patients have had alcoholic habits, while others have been total abstainers; in fact, there is no type of person in whom the disease has been more frequently observed. The hemorrhage may last but a few days, only to disappear and recur again after periods of weeks or months, or even years; or, again, it may be continuous from the first, causing progressive anemia.

As a rule, the urine is loaded with blood and, at times, with free hemoglobin; the blood cells are evenly distributed throughout the urine, appearing in all parts of it as it is evacuated from the bladder; clots may be found in the bladder, to be expelled at intervals; as the specimen stands, the cells rapidly fall to the bottom of the glass container; and it has been observed in my own cases that the urine retains its reddish color after precipitation of the cells, probably due to free hemoglobin.

The urine shows no evidence of renal disease other than a reaction for albumin in proportion to the amount of accompanying blood serum, excepting where nephritis is present, a condition which of itself may give rise to hematuria, but which should not be classed with these cases.

Rarely the patients complain of pain or distress in the affected kidney or over the bladder, but it has been observed in some cases that all of the pain and discomfort have been referred to the opposite kidney. The disease is always unilateral, and no cases, so far as I can learn, have ever been reported where the disease affected both kidneys. It is true that symptomless hematuria is frequently bilateral, but those are the cases due to malaria, hemophilia, drug-poisoning, nephritis or other causes quite different from those included in the present report.

Case IV. Referred by Dr. Kennedy. A man of seventy years of age. Patient had had no urinary symptoms until December, 1907. At that time, after a long carriage ride, he suffered from over-distention of the bladder, and when he voided his urine a blood clot was passed and about two quarts of urine. There was no symptom of any inflammatory process, colic, etc., simply hematuria. The hemorrhage continued for some weeks, stopped spontaneously and recurred again at short intervals. During the spring and summer of 1908, the patient states that there was no blood in the urine. In September he had an attack of cystitis which subsided. In September the blood again appeared in the urine and has been present off and on ever since. No special form of exertion seems to influence the hematuria. There has been some increased frequency of urination more marked at night. He urinates every two hours. He has not lost flesh or vigor and feels otherwise well. There is an organic lesion of the cardiac valves, but no edema or other symptom of cardiac disease.

Cystoscopic examination. — May 5, 1909. About 8 oz. of residual urine. Blood appeared only at end of quantity removed from bladder. Urethral distance, about 9 inches. Some obstruction in prostatic urethra; medium clear after one irrigation. Bladder mucous membrane shows slight chronic changes due to enlargement of median lobe projecting into the bladder. Left ureter opening normal and excreting clear urine with rhythmical contractions. Right ureter opening congested and shows a few vesicles at lower margin. The urine excreted appears to be almost pure blood, considerable in amount.

The fact that the hematuria has been symptomless, absolutely without pain, with no loss of flesh or strength, and no cachexia, has existed for eighteen months, and is confined to the right kidney, would suggest renal varix. Papilloma cannot be excluded. There have been no symptoms of stone. An examination of the urine for tubercle bacilli was negative. Hypernephroma would probably show a distinct afternoon rise of temperature and diminished amount of urine. Malignant disease would probably have caused some loss of strength. Upon examination of this case it was supposed that the hemorrhage might be due to his hypertrophied prostate, and an operation for the removal of the gland was under advisement. This was not done, however, and the patient refused operation on his kidney. His subsequent history has not been reported.

MALIGNANT GROWTH OF THE KIDNEY.

In renal tumor, the hemorrhage occurs suddenly. It seems little influenced by exercise. There may be a single attack during sleep, and then it will not occur again for weeks or months. This is especially true of carcinoma. At one time almost pure blood will be passed and the next urination will be perfectly clear.

Case V. Referred by Dr. Flannery. Patient a woman aged sixty-eight. Nine years ago we removed a large fibroid uterus. The patient has been well until the last six or eight months. Since then she has been somewhat weak, but otherwise her condition has been normal.

Jan. 1, 1910, she suffered from a sudden hematuria, which came on without symptoms, excepting an increased frequency of urination. This lasted but a short time and the urine remained clear for a week. At the end of that time there was another sudden appearance of hematuria without symptoms. Examination revealed an irregular, hard tumor occupying the position of an enlarged and slightly prolapsed kidney. Cystoscopic examination showed the bladder to be normal. Functional test of the two kidneys, passing the catheter into each pelvis, was made, using phenosulphonethalien. No urine was obtained from the right side, due, I believe, to reflex anuria. The urine from the left kidney flowed very slowly and the characteristic reaction of the test did not take place until thirteen minutes after injection of the drug. In a normal functionating kidney this should take place in from seven to nine minutes. It demonstrated, therefore, that not only was the right kidney diseased, but the left kidney also was not functionating normally. During the next twenty-four hours only 17 oz. of urine was passed, which bore out the above conclusion. The patient was examined again after two days, using indigo carmine, and only a faint

greenish color appeared in the urine from the left kidney after twenty-four hours. Operation was advised against. The patient died three weeks later in coma.

Calculus renal hematuria is usually small in amount and is increased by exercise. It rarely occurs without pain. Tubercular ulceration of the pelvis of the kidney gives rise to hemorrhage only through the rupture of a blood vessel, and its occurrence is not frequent, hemorrhage in tubercular disease being almost always accompanied by definite symptoms.

RENAL HEMATURIA ACCOMPANIED BY PAIN.

Renal varix, nephritis and tumors of the kidney seldom give rise to pain excepting that in the latter class, when the tumor causes obstruction or pressure from its size, pain may occur, but is easily diagnosticated.

Renal calculus is a most common cause of hematuria accompanied by pain in the region of the kidneys. Next in frequency comes tubercular disease and congestion or hyperemia due to numerous conditions and aneurism of the kidney. I will not here repeat what has already been said concerning the diagnosis of renal stone, excepting to emphasize the fact that usually the hemorrhage is small in amount. An exception to this is the following case:

CASE VI. Referred by Dr. Beasley. A printer, fifty-three years of age. Nine years ago was operated on by us at the Seney Hospital. In July, 1900, a hydronephrotic left kidney, with stone, was removed. At that time he suffered from intermittent attacks of pain in the left side and back, lasting ten or twelve hours; at such times there would be a change in the character of the urine, but no blood. At long intervals had some pain in the right side, but otherwise has felt fine and strong.

Status praesens. — Accustomed to pass considerable urine; would get up three or four times at night. Five weeks ago noticed some blood in the urine which had been passed during the night; then began to have trouble; pain started on right side under the lower rib and around toward the back; was continuous for short periods, very severe, felt as though he would like to double up. Growing worse, attacks became more frequent; hands and feet began to swell. Blood was continuously present in the urine after its first appearance. Patient thought the amount of urine passed was less during attacks of pain. Amount of blood in urine increasing. Was losing strength rapidly. X-ray examination by Dr. Eastmond showed stone in renal pelvis. Operation at the Jewish Hospital, Oct. 23, 1909, by the writer. Incision, 2½ inches to the right of the middle line of the back starting over the lowest rib, carried down to the crest of the ileum; exposure of the kidney, which was two and a half times as large as normal. Surface densely adherent to all the surrounding structures, due to a perinephritis. The kidney within its capsule was gradually separated from the surrounding structures and brought up into the wound. The upper half of the kidney was markedly changed and showed the effect of a chronic hydronephrosis. In some places the cortex of the kidney was so thin that it was almost like parchment. The lower pole of the kidney was not as markedly diseased as the upper pole. An incision was made through the cortex of the upper pole in the middle line and there escaped a quantity of seropurulent urine. A finger was then introduced through this opening and the calyces of the kidney were found dilated. A large, solitary, smooth uric acid calculus was found in the dilated ureter acting as a ball valve. This was easily removed.

A cigarette drain was placed draining the pelvis of the kidney, a second drain between the kidney and the peritoneum, and a short gauze drain to the kidney surface and the wound was closed. Following the operation the patient had very little disturbance. The next day he was sitting up in bed and passed 30 oz. of urine through the bladder. The second day after the operation patient felt well, was eating normally, temperature normal and pulse normal; passed 40 oz. of urine through the bladder. Considerable discharge on dressings. Third day drain was removed from kidney; condition of the wound perfect. Patient felt well, but showed inclination to sleep a great deal. Fourth day, patient very sleepy and slightly irrational. Large amount of albumin found in the urine and only a small amount of urine passed through the bladder. The temperature has been subnormal, reaching as low as 93° F. and rising again to 97°. Fifth day, only 2 oz. of urine passed; patient uremic; temperature, 86°F., temperature being taken in the axilla, in the mouth and in the rectum, by four different thermometers. Temperature remained between 85.6° and 88° for nearly twenty-four hours, and patient died.

DIFFERENTIAL DIAGNOSIS.

In tuberculosis of the kidney the early bladder involvement, with the finding of pus and tubercular bacilli, aided by cystoscopic examination, as a rule, makes the diagnosis positive. In nephralgia or neuralgia of the kidney due to congestion, hyperemia, adhesions or malpositions, the hemorrhage is usually small in amount, but is quite frequently present. In three cases of my own during the past year the hemorrhage has been microscopical, but always present. In aneurism there is present a tumor, hematuria and pain. Diagnosis is usually impossible unless there is distinct bruit and pulsation. In tuberculosis a large hemorrhage is rare.

THE TREATMENT OF HEMATURIA.

A. *If due to trauma.*

(1) Expectant treatment is indicated in the cases of slight injury, in which there is only moderate or transitory hemorrhage of short duration.

(2) Operation is contra-indicated when both kidneys are extensively injured.

(3) Operation is strongly advised when there is progressive recurrent or persistent hemorrhage, also when infection has taken place.

B. *If due to drugs or diet.*

Removal of the cause. The same treatment is indicated as in any acute inflammation of the kidney.

C. *Hematuria of disease.* In malignant fever, no treatment of the kidney lesion itself will avail. If due to nephritis, medical treatment will usually bring about a cure. If the conditions persist, decapsulation and fixation of the kidney are indicated. In rare conditions where the disease is unilateral and threatens life the kidney may be removed.

Renal varix. The treatment is based upon the pathological findings. Renal varix is a distinct

pathological entity and may be described as an angiomatous disease of the papillæ renales, whose etiology and pathology resemble that of varicocele, varicose veins of the legs, varicosities at the cardiac end of the stomach, hemorrhoidal varices, etc.

In the majority of cases, at operation, when the kidney has been bisected, no gross pathological lesions will be noted, but on microscopic examination of the papillæ renales a typical angiomatous disease will be found. Nephrotomy is the operation of choice, because it allows a thorough examination of the kidney, and also for the reason that it accomplishes exactly what the operation of multiple ligation does in the treatment of varicosities in other portions of the body, in that it cuts six of the main connecting venous radicles of the kidney and in this way destroys the varicosities.

The incision should be made along Broedel's line so as to avoid injury.

Nephrectomy is indicated only when rapid and bloodless operation is demanded, or when nephrotomy fails to relieve the hematuria.

Malignant growth requires the removal of the kidney.

Tuberculosis, removal of the ureter and kidney.

Renal stone, removal of the calculus and sometimes nephrectomy.

Nephralgia calls for renal decapsulation and the fixation of the organ.

INDIVIDUAL EFFICIENCY.*

BY FRANCIS P. EMERSON, M.D., BOSTON.

VERY early in life we reach the conclusion that we cannot accomplish much in working or playing alone. So as a natural evolution we have first our congenial friends, then our societies and finally we become identified with the larger commercial, sectarian and political groups of men who find in organization not only economy and strength, but encouragement. For the average man such association enables him to work out a larger usefulness. Instead of losing his identity, he ceases to work at cross purposes, where alone he could make no headway, and becomes an integral part of an irresistible force. This enables him to work along the line of least resistance with men of the same ideas and aims, thus multiplying his personality and increasing his efficiency. He animates what he can, and if he does not make himself felt, it is to be remembered that alone even a much stronger character would be wholly lost and inefficient. When we reach our majority, we find ourselves, by no act of our own, but by virtue of our citizenship, a part of that larger body of men which we call the government. Here again, on a larger scale, is the same idea, in that it is composed of a majority of our citizens who have united to carry out certain ideas of government, upon which they are mutually agreed. Like other organized groups of men, we find that it has a definite policy, and that one of its earliest functions was the protection of the individual. Not only in his life and liberty, but he was to be encouraged, assisted and given every opportunity to develop as an efficient member of society. Around him as a unit we have built up the common law, and his rights as a free citizen have been most zealously guarded.

From simple customs adapted to rural communities there has developed that code of laws suited to our complex social relations of to-day. At first, men united to protect the individual from attack from without, recognizing only infrequently exigencies which reminded them of their claim one upon another. But at this early time it was accepted that the foe of one was the common foe, and that no one could afford to ignore the weakness of his neighbor. As the community grew, accepted customs became incorporated into statutes, which made it the function of government to safeguard the life and liberty of each constituent member. This prerogative was at first exercised in only a few things, but gradually as society became more complex, other functions were assumed. It became necessary to protect against the vicious and lawless of their own members; to insist on certain standards of education; to insure property rights; to provide for religious observance; to guard against the spread of disease; but always on the justification that the larger opportunity and efficiency of the individual was being provided for and safeguarded. This has always been recognized as a legitimate function of associated government.

In the early history of this country, although the individual stood as the unit around which the common law was built up, he had no particular value. His cheapness was on a level with the sun, light, the rain, the land and other values that were practically free. In other words, the unit of value in commercial life has always in the history of the world raised or lowered the value of human life. As we read history we have passed through two periods and are entering upon the third wherein men's conception of life has influenced and modified all the problems of our commercial and social relations. During the first period men were largely fatalists.

If crops failed or commercial enterprises were disastrous on sea or land, it was to be borne as inevitable. Men believed either that human events were foreordained, or else sought refuge in charms, amulets and sacrifices in warding off or mitigating the wrath of evil spirits. The second period extends from the end of the first, which cannot be fixed definitely, to the beginning of the twentieth century. During this time men sought for some empirical remedy that should cure our illnesses, physical, commercial and theological. Drugs were administered for physical diseases, laws were enacted for political ills and immunity was sought for moral errors through vicarious atonements. Society was, however, becoming more complex. People were segregating in large cities. Land values had increased and individual effort was being superseded by combinations. As enterprises became larger in scope and returned richer rewards, values increased and communities

*Address delivered before American Institute of Banking, Dec. 16, 1909.

grew, the individual rose correspondingly in the scale, as an economic asset.

During this period the sciences were also developing and a better appreciation of the relation of government to the community, and the community to the individual, and of man to man, but there was no general recognition of definite underlying laws, moral, physical and commercial. With the beginning of the twentieth century men turned from empiricism to the prevention of disease, moral, physical and political, and the questions of the hour have been made to tally with this dominant idea. The new concept includes the best in the past, to which it adds a better and more far-reaching grasp of larger problems for the future. History offers no encouragement for the pessimist. The superficial observer who believes that commercial integrity is lost, that moral standards are a thing of the past, and that political life has nothing to offer an honest man, does not read aright the development of the race. It has been necessary that this new country of ours should grow, values increase, enterprises broaden and the rural population flock to our cities, in order that society as a whole should come to recognize the individual as an asset of increasing value in the community. Coincident with business competition and the rivalry of nations, man rises in the economic scale.

Communities are coming to understand the far-reaching consequences of disease and the right of each individual to be protected. They are appreciating that with the complexity of our social relations, illness, which interrupts the efficiency of an individual, affects all. It is being forced upon our attention as an economic question, and so the third period, which ushered in the twentieth century, had for its dominant concept, prevention. That is a study of the underlying laws of commerce, physical and political ills with a view to understanding their cause, how they develop, and what means can be taken, not to cure, but to prevent them. Medical science, to which associated government has looked to protect the individual from physical illness, has been an evolution like the allied sciences. Its viewpoint has changed as we have better understood our relation to natural laws. The discoveries of the chemist, the physicist, the laboratory worker and the investigator in every field of human knowledge has been drawn upon, to work out a larger concept and a richer opportunity for the individual. As we have come to understand better the relation of cause and effect, and the dependence of what had before been considered unrelated conditions, one phase of truth has been emphasized and then another, but eventually they all find their level and are added to the common fund of knowledge.

Only two hundred years ago the streets of London were breeding beds of disease. The surface of the ground was a receptacle of filth of every description. Drainage as a means of preventing disease was not practised, the water supply was polluted, sun and fresh air were excluded from the houses and the rudiments of anything like sanitary science was unknown. Everything that has since become the function of the government, the state or the municipality in safeguarding the individual has developed. Each year this regulation by law of the life of the individual for the common good is extended to include all the relations of life. Not only are we forbidden to pollute the water supply, the air, food and surface of the earth, but the height of our buildings, the hours that we shall be compelled to labor and conditions of light, air and employment of safety devices that protect the efficiency of the individual are submitted to as the prerogative of government. In addition, experts in their particular field study the laws that underlie all social relations, and as they are understood, they are added to the restrictions under which we can continue to live in safety. Individuals, rich and poor, private enterprises and public service corporations, each year expend vast sums to bring their business to conform to these regulations, that safeguard the life and property of all.

Medical science has worked hand in hand with the central authorities to further increase the efficiency of the individual by studying the origin and modes of propagation of special diseases that annually spread in epidemics over large sections of our country. In some years when the infection was particularly virulent, the loss of human life exceeded that of war. Some of these are now hardly known to the present generation. To-day our boards of health demand that every physician report all cases of typhoid, typhus and scarlet fever, diphtheria, croup, cholera, chicken-pox, cerebrospinal meningitis, smallpox, measles and tuberculosis. In another ten years it is believed that most of these will be rare. The breeding place of the infectious diseases, the public schools, has been attacked, and this year in Brighton a culture was taken from the nose and throat of every child on admission, and those infected, excluded and isolated. Sepsis which demanded its toll of thousands following surgical operations or childbirth is now a cause of explanation in the practise of any physician in even a single case. Yellow fever, cholera and malaria have ceased to carry terror and death into large sections of the country. Appendicitis or inflammation of the bowels is recognized by the recent graduate of medicine. So I might go on and enforce these assertions, by quoting statistics, to show how absolutely we have advanced in our control of these diseases, as in the case of diphtheria, where the mortality has been reduced from 20–30% to less than 5%.

Improved methods of diagnosis are in daily use. We see directly by means of the x-ray the exact condition of every joint and organ of the body. A drop of blood from the ear decides in the very beginning of illness a half dozen conditions like typhoid, malaria, etc., that mean much for the early restoration of the individual to active life. With the bronchoscope, the cystoscope, etc., direct inspection of the bronchi, stomach and all the hollow viscera can be made with certainty. Before any physical signs appear, the cutaneous

reaction for tuberculosis confirms a diagnosis of consumption before the patient is a danger to the community at large and while yet there is time to save him. Health inspectors guard the entrance of every port that we may work in safety and efficiently.

There is only one widespread disease that is a national evil, that effects youth and old age, that is seen daily in the practise of every busy man, in which we have made but little advance in safeguarding the community, and that is venereal disease. Every young man should know as his right, and be taught by those who are his natural guardians, as well as by the public, that the infection of one attack of gonorrhea may remain during life; that it is the cause of a large per cent of blindness in early life, of the necessity of abdominal operations in the first years of married life and of sterility; that syphilis is accountable for most cases of locomotor ataxia, general paralysis of the insane, many cases of apoplexy in middle life, and that the third stage may invade every organ of the body and simulate every known disease. No indulgence under any known conditions is safe, but public supervision seems so far impracticable, and only knowledge and direct instruction in early life offers any hope.

If these things are true, the same dominant idea, i. e., prevention, is working in the field of health, of politics and of commerce. Each has its natural laws of health and disease which bind us together in one common interest, — to educate the public in the prevention of associated or community ills, to enlarge the opportunity and safeguard the individual, that he may become an asset of increasing value. But after all, paternalism or a physically perfect human organism will not assure us an efficient man. The diseases which prevent our efficiency are generally not physical, but are disorders of the mind and the will. This truth, while not new or unrelated to well-known facts, is being emphasized just now, and we are hearing much of the force of habit, of the influence of mind over matter, of suggestion, etc. Remember that three fourths of human ills are preventable, and if we would regulate the functions of our body, you must do it largely from the top. Medicine or surgery only help to bring us back to right relations, and do not assure their continuance. We must keep the balance right. There comes a time when a man realizes that he cannot afford to lose his temper, be jealous or suspicious, or allow himself to lose control of himself; that his efficiency is determined by conditions under his own hat, and no man can prevent his success provided that he has the determination and is willing to pay the price.

If the signs of the times are not misleading, the efficient young man of the near future will have to start in his life work educated and made efficient to do that particular thing from the beginning. As an economic asset he is becoming too valuable to waste his time in working from the bottom up, without skilled supervision, or a wise use of his energy, whether this be in commercial or professional lines.

Medical Progress.

PROGRESS IN PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS.

BY MAURICE VEJUX TYRODE, M.D., BOSTON.

ANESTHESIA AND ANESTHETICS.

Intravenous ether and chloroform narcosis.—It was formerly the universal teaching in pharmacology that the volatile anesthetics were more suitably administered by inhalation than by other channels because by the former their effect could be more easily regulated; but Burkhardt performed a series of experiments with a view of proving that a more exact dosage could be obtained by giving the anesthetic in salt solution intravenously. For chloroform he used a saturated solution in normal saline which makes it about ½% strength by volume. By allowing this solution to run slowly into a vein he was able to obtain complete anesthesia in cats for over one hour with about 150 ccm. of salt solution containing a total quantity of 0.75 ccm. chloroform. In rabbits it took about 1.55 ccm., while in dogs about 4.70 ccm. chloroform. In all his animals there was some hemoglobin and albumin in the urine.

He anesthetized four human beings in this manner, injecting from 1100 to 1900 ccm. of salt solution saturated with chloroform (about ½%) into the medium basilic vein for about an hour. The respiration and pulse were remarkably regular from the beginning to the end and the awakening occurred very promptly after the infusion was stopped. Two of the cases, however, showed some hemoglobinuria and evidence of slight irritation of the kidneys.

He anesthetized 33 patients with a 5% solution of ether in normal saline injected intravenously, and in 30, he had no ill-effects as far as headaches, nausea, vomiting or renal irritation. In none did he see any evidence of depression of respiration or circulation.

Gianni more recently tried the method with two cases, in which one, a large angiosarcoma of the lip, and in the other a benign tumor of the hypophysis, were removed under chloroform administered intravenously in a saturated solution of normal saline. The injection was made into the saphenous vein about 4.5 cm. from its junction with the femoral. About 55 ccm. were allowed to flow into the vein during the first minute; 1100 ccm. of fluid were used in all in the first case, representing about 6.6 gm. of chloroform. The anesthesia lasted for forty minutes, and seven minutes after cessation of the infusion the patient roused. Traces of albumin were found in the urine during the day, but it was again normal by the following morning. There was no tendency to vomiting during the operation nor afterwards in either case. Muscular relaxation was complete by the fifth minute in the first case and by the fourth in the second case. In the latter, 1500 ccm. of fluid were infused, containing about 9 gm. of chloroform during the seventy-five minutes required for the operation. Patient

roused in five minutes. When the anesthesia was complete, the infusion was suspended until the corneal reflex warned that more of the chloroform was required. He does not regard the method as responsible for the slight transient changes observed in the urine of the first patient, as his previous condition was sufficient to explain it. In his research upon animals unlike Burkhardt, he was unable to observe any irritation of the kidneys. This experimenter, like the former, is very favorably impressed with the advantages and harmlessness of this technic, and especially for operations on the head and throat.

It seems to the reviewer that this method has some promise of good, because doubtlessly the regulation of anesthesia can be more accurately carried out by the intravenous (provided the solution is very dilute) than by the inhalation method. Furthermore, there is the distinct advantage of not administering or passing through the body of an individual a greater quantity of anesthetic than is absolutely necessary for complete anesthesia. The local irritation of the air passages and of the stomach (swallowing of ether-laden mucus) by the inhalation method or of the colon, sigmoid and rectum by the rectal method is entirely avoided. Yet, it must not be forgotten that both ether and chloroform have the power of precipitating proteids and of disintegrating the red blood corpuscles (hemolysis); thus by too rapid direct injection into the circulation we incur some danger of embolism or thrombosis besides the general liability of infection following intravenous administration. From the experiments in animals we might also be led to consider whether the irritant action of the anesthetic is not greater upon the kidneys when given intravenously.

Rectal anesthesia.—Since Pirogoff first introduced rectal anesthesia it was tried by a number of surgeons, but never received really serious attention until Cunningham introduced an improved method of rectal ether administration which corrected to a great extent the marked diarrhea and dysentery which previously followed such anesthesia. Since Cunningham's report a number of European surgeons have taken up his method and reported statistics upon it, as Baun, Dumont, Kadjian, Morosow quotes the latter's result in five years. He operated on 68 cases with rectal anesthesia, and in 61 the patient slept perfectly well, in 5 they were restless and in 2 they did not sleep at all. Vomiting during narcosis occurred three times, bloody diarrhea in 6 cases, while common diarrhea in 3, accompanied by cramps. In the remaining 59 cases no bad effects whatever followed.

More recently, a case reported in the JOURNAL of a sailor who received rectal ether to allow the removal of an epithelioma about the mouth. He died in a few days after operation and at autopsy it was found that he had chronic dysentery and that an ulcer had broken during the anesthesia and caused general peritonitis.

The reviewer believes that although rectal anesthesia has a field of usefulness, especially in face operations, yet it should never be employed when there is any disease of the intestines, and in fact its use should always be preceded by a careful physical examination of the abdomen, analysis of the feecs and an examination with sigmoidoscope.

Anesthesia and diuresis.—Hawk has pointed out that marked diuresis occurs during etherization, beginning after thirty minutes and continuing for four and a half hours. This is probably to be explained by the direct stimulation of the kidneys by ether plus the dilatation of the renal blood vessels.

Fleig performed some experiments in which he tested the value of artificially increasing diuresis after anesthesia and also of counteracting hemorhage by rendering the blood more readily coagulable. He reports a research which demonstrates that the heart's action can be reinforced, the blood pressure increased and coagulation promoted by preventive injection before the operation of an isotonic solution of calcium chloride with or without a mixture of blood serum. He shows also that elimination of the anesthetic is promoted and the period of its contact with the tissues shortened by the subcutaneous intramuscular or intravenous injections of solutions of glucose or levulose. Copious diuresis is induced by these injections which wash out the anesthetic and attenuate its secondary toxic effect, while they have besides a tonic action on the cardiovascular system, combating reduction of blood pressure and collapse. The sugar solution has also a certain nourishing action. The sugar and calcium chloride may both be combined in a single solution. He urges that more general adoption of such measures, especially in chloroform anesthesia and when there is reason to dread an injurious action on the heart. He warns, however, that the calcium chloride or blood serum should never be used in cases in which there is danger of thrombosis.

He shows that these glucose injections shorten greatly the post-operative anesthesia. In one dog diuresis became copious in ten minutes after injections of 4.40 ccm. of 25% glucose solution and continued thus for twenty minutes, after which the dog roused, while the same animal three weeks before did not rouse for one hour and a half after the administration of the same amount of chloroform. Hypertonic solutions of sugar ingested by mouth do not seem to have the slightest diuretic action, and diuresis is less with isotonic solutions ingested by mouth than when pure water is taken.

It is not at all surprising that Fleig could not obtain diuresis in normal individuals by the taking of sugar internally because the liver takes care of it before it can reach the general circulation.

Narcosis and adrenalin mobilization. — Schur and Wiesel found out experimentally that the chromafin affinity of the suprarenal and sympathetic system is decreased by narcosis (ether, chloroform, etc.) and is altogether suspended if anesthesia lasts from three to five hours. At the same time extracts of the suprarenals of such animals failed to dilate the frog's pupil or to raise the blood

pressure or to give the iron-chloride reaction. Therefore, there is a pouring out of adrenalin into the circulation during narcosis since, contrary to the serum of the normal rabbit, that of the anesthetized has a mydriatic effect after one or two hours which disappears after a longer time. Then a few hours after narcosis is interrupted the chromafin reaction begins to reappear and reaches its normal intensity in eight to twelve hours. It is interesting to note that fatalities during anesthesia are more frequent in lymphatic individuals with hyperplasia of adrenalin-containing tissues and is probably explained by the sudden liberation of too large quantities of adrenalin.

These observations are exceedingly interesting as they are capable of explaining some of the heretofore unexplainable surgical shocks as acute adrenalin poisoning.

Effect of anesthetics on the bactericidal power of the blood. — Zimine found that in guinea-pigs the englobement by the phagocytes of the bacillus proteus injected into the peritoneum is much less active in the pigs which have been etherized from forty-five minutes to two and one half hours than in normal pigs or those subjected to chloroform.

Graham, after an exhaustive study, confirmed the work of the preceding and found great reduction in phagocytic activity against the streptococcus, staphylococcus, bacillus coli and typhosi after etherization. This author likened the results to those obtained by others after alcohol and chloroform and adopts the Mayer-Overton theory of anesthetics dependent on mechanical affinity for fatlike substances to explain the condition. He seems to prove the point by showing a restoration of phagocytic activity after it has been lowered with ether by the administration of lecithin or fats, as olive oil. Not only does he get results by subcutaneous administration, but also by rectal injections. This is exceedingly interesting, for if fats restore phargocytic activity after its diminution by anesthetics, it is possible that they may restore it after it is lowered from other causes, and thus the forced feeling in tuberculosis with large amounts of fat may have its good result partly by neutralizing the toxins which lower the phagocytic activities of the serum.

This also suggests that the shorter the operation and the smaller the quantity of anesthetic given, the better are the chances of avoiding infection. This was remarkably proved in our laboratory some years ago when dogs operated for gastric fistula, by some research men with poor technic prolonging the operation from an hour and a half to two hours, yet under the strictest aseptic and antiseptic precautions, all died of sepsis. On the other hand, two dogs operated without antiseptic precaution, mere cleanliness, but the total operation lasting less than ten minutes, no sepsis occurred in either case.

These facts would seem to indicate that besides shortening an operation and quantity of anesthetic to its lowest minimum, patients who have been subjected to an operation should be fed with more care, increasing as rapidly as possible the easily digestible fats in the diet.

General pharmacological action of ether. — After an exhaustive and painstaking research, Draux comes to a very interesting series of conclusions which follow:

1. Ether injected subcutaneously in normal dogs is capable of causing a slight rise of blood pressure and increased pulse rate.

2. Ether injected intravenously causes at first a lowering of the blood pressure, soon followed by a certain rise. The fall of pressure is accompanied by a diminution of the amplitude of pulsation and often by slowing of pulse-rate. The rise of pressure is frequently accompanied by an acceleration.

3. The slowing which follows the fall of pressure after intravenous injections of large doses of ether is the result of reflex irritation of the vagus.

4. Ether produces a depressant action on the isolated heart which manifests itself by a diminution in the amplitude of the pulse waves, by a slowing of the rate going to complete stoppage and by irregularities in the rhythm.

5. The fall of blood pressure observed at the beginning of intravenous injection is not due to a vaso-dilatation, but to a direct depressant action on the heart. The oncometer tracings of the kidney, spleen and paw, instead of showing a rise, as in vaso-dilatation, show, on the contrary, a fall which is most marked when the dose of ether is greatest.

6. The rise of blood pressure in etherization is due to vaso-constriction and not to stimulation of the heart.

It is interesting to note that this author definitely proves the depressant action of ether on the heart from the beginning without any stimulant stage, a point which has been held for so many years by pharmacologists, but so much contradicted by many clinical men on account of wrong observations. He shows that the rise in blood pressure which sometimes occurs is not evidence of heart stimulation, but only of vasomotor constriction.

Nicloux proves that inhaled ether is excreted by the milk, and this he explained by the fat contents of this secretion which attracts ether.

Toxicity of chloroform. — Doyen, Gauthier and Policard, in a recent work, found that chloroform taken by inhalation produces in dogs an excretion of pathological urobilin which they believe comes from the blood; also they think that it has some relation to the hepatic lesions. These facts are in harmony with the observations of Hamberg and Ewing, who found marked anemia after chloroformization, and also an increase in the hemolysis of the blood. Of course the degeneration of the liver and also the acid intoxication which has some relation to the former have been described by numerous authors with citation of cases. A particularly good review is given by Wells.

Fate of chloroform in the body. — It was formerly taught that both ether and chloroform left the body intact without undergoing any chemical changes, but Nicloux in a recent paper adduced evidence to show that a certain portion of inhaled chloro-

form which is not recovered in the excretion is changed by a process of hydration with the ultimate formation of carbon monoxide.

Nitrous oxide and oxygen anesthesia. — Since the anesthetic action of this gas was discovered by Wells in 1844, and brought into general dental use for extracting teeth by Colton in 1863, it was not employed as a general anesthetic until Andrews, of Chicago, in 1868, showed such possibilities by using nitrous oxide and oxygen combined. Paul Bert, in 1880, worked extensively with this combination and proved conclusively its practical application in surgery. Yet since that time up to recently nitrous oxide has been but little employed with oxygen as a general anesthetic. One of the main objections was that it was believed that it could only be administered under artificially increased atmospheric pressure, which necessitated very cumbersome apparatuses, pneumatic cabinets, etc. Later, however, very much simpler apparatus has been devised, so that one of the main objections has been overcome.

Bevan, of Chicago, has again brought up the subject in America a few years ago and reported many successful major surgical operations performed under nitrous oxide and oxygen mixture. More recently Peairs, Teter and Crile write most enthusiastic reports from its use. Peairs' new apparatus is simple and easily portable, weighing only 19 lb. Teter has administered the gas thirteen thousand times, and one thousand times in major surgical operations. Crile used it in five hundred and seventy-five major operations. He compares it very favorably to ether, stating that nausea occurred in 17% of cases as compared with 42% under ether. He believes that, just as with ether, nausea from nitrous oxide is due to uneven administration. He is particularly gratified by the rapid recovery of the patient to the unclouded possession of all his faculties, also the great diminution of surgical shock and the more rapid return of the pulse to normal after operation. In fact, he strongly recommends it especially in the so-called handicapped cases which would make a bad ether anesthetic risk.

In spite of the favorable reports there are some unfavorable features to this mode of anesthesia, and one is that it is sometimes impossible to obtain absolute muscular relaxation. Hilliard's study on the influence of the barometric pressure probably explains many of these cases, as when the barometric pressure is low it is impossible to get absolute surgical anesthesia without dangerous cyanosis. Furthermore, it is a fact that the blood pressure is considerably raised and, therefore, it is dangerous to use this method in atheromatous conditions or in individuals having the entiological antecedents of these as excess of alcohol and tobacco.

Spinal and local anesthetic of the cocaine group.— On account of the widespread interest of spinal anesthesia during the last few years, it is interesting to note an article from the laboratory of Professor Reclus by Piquand and Dreyfus on the comparative anesthetic power and also toxicity of cocaine and its substitutes. The different local anesthetics or combinations thereof are classified as follows with decreasing strength:

1. Cocaine.
2. Novocain-adrenalin. (Analgesic power not far from that of cocaine.)
3. Novocaine, alypin, coca-stovaine (the three have about the same anesthetic power except that the effect of novocaine is less lasting).
4. Stovaine, tropacocaine, beta-eucaine. (These three have about equal power.)

As regards the toxic action determined by intravenous injections in rabbits, the following results were obtained with decreasing toxicity downwards.

Fatal dose per kilo.	Name of drug or combination.
0.017	Alypin
0.0183	Cocaine
0.019	Beta-eucaine
0.02	Tropacocaine
0.027	Stovaine and cocaine equal parts
0.03	Stovaine
0.046	Novocain-adrenalin
0.063	Novocaine

As may be seen by these tables, the novocain-adrenalin is the most active and next to the least toxic and, indeed, it is this anesthetic which Reclus has found the most valuable. They cite three cases of inflammatory and gangrenous conditions following the anesthetic, but they attribute it to some probable mistake in sterilization, etc., as Reclus has had 700 cases without any accidents following.

It would be a strong endorsement for novocaine spinal anesthesia if cases of death and paralysis by this method had not been reported, besides occasionally very intense untoward effects. Thus Gabbet reports the death of a patient from evident paralysis of respiration while removing an elephantiasis of the scrotum. As Gabbet had given 1 mgm. or 1-60 gr. of strychnine to his patient, he concluded that death had occurred from strychnine poisoning because there was stiffness of the arms, which, of course, could easily be due to the asphyxia incident to the paralysis of the respiratory center by novocaine.

Such a dose of strychnine could not possibly produce death, and from the description of the symptoms the reviewer has no doubt that death was due to the 1–10 gm. of novocaine given.

Furthermore, Spielmeyer, in a research on this local anesthetic, was able to show marked neurohistological degenerations, particularly in the motor-ganglion cells of the anterior horn. Such changes would, of course, explain the occurrence of paralysis. Spielmeyer had previously found these lesions after stovain. He claimed that, these could not be seen with a dose less than 0.07 but Hardouin records one case of death in ten patients from a dose not exceeding that. Santesson after a careful research upon the action of cocaine and stovaine on nervous fibers found that the latter produced changes in the myelin of the nerves. With the well-known paralyzing action of all these substances on the respiratory center, it is difficult to understand the results claimed by Jonnesco and Jiano, who inject these

drugs in the cervical cord and even within the skull after trepanation. Concerning stovain, Munchmeyer's report of 1,000 cases is rather interesting. He claims 70% without ill-effects, 30% chiefly with headaches, 7 cases of motor paralysis, lasting from eleven to fourteen days, including 5 of the limbs and 2 of the abducens.

It seems to the reviewer that spinal anesthesia is a decidedly more dangerous method than most of the others previously mentioned in view of the fact that none of the local anesthetics so far are devoid of very toxic effects in doses necessary for anesthesia. The danger of paralysis has to be seriously considered on account of degenerative changes which they may all produce in the spinal cord. Some authors report as severe if not more severe post-operative discomforts than after ether, as nausea, vomiting, headaches, etc. Furthermore, even if we had a perfect spinal anesthetic devoid of toxicity (which we do not have as yet), the method would be objectionable on account of the consciousness of the patient during the operation, which is liable to produce a great deal of psychic shock, much more than would occur when unconsciousness is preserved throughout the operation.

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New Feature of Hopkins Medical Clinic.—A "heart station" will be instituted at the medical clinic of Johns Hopkins Hospital next fall. It will be equipped with a special laboratory for examining the heart by electricity and other new graphic methods of registration.—*Jour. Am. Med. Asso.*

Reports of Societies.

THE AMERICAN NEUROLOGICAL ASSOCIATION.

Thirty-sixth Annual Meeting.

May 2, 3 and 4, 1910.

Monday Session.

The Association was called to order in the Yellow Room of the New Willard Hotel, Washington, D. C., at 2.30 P.M. by the President, Dr. Morton Prince, of Boston, who delivered an address entitled,

CEREBRAL LOCALIZATION FROM THE POINT OF VIEW OF FUNCTION AND SYMPTOMS WITH SPECIAL REFERENCE TO VON MONAKOW'S THEORY OF DIASCHISIS.

Dr. Morton Prince, of Boston: I have chosen as a subject upon which to address you that of the doctrine of cerebral localization from the point of view of function and symptoms. The doctrine of cerebral localization acquires a very different significance according as to whether it means that the brain can be mapped out into a number of circumscribed areas, in each of which can be located a definite psycho-physiological faculty or function, or whether it means only that these areas contain anatomical elements which are made use of for the physiological expression of function. The doctrine of cerebral localization resolves itself into the question whether the localization is of symptoms or of function, or whether it is only an anatomical localization of fibers. It too often happens that the formulæ of localization do not work in diagnosis. It not rarely happens that clinical and pathological findings are contradictory. Thus, on the one hand, extensive lesions in one or another of the recognized cortical centers run their course without symptoms, and, on the other hand, focal symptoms, pointing to disease of these centers, develop in cases in which no anatomical alterations are found at autopsy.

There is a growing dissatisfaction with the currently accepted doctrine of cerebral localization; a feeling that it is in many respects inadequate. The first blow to the traditional localization of function in the cortex was received when Marie launched his attack on the currently accepted doctrine of aphasia. Whatever the outcome of the reinvestigation of this question shall prove to be, it is evident that the beautifully diagrammatic concepts of the function of language and of aphasic disturbances of this function have been relegated to the scrap heap of the phantasies of science. Our former naive conception of aphasia can never be revived. The fact, I believe, will be found to be that whether the third left frontal convolution, the first and second left temporal convolution or other areas take part in the function of language or not, the function as a whole, as a psychical process, is a widely distributed one in which are engaged many dynamic processes and anatomical "centers," and a lesion of any one of several "centers" may give rise to all modes of apahsic disturbance. The contest has centered largely around the question whether a lesion of Broca's convolution gives rise to the motor type of aphasia and, therefore, whether in this convolution can be localized so much of language as is lost in this type. In thus stating the problem there is plainly a confusion of concepts; the one is a clinico-anatomical question involving a particular syndrome, the other a question of localization of function. In distinguishing between these concepts perhaps the difficulties may disappear, for a lesion might theoretically give rise indirectly to a group of language symptoms without being the seat of language function.

The clinico-anatomical data themselves are contradictory. As, for example, (1) Lesions of F3 do give rise to a clinical aphasic syndrome of the so-called motor type. (2) Destruction of Broca's convolution may be accompanied by simple mutism, or pure motor aphasia of the so-called subcortical type. (3) It also appears to be true that in a considerable proportion of cases of aphasia, characterized by loss of the power of word-formation and articulation, Broca's convolution has been found intact. In any theory of aphasia as a clinical syndrome, and in any theory of function, these discrepancies must be reconciled. May it not be that a lesion in F3 may occasion a disturbance of language of the so-called motor type and yet this convolution not be an essential factor in the functioning mechanism of language? If time had permitted, other syndromes and functions might have been taken for analysis; for example, astereognosis, asymbolia, apraxia, in which similar contradictions would be found.

Von Monakow, whose clinical experience and pathological training entitle his views to great weight, points out the inadequacy of the generally accepted doctrine of localization to account for these contradictory phenomena. He believes that there lies some error in the form in which localization is conceived by most clinicians. To-day, as formerly, two sets of experiences stand opposed to one another, the negative and the positive, and invite anew discussion of the doctrine of localization, which has been declared closed by many writers. We must ask how these contradictions can be explained. To answer this Von Monakow proposes a theory, which is of the greatest interest and challenges examination, known as diaschisis, and which has for its basis the results of experimental investigation. After removal of focal areas in the cortex, certain symptoms are temporary, while others, which are purely local, are permanent. These latter or residual symptoms alone represent the function or part of function that is localizable in a given center. So-called focal symptoms are in large part a complicated reaction of unimpaired areas of the central nervous system to the local cortical lesions. By diaschisis is meant a functional shock-like inhibition of previously uninjured distant areas produced by the dynamic influences of a lesion anatomically connected with such areas. Through the break in the continuity of the conducting associative paths the eccentrically lying brain foci are robbed of their natural sources of stimulation and in part isolated. Only the directly injured elements give rise to the permanent symptoms and secondary degerenations.

So far as the theory definitely distinguishes between the localization of symptoms and the localization of function, I think it may be safely insisted upon as the only interpretation that can reconcile the facts of clinical and pathological observation. The diaschisis theory is fruitful in other fields than that of cerebral localization. For example, its possible applications in the explanation of focal symptoms without focal lesions will occur to every one.

A REPORT OF THREE PRE-FRONTAL TUMORS.

DR. F. X. DERCUM, Philadelphia: First and second, inoperable; third removed, but of enormous size, weighing 7¾ oz. Death fourteen days after operation. Report of operation and subsequent surgical history by Dr. John H. Gibbon.

The symptoms present in the above cases are of unusual interest. Vague mental symptoms were present in all of them. Case I suggested symptoms not unlike those of profound cerebral exhaustion of a beginning paresis. Headache had never been a marked feature, and was elicited only by questioning. It existed only for a short time previous to death; vomiting occurred but once and that only toward the very close of the illness. There was absence of optic neuritis and any involvement of the visual fields. The only symptom which was at all suggestive was one attack of slight twitching of the left leg and possibly twitching of the left arm, which occurred a few days before he came under observation; the attack was very brief in duration and was not attended by loss of consciousness. Occasionally psychic vesical incontinence was present.

In the second case there was early headache, optic neuritis and vomiting, all of the symptoms being typical and marked. The feature of special interest is the slight flattening of the lower half of the right side of the face and the equally slight involvement of the left leg and arm. These symptoms were in all probability due, in part at least, to indirect pressure. The subjective sensory disturbances in the left leg and left arm, namely, pain and the hyperesthesia of the left arm and both legs, are somewhat difficult to explain. The occurrence of typical areas of hysterical painful hyperesthesia under both breasts and over both groins is exceedingly interesting and important and must be borne in mind in considering the other sensory symptoms present. The area of hyperesthesia upon the left parietal region was also small and resembled in other respects an area of hysterical hyperesthesia, though it was present on the same side as the tumor; the question arises whether the left hemiparesis, present for a time only, was not also hysterical in origin.

In Case III, optic neuritis was pronounced. Headache was scarcely, if at all, present. Vomiting was absent. Case III, is remarkable for the size of the growth, which had probably existed for a long time previous to the seizure, which occurred in the summer of 1908. That so large a growth could have been present and the patient still have been able, even in a degree, to attend to his business and ordinary affairs is very remarkable. Finally, the resemblance of the mental symptoms in Cases I and III to those of paresis is worthy of comment. Case I was placid, indifferent and did not manifest the least anxiety as to his condition. Case III was at times distinctly expansive, good-humored and not infrequently laughed and joked. Case II, though quiet, complained greatly at times of suffering; at no time was she jocose, nor was there any tendency to laughter or hilarity. Indifference to the sphincters was not observed and there were no epileptiform seizures. The eye muscle symptoms made their appearance late and are probably to be referred directly to the frontal lobe lesion; in part they may have been due to the blindness and the absence of fixation.

In many respects the above cases conformed to the ordinary observations made in prefrontal tumors. This was particularly the case as regards the mental symptoms, which were most marked in Case III, less marked in Case I and least in Case II. Psychic incontinence was pronounced in Cases I and III. Epileptiform seizures were present but once in Cases I and III, and absent altogether in Case II. Optic neuritis was present in Cases II and III, and absent in Case I; the swelling was more marked on the side of the tumor in Case II, and slightly greater on the side opposite the tumor in Case III. Local tenderness of the skull was present only in Case II, was on the same side as the tumor, but was parietal and not frontal.

Finally, it is interesting to note that in none of the cases was there present any ataxia.

It should be added that no x-ray examination was made in Case I. In Case II an x-ray examination was negative. Case III an x-ray examination was

also negative save that it revealed some irregularity of the inner surface of the frontal bone upon the right side; also some apparent thinning of the bone. The possible etiological value of trauma is well illustrated in Case I.

DISCUSSION.

Dr. E. W. Taylor, of Boston: The two main points that Dr. Dercum has brought out are of much interest. In the first place, the mental condition; in the second place, the epileptiform seizures. From what Dr. Dercum has said, and I presume it is generally accepted, there is no definite type of mental disease in connection with frontal lobe lesion. I recall distinctly a patient in which the mental symptoms, instead of being apathetic, were precisely of the opposite sort. The man was a young army officer, previously healthy. He was extraordinarily apprehensive; he developed all sorts of phobias, was unable to go into crowded places, buildings and so on, and presented all the appearances of a psychasthenia. He had slight epileptiform convulsions which I misinterpreted as hysteroid convulsions. He disappeared from view, and, if I had not heard his subsequent history, I would have regarded him as a psychasthenia patient. He later developed definite signs of brain tumor and died. There was found an extensive pre-frontal tumor, gliomatous in type, very difficult to distinguish from the brain itself. The points of importance in this case were incidence of slight seizures, epileptiform in character, and, secondly, and still more confusing, were a series of symptoms, which one so often sees in the neuroses of psychasthenic character, and which were benefited by mental treatment.

Dr. Edward B. Angell, Rochester, N. Y.: I have been impressed with the lack of symptomatology of prefontal tumors. We get many of these cases without headache, nausea, vomiting, without any of the motor symptoms and without any of the hemiplegias or disturbances of one side of the body. A case came under my observation one year ago; a very successful and intelligent business man. He suddenly became apathetic; his family first noticed this because he received news of a disaster with unconcern. Aside from that condition he had no symptoms whatever. He had an attack of grippe and had quite a nasal discharge and quite an increase in the white blood cells. Here was a case where we had reason for believing we had acute trouble by extension from the nasal chambers. The mental symptoms were not such as to indicate much pressure. When he died, and it was shortly, he had a tumor as large as Dr. Dercum's patient in the left prefontal lobe.

Dr. Hugh T. Patrick, Chicago: What was the state of the sense of smell in these cases?

Dr. Herman H. Hope, Cincinnati: I wish briefly to refer to one symptom-complex which obscured the diagnosis in a case seen in which there were absolutely no general symptoms of brain tumor. This tumor grew from the sella turcica and involved both portions of the frontal lobes. The earliest manifestations were in reference to the optic thalamus. This man went on with business after developing atrophy of the optic nerve; then he began to develop sluggishness of the pupils. In the subsequent history there was a pure simple dementia, so much so that the diagnosis of dementia paralytica was made. The man died in an insane hospital and the autopsy revealed the tumor.

Dr. George Jacoby, New York City: I had the pleasure and benefit of seeing the case Dr. Dercum has reported, and, after seeing that case and comparing it with a couple of others I had previously seen, it seems to me that we can be very positive that there is no pathognomonic series of symptoms of prefrontal tumors. One way diagnosis can be made is by sequence of symptoms or symptoms dependent upon pressure; the occurrence of aphasia and involvement of the motor tract, the significance of reflexes, all of which are helpful and indicative of the associated pressure.

Dr. E. E. Southard, Boston: I have found that in some cases it is profitable to examine histologically other parts of the brain than those directly involved in the tumor. I recall a case of tumor of the prefrontal lobe in which epilepsy did not exist, but in which there was a unilateral paralysis on the same side as the tumor, and histological study of the precentral gyri showed that for some reason on the opposite side there was absence of cells.

Dr. B. Sachs, New York City: In regard to frontal tumors, I do not know why they were spoken of as prefrontal tumors. There were two points of vital importance in regard to the question of operability: First of all, the focal signs, as in many instances they give no idea of the actual size of the tumor and the probable result of an operation. So much depends upon shock—the shock seems to be in direct proportion to the size of the tumor,—that one of the most essential points for determining the operability of a tumor is to try to decide whether the tumor is of large size or not and whether the symptoms give one any idea of the size of the tumor. The other points belong to all tumors. A great deal depends upon the character of the tumor, particularly in the development of symptoms. It is a very different thing when the brain substance is being invaded by tubercle or sarcoma or whether it is being gradually invaded by a glioma, and some of the peculiarities in regard to tumor of the frontal lobe may be explained by the fact that many of these tumors have been slowly invading gliomata, whereas the cases in which the tumor has been much more destructive, the symptoms are more marked. The destructiveness of the tumor is in direct relation to the distinctness of the symptoms. I have observed a case which had presented during life absolutely nothing else but epileptiform seizures which suddenly died from hemorrhage from a tumor, which on post-mortem examination proved to be a huge glioma involving one entire hemisphere of the brain. This is a point we often lose sight of, that is, the different character of the symptoms in relation to different structure of the tumor. Glioma seems to cause fewer symptoms than any other tumor because the brain tissue accommodates itself much more readily to the slow invasion of the glioma.

Dr. D. D. Wolfstein, of Cincinnati: I wish to refer to a case in which I made the diagnosis of tumor of the frontal lobe. It was in the left frontal lobe, and of very large size, but there was absolutely no mental disturbance. The only symptoms were progressive optic atrophy with complete loss of vision. There was a suspicion of epileptiform seizure. Very often these tumors pass far back and tangental fibers which pass through the capsule are involved. Those cases which simulate epileptiform seizures might in this way be explained.

Dr. Dercum, closing: In these cases the sense of smell was preserved. In a case which I reported to the Association some years ago the sense of smell was destroyed. I think Dr. Southard's position well taken. It seems to me that the epileptiform attacks in these cases were perhaps due to pressure about the base. I am in entire accord with what Dr. Sachs has said in reference to the size of the tumor. The first two cases were round-celled sarcomata, the third was endotheliomata and sprang from the dura of the base. As regards the term "prefontal" I feel that it

is a justifiable term, provided we strictly mean that the tumor has advanced up in front of the motor tract itself.

REPORT OF A CASE OF RESECTION OF DORSAL SPINAL NERVE ROOTS FOR GASTRIC CRISES OF TABES.

DR. JOHN JENKS THOMAS and DR. EDWARD HALL NICHOLS, of Boston: Writers agree that the gastric crises of tabes are of nervous origin, and may be very severe and lead to death. The attacks not infrequently constitute the earliest symptom of the disease. This fact has frequently led to error of diagnosis and the performance of useless operations. Post-mortem in fatal cases, the stomach usually shows no changes, even when blood has been vomited. The most probable theory as to causation is that the pathological basis consists in changes in the sympathetic nerves. This view was adopted by Förster and led him to resect the dorsal thoracic nerve roots, by which the sympathetic nerves are connected with the central nervous system. Aside from this first case of resection of dorsal nerve roots for this symptom reported by Förster and Küttner, one other case has been found in the literature, reported by Brüns and Sauerbach, both operations having been done in the summer of 1909 and both followed by complete relief.

The patient whose case is reported in this paper was a man of thirty-two years, a widower, with one healthy child, a girl of thirteen. This child was followed by three or four miscarriages of unknown cause. Syphilis was denied. The gastric crises began about eight years before, and in October, 1905, the abdomen was opened at a hospital, but nothing abnormal was found except a few adhesions of the omentum to the gall bladder, which did not pull upon the stomach. These adhesions were freed. The attacks continued and he entered the Boston City Hospital, Aug. 3, 1908; at that time his attacks came at intervals of one week to one month, and lasted from one to ten days with severe pain and vomiting, accompanied usually by diarrhea. There had been no loss of control of the bladder, but some diminution of sexual desire. No lancinating pains, no diplopia and no ataxia in walking or standing, but very slight ataxia in movements of legs with eyes closed. Hypertonicity in legs well marked. Pupils moderate size, regular and equal, reacting with accommodation, but not to light. Patellar and Achilles reflexes equal and present. At this time he had become habituated to the use of morphine and was taking about a grain a day. The attacks continued, gradually becoming more frequent, seldom a week passing without one. In August, 1909, the Noguchi serum test for syphilis was positive. At the time of operation the weight, formerly 145 lb. had fallen to 100 lb., sensation for touch and pain was diminished on the chest from the third to fifth rib and the abdominal reflexes were lively. The left Achilles jerk had disappeared though the right one and the patellar reflexes were present. March 3, 1900, the seventh, eighth and tenth thoracic dorsal roots were cut. After the operation there was severe twitching of the abdominal muscles at times and pain about the chest, which gradually diminished. He vomited once while still in the hospital after being given mercury by mouth and once after his discharge after eating beans, but neither time was there any pain, nor was the vomiting persistent, being over within an hour. There was the same condition on examination, but an absolute loss of the sense of touch and pain from the level of the sixth rib to three fingers' breadth above the umbilicus, and from this area no abdominal reflex could be obtained, but it was present and increased on irritating the skin of the lower abdomen. The man regarded himself as cured of his crises, but had not gained in weight and was attempting to diminish his morphine and had reduced it to two quarters of a grain a day.

(To be continued.)

Book Reviews.

Nutrition and Dietetics: A Manual for Students of Medicine, for Trained Nurses, and for Dietitians in Hospitals and Other Institutions. By WINFIELD S. HALL, Ph.D., M.D. New York and London: D. Appleton & Co. 1910.

These two volumes are complementary. The former, a second edition of Lusk's well-known work, aims to review, in fairly technical and scientific manner, the experimental data on which rests our knowledge of nutrition in health and in disease. The latter, a new publication, undertakes to present in more practical, didactic form, for medical students, nurses and general practitioners, the details and methods of application of this knowledge to the actual, specific problems of dietetics. Each is admirable in its particular field. Lusk's new edition brings up to date a textbook of standard value and convenient reference, especially for investigators in the physiology and pathology of metabolism. Hall's book, presenting as it does the result of the author's experience in teaching nutrition and dietetics, should meet the definite need of a less technical manual on these subjects. Both volumes are well arranged and adequately illustrated.

The Family Health. By MYER SOLIS-COHEN, M.D. Philadelphia: The Penn Publishing Company. 1910.

This volume aims to present in simple form the principal details of domestic hygiene, and succeeds well in its attempt. The several subjects are classified under appropriate chapter headings, and the topics considered in each are clearly arranged and expressed. The book should have a wide and deserved popularity in this age of popular interest in health and its maintenance.

Dose-Book and Manual of Prescription Writing. By E. Q. THORNTON, M.D., Ph.G., Assistant Professor of Materia Medica, Jefferson Medical College of Philadelphia. Fourth edition. W. B. Saunders Company. 1909.

This manual now in its fourth edition contains much useful information which has been brought abreast of the changing conditions of practice. Certain portions have been entirely rewritten, notably the table dealing with solubilities. The chapters dealing with solvents and incompatibilities, preparations and methods of prescribing them have been amplified. The general form and appearance of the book is the same. It is excellently printed and bound in flexible covers.

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THE ANTI-VIVISECTION AGITATION.

Massachusetts has this year been free from the usual legislative activity regarding the regulation of vivisection. New York has not fared so happily in this respect. Although not very much has been accomplished by the opponents of vivisection as yet, their activity apparently continues unabated, and it is felt that although adjournment of the legislature has taken place, it is still necessary to carry on the campaign against the anti-vivisection faction.

The Medical Society of the State of New York has undertaken this work and has circulated a vigorous statement which should have a wide reading outside of the particular state involved. It is evident that legislation directed against the practise of vivisection, should it become law in any individual state, must have a wide influence on legislative bodies in other parts of the country. It is therefore desirable that the country at large unite in a protest against such legislation if it appears particularly imminent in any one locality.

For several years the anti-vivisection societies of New York have introduced into the state legislature bills which, if enacted, would interfere materially with teaching in medical schools and particularly with investigation. In spite of the fact that these efforts have up to this time entirely failed, it is unwise for the profession to grow lax in its opposition on this account.

The anti-vivisectionists failing thus far in convincing legislatures of the justice of their position have undertaken a propaganda in every respect pernicious by establishing in certain places exhibits which purport to represent the facts on vivisection. Such exhibits have appeared in New York City during the past winter, and it is stated that the Anti-vivisection Society of New York now proposes to carry its exhibit to various county and agricultural fairs to be held during the autumn, in the hope thereby of influencing the legislature, through which alone their ultimate objects can be secured. The unfairness of this method of attack must be evident to all right-feeling persons. The exhibit naturally appeals to the prejudices and to the uncultivated feelings of the masses, and thereby excites a sentiment which undoubtedly, if sufficiently widely exploited, might have a very distinct influence on popular opinion. That these exhibits, representing a stuffed animal, for example, in an uncomfortable position on a board with no statement regarding anesthesia, are essential misrepresentations of the facts needs no comment here. The point of importance is that such appeals to an ignorant public opinion are pernicious and misleading and should be prevented in the interest of decency and good taste. We hope that means may be found to avoid such an unfortunate appeal to the morbid curiosity of the crowd.

In an open letter to the New York Times by Professor F. S. Lee, of Columbia University, discussing this question of anti-vivisection exhibitions, an excellent statement is made of the methods employed, two paragraphs of which we quote:

"A significant part of the exhibition consists of the tales that are told to the visitors by the women attendants. Of the various operations that are portrayed or suggested, one is frequently told that they are customarily performed without anesthetics, a statement which is not true. One attendant said to a visitor that the surgical head-holders were used for the purpose of breaking the jaws of dogs, and that this was done without anesthetics. When questioned as to the reason for breaking the jaws of dogs she confessed ignorance. Such a procedure is so patently fantastic as to render comment unnecessary. There is an oven, heated by gas burners which contains the stuffed body of a rabbit, and which the attendant tells you is used for the purpose of baking live animals to death, and that this also is performed without anesthetics. Fabrication and grotesqueness here reach their culmination, for the oven is an apparatus intended for the incineration of dead organic matter, the anatomical refuse of a laboratory. The attendants are ever ready to discuss animal experimentation, seemingly quite unaware of their great and prejudiced ignorance. They do not

hesitate to speak of well-known and highly respected scientific men in intemperate language that is anything but refined or parliamentary."

"In the exhibition of which I write the most striking single exhibit is the New York Anti-Vivisection Society itself. It has had every opportunity to learn the truth or the falsity of its demonstrations and its declarations. It has been told by those who know how untrue they are, and yet it has continued week after week to keep its deceptive sights before the public and to tell its false tales. In the minds of those who both know and respect the truth the New York Anti-Vivisection Society stands, under the deceitful mask of a pretended moral leader, as an obscurantist, a partisan of vicious principles and practises, and a foe of the public good."

AN IMPORTANT CHARITY.

AN appeal for aid which should not be in vain is that of the Milk and Baby Hygiene Committee of Boston. This organization, at eleven stations in the congested parts of the city, supplies at cost, pure milk, modified when necessary, to meet the requirements in each case.

At each station a graduate nurse instructs the mothers in the care of their children, and medical advice in feeding problems can be obtained. The fact that among the babies cared for in this way last year the mortality was only one-fifth as great as that among babies of similar circumstances not treated proves the practical value of the charity.

The Floating Hospital, the Children's Hospital and the Dispensaries do a great work in saving babies who are actually sick. The final result, whether the infant, weakened by illness, becomes reinfected or not, depends upon its treatment after leaving hospital care. The mothers, as a rule, are more than willing to do all they can, but hampered by large families, by poverty and by ignorance, they are only too likely to become careless. The encouragement and practical help of the milk stations goes far towards remedying this.

We admit to our country annually thousands of families ignorant of the situation which they must face; we supply them with dark, evil-smelling, crowded dwellings and surround them with labor conditions and impossible prices which absolutely prohibit hygienic living.

If we wish to limit their increase, it should be done in some other way than by the death of babies. If, on the other hand, we wish to make them useful rather than detrimental citizens, we must educate them and, when necessary, give them practical aid. For such a service the Milk and Baby Hygiene Committee appeals for help.

EUGENICS AGAIN.

THE transmission to their children of moral, mental and physical defectiveness by people unfit for parenthood is familiar to no one more than to the physician. The baby deficient in vitality, the child lacking in intelligence or in special sense, the youth of perversions and abnormal cravings, come, in one way or another, to his cognizance. Such a law as that passed recently by New Jersey should meet with the careful consideration of the profession. "Every applicant for marriage in the state must have a license secured from an official register. As an essential to that, each person must endure rigid questioning, false answers involving a penalty of from one to three years' imprisonment. No license can be issued to a person under the influence of liquor, or narcotics, to an imbecile, an epileptic, or to one who has been an inmate of an asylum, except as full discharge is in evidence."

Registers, justices of the peace and clergymen are held responsible under heavy penalties for the enforcement of the law.

Every human ill cannot be laid at the door of procreation by the unfit, nor do all those unfit to procreate come within the provisions of this law. It will be interesting, however to see whether preventing marriage between these persons will indeed prevent their having children. It will at least give the law a chance to put such people where they cannot repeat their offense. The passage of the law itself, however, is an indication that the public is at last taking the stand that freedom for the individual, no matter what the cost, is not the liberty for which our forefathers fought. Study of the question is bound to result in public good.

LUNCHES FOR SCHOOL CHILDREN.

WITHIN the past two years, the hygiene department of the Home and School Association has organized in seven of those Boston Schools, which are attended largely by poor children, a "penny lunch" system. Plain, inexpensive, yet nutritious food, such as bread and milk, cereals, and fruits, is prepared by the cooking class and served at 10.30 A.M. to such children as desire

it for a cent apiece. To those householders accustomed to butchers' and grocers' bills of the first magnitude, the idea of getting up any sort of a meal at such a price seems absurd. At Valparaiso University, Indiana, the management for some years has provided breakfast and supper for the student at four cents a meal, and a four-course dinner for ten cents, and according to the man who investigated this system for *McClure's Magazine* of May, 1908, the food was satisfying both in quantity and in quality. Cheap meals, therefore, can be prepared by those who know how, and that the Home and School Association has this information their results indicate. Of a class of forty normal children who were not served with meals, half lost weight, twelve gained and the rest remained the same. Of forty anemic children, given the extra lunch, only eight lost weight and the other thirty-two gained.

The "penny lunch," therefore, especially when combined with the open air classroom, gives to the little unfortunates not only greater vitality and mental snap, but a better resistance against tuberculosis, on account of which the system was originated.

MEDICAL NOTES.

Cholera. — It is announced that several deaths from cholera have occurred among emigrants in Berlin.

Registration in Dentistry. — Ninety-four dentists have passed the State Board of Registration out of one hundred and fifty-one applicants In this number there are apparently no women.

Society for Clinical Serology. — The Society for Clinical Serology was organized at the Mt. Sinai Hospital in New York City on May 9, 1910, when the following officers were elected: David J. Kaleski, M.D., President; Howard Fox, M.D., Vice-President; Walter J. Heimann, M.D., Treasurer; Mortimer Warren, M.D., Secretary, 39 East Twenty-seventh Street. The object of the Society is the cultivation of serological methods as applied to clinical medicine. Meetings will be held on the second Friday in October, December, February and April. The Society is making an effort to effect a standardization of material used in the Wassermann reaction in order to bring about uniformity of results.

Straw Itch. — Straw itch may be considered a new disease, or possibly more properly, a disease of which we have but recently acquired definite knowledge according to the United States *Public Health Report*. In the early part of the summer of 1909, there was an outbreak of an eruptive skin disease among sailors in Philadelphia. The disease was studied by Goldberger and Johanberg who ascertained that the cause was a small mite (pediculoides ventriconus) in the straw of mattresses on which all those affected with the disease had either slept or had put their clothes. Outbreaks of what is in all probability the same disease have been reported from various points in New Jersey, Maryland, Pennsylvania, Ohio and Indiana. The mite preys upon the larvæ of certain insects which live on grain and especially wheat. It remains on the straw and may attack man during the handling of the grain as in thrashing, or if the straw is used in filling mattresses those sleeping on them may be infected. The main symptoms of the disease are a severe itching and an eruption consisting of wheels surrounded by vesicles which develop in a few hours into pustules.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, July 5, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diptheria 40, scarlatina 20, typhoid fever 4, measles 86, smallpox 0, tuberculosis 56.

The death-rate of the reported deaths for the week ending July 5, 1910, was 17.88.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, July 2, 1910, was 188, against 170 the corresponding week of last year, showing an increase of 18 deaths and making the death-rate for the week 15.56. Of this number 96 were males and 92 were females; 183 were white and 5 colored; 136 were born in the United States, 48 in foreign countries and 4 unknown; 44 were of American parentage, 122 of foreign parentage and 22 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 29 cases and 1 death; scarlatina, 20 cases and 1 death; typhoid fever, 4 cases and 1 death; measles, 129 cases and 2 deaths; tuberculosis, 106 cases and 18 deaths; smallpox, 1 case and 0 deaths. The deaths from pneumonia were 16, whooping cough 0, heart disease 20, bronchitis 1. There were 12 deaths from violent causes. The number of children who died under one year was 47; the number under five years, 66.

The number of persons who died over sixty years of age was 45. The deaths in public institutions were 84.

Cerebrospinal meningitis, 3 cases and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 8 cases and 1 death. Cerebrospinal meningitis, 2 cases. Scarlet fever, 1 case. Diptheria, 1 death.

Deducting deaths of non-residents, the total is 169 and the death-rate is then 13.99.

DEAN OF YALE MEDICAL SCHOOL. — It is announced that Dr. George E. Blumer, professor of Medicine at the Yale Medical School is to succeed Dr. Herbert G. Smith as dean. Dr. Smith has served in the capacity of dean for twenty-five years.

PRESENTATION TO DR. CHARLES W. PAGE. — At the recent graduating exercises of the training school for nurses of the Danvers State Hospital, Dr. Charles W. Page, the retiring superintendent, was presented a loving cup by the members of the hospital staff.

BOSTON FLOATING HOSPITAL. — The Boston Floating Hospital began its work for the year on July 1. The number of patients on the first day was considerable and there is no doubt that the service of this charity to the community will be equal to that of preceding years.

HONORARY DEGREES. — Dr. John H. McCollom, professor of contagious diseases at the Harvard Medical School and superintendent of the Boston City Hospital, has received the honorary degree of M.Sc. from Dartmouth College.

Dr. Theobald Smith, professor of comparative pathology at the Harvard Medical School was given the degree of D.Sc., at the recent commencement of Harvard University.

At the commencement of Princeton University, on June 14, the honorary degree of LL.D. was conferred upon Dr. William H. Welch, of Johns Hopkins. Dr. Francis Volk, Professor of Ophthalmology in the New York Post-Graduate Medical School, received the degree of Doctor of Science from Washington College at Chestertown, Md., on June 15.

At the commencement of Yale University, on June 22, the honorary degrees of Doctor of Science and Master of Arts were conferred respectively upon Drs. Simon Flexner and William B. Coley, of New York. Dr. Lucien Howe, of Buffalo, was given the degree of Doctor of Science at the commencement of Bowdoin College, on June 23.

BOSTON'S FOURTH OF JULY. — Certainly nature did all in her power to assist Boston in her plan for a "safe and sane" holiday. The program for the day, which included an athletic meet, a regatta, numerous parades and concerts, and, in the evening, fireworks, was well calculated to keep the small boy busy running from one show to another. Aside from the military bands, no one made very much noise, yet every one seemed contented and imbued with more of the true holiday spirit than on previous Fourths. At this writing, the only returns of injuries are those due to the collapse of a float, an accident involving twelve girls, and other injuries, amounting to less than a third of previous years.

NEW YORK.

BEQUESTS. — By the will of the late Mrs. Mary E. Leavitt of New York, $7,000 is left to St. Luke's Hospital, and $3,000 to the Sheltering Arms Orphan Asylum, to establish beds in memory of her mother, Elizabeth Bell Barker.

VETO IN FAVOR OF MEDICAL SOCIETY. — Mayor Gaynor has vetoed the bill passed by the legislature taking away from the Medical Society of the County of New York the revenue received from the fines imposed in cases brought at its instance, to which the society is entitled under the present law.

OPENING OF HOME FOR CONVALESCENT CHILDREN. — On July 1 the Home for Convalescent Children at Chautauqua, Westchester County, the latest addition to the charitable agencies of the Children's Aid Society, was opened. The Society's Coney Island Health Home for women with sick and ailing babies and Bath Beach Summer Home for children had previously been opened for the season.

RED CROSS HOSPITAL NURSES. — The first class of trained nurses, five in number, at the Red Cross Hospital was graduated on June 16. Although the hospital was incorporated in 1902, for some years it occupied very small quarters, and it was not until the present commodious building on Central Park West was erected that it was enabled to maintain a regular training school.

JULY FOURTH. — Notwithstanding the efforts of the authorities in the direction of a "safe and sane" Fourth, the City Health Department did not relax in its precautions to protect the injured from tetanus. A large corps of medical inspectors was on duty throughout the day, prepared to

administer antitoxin to wounded patients, and, in addition, the department supplied the antitoxin free of charge to all physicians. Furthermore, Health Commissioner Lederle issued to the public a warning setting forth the dangers from lockjaw and the efficacy of tetanus antitoxin as a preventive, and stating that the treatment could be secured by simply telephoning to the nearest station of the department. A novel feature of the celebration of the Fourth this year was the singing of several hundred public school children at Bellevue and other hospitals and at the institutions on Blackwell's Island. This was due to the efforts of Mrs. Rice, the founder and organizer of the "Anti-Noise Society" of New York.

A New Fireman's Helmet. — A new helmet, designed to protect firemen from inhaling smoke, gas and ammonia fumes, was recently successfully tested in a smoky fire in the basement of a feather warehouse. A fireman, who was sent into the fire wearing the helmet, reported that, unlike other helmets which had been tried, it had effectually kept out the smoke without interfering with his vision or hampering him by its weight. This new helmet is to be further tested as opportunity is afforded. In general, it resembles a diver's helmet, and is constructed of leather, with a glass front. In the back is a small cylinder containing water, which is made to drop in regulated quantities upon a chemical preparation (sodium peroxide) contained in a compartment below; thereby generating oxygen by a process which, it is stated, is much the same as that employed in the making of acetylene gas. The oxygen is supplied to the mouth of the wearer by means of a tube, which he holds between his teeth. In addition, this ingenious device is equipped with a small bulb horn, like that of an automobile, to be sounded by the fireman as a signal in case of trouble.

Spicula of Bone inside Pleura. — In making an autopsy recently at the morgue on the body of Michael Minnicz, a Russian who had committed suicide by inhaling illuminating gas, Drs. O'Hanlon and Loughan were surprised, on opening the left lung, to find a spicula of bone just inside the pleura. There were no evidences of inflammation or other indications of recent injury in the locality. By the finding of the card of Dr. M. L. Weil in the clothing of the deceased they were enabled to obtain an explanation of this curious discovery. It appears that soon after Minnicz arrived from Russia, three years ago, he was shot and robbed by thugs, who left him for dead. He was not fatally injured, however, and at Mount Sinai Hospital a bullet was found under the skin at the eighth rib on the left side, and removed. From the character of the wound it was evident that the bullet had passed around the left scapula and struck the eighth rib, from which it had chipped off a piece about a quarter of an inch long. Though unsuspected at the time, the latter was driven through the pleura, and it was this spicula which was discovered at the autopsy. It was learned that the man had head trouble after the assault and robbery and seemed to be insane, and that for a long time he had been morose and apparently in pain.

Opening of Junior Sea Breeze. — "Junior Sea Breeze," the summer camp for sick babies on the grounds adjacent to the Rockefeller Institute, has been opened for the fifth season. The site, which is on a bluff overlooking the East River, is provided by Mr. Rockefeller, and the camp is maintained by the New York Association for Improving the Condition of the Poor. There is a competent medical staff and a corps of five trained nurses who, in addition to their duties at the camp, visit regularly in the homes of the poor living in a district extending from Fifty-fifth Street to Seventy-second Street, and from Third Avenue to the East River. They do this work so thoroughly that it has been found possible to withdraw the Health Department nurses from the district named in order to give more attention to other portions of the city not thus provided for. These nurses go to the home of every family in the district in which a birth has been reported, and in the first week of their service they found that out of 195 newborn infants visited, the birth had been attended by physicians in only 34.

Investigation of Private Hospitals. — At a meeting of the State Board of Charities, held June 15, a report was received from a special commission headed by Robert W. Heberd, recently Commissioner of Charities, giving the results of an investigation of some sixty private hospitals in New York City. A number of evils were found to exist, and the board adopted a series of resolutions which the commission recommended in consequence of the discovery of these conditions. These provide, among other things, that no patient shall be maintained at public expense in any ward of any hospital wholly or partly under private control unless the building

is fireproof or its fire protection facilities have been formally approved by the State Board of Charities; unless the building is in good sanitary condition, and unless the wards provide at least 1,200 cubic feet of air space for each bed. In extraordinary instances the air space allowable may be reduced to 800 feet, but only on written permission of the board. At this meeting, applications for certificates of incorporation were granted to the Tuberculosis Preventorium for Children near Lakewood, N. J., and to the new Hempstead Hospital at Hempstead, Long Island.

REPORT OF METROPOLITAN SEWERAGE COMMISSION. — On July 1 the Metropolitan Sewerage Commission presented a report to the mayor, which was similar in character to previous reports by the New York Bay Pollution Commission of which it is the successor. The president of the commission is the well-known sanitary expert, Dr. George A. Soper. Dr. Linsly R. Williams is a member, and the other three members are engineers. The report states that the sewerage being emptied into New York Harbor is a menace to the public health, and recommends the creation of an interstate board by New York and New Jersey for the permanent protection of the harbor. The Commission's investigations included several thousand chemical and bacterial analyses made to determine the digestion capacity of the harbor waters for sewage. Tidal studies, carried on in co-operation with the United States Coast and Geodetric Survey, showed that the drainage which is discharged into the harbor is not flushed out to sea, but is assimilated by the water. If more sewage is emptied into it, than can be disposed of in this way, intolerable conditions will result. Even at present, it is dangerous to bathe in these waters above the Narrows, and the recommendation is made that the public bathing establishments along the docks of Manhattan should be abandoned. Oysters and other shellfish taken from the upper harbor are unfit to eat. To keep all sewage out of the harbor would cost a prohibitive amount. The best that can be done is to remove as much as possible of what is harmful in the sewage and discharge the rest under the most favorable circumstances. Against great trunk sewers, such as have been proposed for the Passaic and Bronx valleys, the commission is unalterably opposed, on account of the immense volumes of sewage which would thus be emptied into the harbor. Such inland communities, the report says, should deal with their sewage in a more modern and sanitary way.

Current Literature.

MEDICAL RECORD.

JUNE 25, 1910.

1. LOEB, L. *The Function of the Corpus Luteum, the Experimental Production of the Maternal Placenta and the Mechanism of the Sexual Cycle in the Female Organism.*
2. *ZIEGEL, H. F. L. *On the Affections Clinically Simulating Typhoid Fever, with Especial Reference to and Reports of Cases of Brill's Disease.*
3. ALLEN, W. *Studies in Amebiasis, with a Report of Forty-two Cases.*
4. TEBBETTS, J. H. *The Care of the Mammary Glands, Before, During and After the Puerperium.*
5. BODKIN, M. L. *Proctitis as a Cause of Hemorrhoids, with Suggestions for Medical Treatment.*
6. RICHTER, G., AND WEINSBERG, C. H. *A Case of Dextrocardia.*

2. Ziegel discusses some of the affections clinically simulating typhoid fever, especially intestinal sapremia, coli infections, meat poisoning, paratyphoid fever and, most important of all, Brill's disease. This last is the name given to a symptom-complex similar to, but distinct from, typhoid fever. The clinical differences between the two diseases are pronounced. The most striking difference is in the eruption which in Brill's disease appears as a single crop, usually before the seventh day. There are no new crops. The rash is profuse and sometimes conglomerate. The spots are maculopapular and usually have an oval, indistinct outline. The eruption fades rapidly at the time of defervescence. The febrile invasion is usually abrupt and is ushered in with a chill or chilly sensations followed by very severe headache and high fever. The temperature curve reaches its height in about three days and remains high until a crisis or rapid lysis brings it down. Apathy and prostration develop very early, and the patient ill with Brill's disease looks as sick in the first week as the typhoid patient in the second or third. In Brill's disease recovery is prompt at the time of defervescence; after the temperature has remained continuously high for a week of two, there is a fall to normal in from ten to sixty hours, and in the great majority of cases the temperature never again rises above normal. No case has been observed with a relapse or with serious sequelæ, and the mortality is nil. The white count is normal, the Widal tests negative and cultures from the blood, urine and feces unproductive.

[L. D. C.]

NEW YORK MEDICAL JOURNAL.

JUNE 25, 1910.

1. GRIFFITH, J. P. C. *The Etiology and Symptomatology of Infantile Scurvy.*
2. FIFE, C. A. *Pathology of Infantile Scurvy.*
3. OSTHEIMER, M. *The Treatment of Infantile Scurvy.*
4. LE BONTILLIER, T. *Prognosis and Differential Diagnosis of Infantile Scurvy.*
5. KNOTT, J. *Death by Lightning.*
6. *GRISCOM, M. W., AND PFAHLER, G. E. *Röntgen Therapy in Gynecology.*
7. COLEMAN W. *A Clinician's Attitude Toward the Revision of the Pharmacopeia.*
8. BASTEDO, W. A. *The Pharmacopeia Revision from the Standpoint of the Medical Teacher of Drugs.*
9. SPIVAK, C. D. *Physicians in Fiction.*

6. Griscom and Pfahler report results with Röntgen therapy in gynecology. They find that the x-ray can decrease or obliterate the functions of the ovaries and that it can control menorrhagia and metrorrhagia due to myomata; it can also control other menstrual disorders due to overactivity or increased irritability of the nervous mechanism connected with the ovaries. X-ray treatment should be confined at present to inoperable fibromata and menstrual disorders in which other forms of treatment are not advisable.

[L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JUNE 25, 1910.

1. *FAIRCHILD, D. S. *Surgical Considerations in the Treatment of Chronic Suppurative Nephritis.*
2. *MACLAREN, A. *Proper Treatment of Intraperitoneal Abscess in the Lower Abdomen, with Special Reference to Rectal Drainage in Pelvic Abscess.*
3. TALBOT, E. S. *How Shall the Stomatologist be Educated?*
4. POWER, J. E. *How Shall the Stomatologist be Educated?*
5. CRYER, M. H. *How Shall the Stomatologist be Educated?*
6. KNAPP, A. *Intermittent Closing of Retinal Arteries.*
7. ORTON, H. B. *Acute Gonorrheal Salpingitis.*
8. COUES, W. P. *A Case of Primary Mastoid Periostitis.*
9. HARTSOCK, F. M. *Antityphoid Vaccination.*
10. *WHEATON, C. L. *Integument Atrophy: A Sign of Diagnostic Importance in Early Pulmonary Tuberculosis.*
11. STOKES, A. C. *Injection of Paraffin into the Appendix in an Attempt to Cure Indirect Inguinal Hernia.*
12. *BOGGS, T. R. *Alum Baths in Typhoid Fever.*

1. Fairchild believes that in the chronic forms of suppurative nephritis of hematogenous origin decapsulation is of great value. This will suffice in a great many cases. Others more severe, however, require incision and drainage. The results in either case are generally good.

2. MacLaren shows the efficiency and also the safety of instituting rectal drainage in that type of peritoneal infections, generally following a perforative appendicitis in which, after a few days subsequent to the abdominal operation, the temperature goes up, the patient complains of pain in the pelvis, is doing poorly and rectal examination shows bulging of the anterior rectal walls. His illustrative cases are striking and show that rectal drainage is as efficient as, and not more dangerous than, vaginal drainage. The efficiency of the procedure is shown by the fact that most of his cases were young boys. He advises stretching of the sphincter at the time in order to prevent any possible backing up later.

10. Wheaton believes that he has discovered a new diagnostic sign in early pulmonary tuberculosis. It is observed that when the skin over the area of infiltration is pinched up between the thumb and forefinger it can be drawn away from the chest wall with ease and seems more freely movable than on the mormal side, and if rolled between the fingers it will feel in consistency much thinner than a fold of skin taken from the sound side. He also claims that if there is bilateral involvement the sign can be demonstrated on both sides, but will be more pronounced over the original area of infiltration. The value of the sign is that it occurs early in the process.

12. Boggs has found an alum bath for typhoid patients most efficacious in preventing the occurrence of bed sores, dermititis and skin infections. His prescription is as follows. "One pound of powdered alum is quickly dissolved in a little hot water and added to the tub during the filling. With the average tub of 450 to 500 liters, this makes approximately a 1 to 1,000 solution. The cost is about 4 cents per bath. The patient is bathed in the alum solution just as in ordinary water and experiences no inconvenience from the drug." [E. H. R.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

MAY, 1910.

1. *MACCARTY, W. C. *Pathology and Clinical Significance of Stomach Ulcer.*
2. HERB, I. C. *Mixed Tumors of the Uterine Body.*
3. FRY, H. D. *The Nutritional Changes Ocurring in Fibromyoma of the Uterus Incident to Pregnancy and the Puerperium.*
4. *HALPENNY, J. *The Relationship between Thyroid and Parathyroids.*
5. HUNNER, G. L. *Forcible Dilatation of the Kidney Pelvis as a Means of Diagnosis.*
6. HALSTEAD, A. E. *Remarks on the Operative Treatment of Tumors of the Hypophysis. With the Report of Two Cases Operated on by an Oro-Nasal Method.*
7. *O'NEIL. R. F. *Necrosis of the Bladder with Exfoliation. A Consideration of the Subject with Two Previous Unreported Cases.*

1. MacCarty's most excellent paper on gastric ulcer is worth careful study. A résumé is as follows. 1. Ulcers may be single or multiple, and in different degrees of extension in the same specimen. 2. After the initial destruction of the mucosa, there is definite deepening of the ulcer by necrosis, which is sufficiently slow to allow a dense, connective tissue barrier against perforation to be formed. 3. Ulcers heal, perforate and become malignant. 4. One cannot say positively that all carcinomata of the stomach have developed on ulcer, because carcinomatous tissue in the base of an ulcer may be an ulcerated primary carcinoma. 5. The length of the clinical history is no positive index of the extent of the lesion. 6. The absence of blood in the vomitus or gastric contents at the time of laboratory analysis when associated with gastric symptoms is not evidence against the presence of ulcer, nor is absence of hyperacidity evidence against the presence of ulcer. 7. Clinically, it is impossible to say that a gastric ulcer is not malignant.

4. Halpenny believes that the thyroid and parathyroids are similar in function, not antagonistic or corrective of one another. In many instances one is able to assume the functions of the other. Though the parathyroids are not rudimentary thyroids, the whole apparatus is essentially one.

7. O'Neil has a very thorough and well illustrated (by cases) article on necrosis of the bladder with exfoliation and appends the histories of all the collected cases. He concludes as follows: 1. Necrosis of the bladder occurs as a result, primarily, of interference with the circulation of the organ aided by bacterial infection. This interference may be produced by mechanical pressure outside the bladder or by bacterial inflammation within the bladder wall. 2. The condition is more common in women than in men. 3. The clinical symptoms are vague. Retention (when associated with cystitis) which cannot be relieved with catheter should excite suspicion. 4. There is a typical cystoscopic appearance by which the diagnosis can be made if the examination is made at a certain time. 5. The prognosis as to life on the whole is good in women. In severe cases permanent injury to the urinary function will result. The prognosis in men is good if the membrane is removed. 6. Operative treatment is always indicated in men, occasionally in women. 7. The lesion is a rare one. [E. H. R.]

THE LANCET.

JUNE 4, 1910.

1. MORRIS, H. *Three Clinical Lectures. Lecture II. On a Case of Aneurysmal Varix in the Leg of a Child aged Seven Years.*
2. *WILLIAMS, C. T. *A Lecture on the Relation of Fibrosis to Tuberculosis.*
3. *POYNTON, F. J., AND PAINE, A. *Some Further Investigations and Observations upon the Pathology of Rheumatic Fever.*
4. STONEY, R. A. *Two Cases of Nephrectomy.*
5. TAYLOR, G. *A Case of Volvulus Associated with the Reduction of a Hernia.*
6. *WILLIAMS, M. H. *Pulmonary Tuberculosis in Children.*
7. MACEWEN, J. A. C. *Encapsulated Cerebral Abscess, of Large Size and Considerable Duration, Involving the Tempero-Sphenoidal Lobe, Island of Reil and the Ventricles, but Causing Comparatively Slight Symptoms.*
8. THORNE, L. T. *The Fatty Degeneration of Arterial Hypertension.*
9. HIRSCH, C. T. W. *Motoring Notes.*

2. In a discussion on the relation of fibrosis to tuberculosis of the lung, Williams first describes three forms of fibrosis, one arising from pleural inflammations, one accompanying or resulting from interstitial pneumonia, or the result of such chronic changes following inhalation of iron filings, stove dust, etc., and the third form supervening on tuberculosis. He briefly describes the pathological features of this condition and then discusses the clinical aspect, especially where the fibrosis is the result of tuberculosis. As this condition comes on, all the patient's symptoms improve except the shortness of breath; there is apt to be a marked shrinkage of the affected lung. He

presents the details of several cases. He defines fibrosis as the process by which nature resists the advance of tuberculosis and limits its inroads.

3. Poynton and Paine review and bring up to date the work done on the etiology of rheumatic fever and allied conditions with especial reference to their own careful investigations. They conclude that no explanation of acute rheumatism can compare with that which attributes it to an infection with a diplococcus of the streptococcal group.

6. Williams in an examination of 3,159 children finds that 16.2% show signs of pulmonary tuberculosis. She urges physicians to begin treatment and to realize the gravity of the condition before local signs in the lungs are marked. Her paper is largely a defense of her own previous work against certain criticisms brought against it. She presents statistics from Naegeli, Hamburger and Sluka and others, and discusses them. [J. B. H.]

BRITISH MEDICAL JOURNAL.

JUNE 4, 1910.

1. PIERCE, B. *An Address on the Diagnosis in States of Depression.*
2. *GORDON, W. *The Rightward Edge of Cardiac Dullness.*
3. GRIFFITHS, J. *The State Civil Medical Services, with Special Reference to the Poor Law and the Reorganization of the Home Civil Medical Service.*
4. MOORE, B. *The Nationalization of Medical Service.*
5. WHITE, W. H. *Gastrostaxis.*
6. *CLARKE, H., AND FORSYTH, C. E. P. *The Differential Cutaneous Reaction in Tuberculous Diseases.*
7. STRETTON, J. L. *A Further Contribution on the Sterilization of the Skin of Operation Areas.*

2. Gordon emphasizes the fact that the percussion outline of the heart is markedly altered on change of position and that in cardiac disease this is still more marked. He believes that this point receives far too little attention. He illustrates by diagrams the changes to which he refers. In the erect position the actual position of the heart as shown by the x-ray practically corresponds with its position as determined by percussion; in the recumbent position, however, while by percussion the left border is still fairly accurate, the right border rarely goes beyond the mid sternum and is very far from corresponding with the heart's rightward limits. This is still more striking in cardiac disease. Therefore, according to the writer, the value of transverse cardiac measurements, unless it is stated in what position they are taken, erect or recumbent, is absolutely nil.

6. Clarke and Forsyth discuss their work on the differential cutaneous reaction in tuberculous diseases as originated by Detri. Their work is illustrated by various tables. They conclude that: (1) Any patient giving either or both reactions is certainly tuberculous, but the reaction gives no indication of the site or activity of the lesion (2) Any patient giving no reaction is certainly not tuberculous except in certain advanced or moribund cases. (3) Both reactions are usually present in pulmonary tuberculosis. It is accordingly better to treat patients with both human and bovine tuberculin.

[J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 22.

JUNE 2, 1910.

1. PAYR, E. *Diagnosis and Treatment of Fracture of the Skull.* (Continued.)
2. FUNCK, C. *"Transthermie" and treatment with Ether Waves.*
3. DA GRADI, A. *The Course of Laryngeal Tuberculosis Complicating Pulmonary Tuberculosis Treated by Artificial Pneumothorax.*
4. *HOFFMANN. *Successful Infection of Guinea Pigs with the Spirochete of Syphilis.*
5. *TOMASCZEWSKI. *A Simple Method of Reproducing a Primary Sore in Rabbits.*
6. BODDAERT, R. J. *Change of the Agglutinating Properties of the Paratyphoid β. Bacillus.*
7. SCHLOSS, E. *Importance of Mineral Salts in the Pathogenesis and Treatment of Edema.*
8. v. BEUCZUR, J. *The Real Importance of So-Called Maximal Blood Pressure.*
9. ALEXANDER, W. *The Leg Phenomena in Tetany.*
10. SIEBKE. *Essay on Question of Renal Diabetes.*
11. FICKLER, A. *Atropine Delirium in an Asthmatic.*
12. REHFISCH. *Underlying Experimental Principle in the Electrocardiogram.*
13. FRANKENSTEIN, C. *Laparotomy for Incarcerated Retroflexion of Pregnant Uterus.*
14. COHN, M. *Localization of Foreign Bodies.*

4. Hoffmann, in a short note, mentions the fact of the successful inoculation of guinea pigs with the spirochete of syphilis. He considers that this form of inoculation will be of considerable value in experimental work along these lines.

5. Reviewing briefly the work of different authors in their methods of infecting rabbits with syphilis on the scrotum or testicle, Tomasczewski presents a new method of his own of implanting a bit of suspected material in a rabbit's testicle forced out through inguinal ring. In from ten to eighteen days later spirochete may be obtained from the sore and also they can be demonstrated in the tissues. In this way he feels that he has an easy and quite rapid way of making a diagnosis, before waiting for later symptoms to develop in the individual or animal. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 23.

JUNE 7, 1910.

1. HAUSER, G. *Carcinomatous Degeneration of Chronic Gastric Ulcer.*
2. *BRÜCKNER, G. *Ambulant Typhoid in Children and the Spread of Typhoid Fever.*
3. *BITTORF, A. *Paradoxical Movement of the Diaphragm.*
4. HOHMANN, G. *Pathology and Therapy of Coza Vara.*
5. STRÜBE, K. *Gastric Lavage for New Indications and in Modified Form.* (To be concluded.)
6. FUNCK, C. *Causal Treatment of Glycosuria and Diabetes.*
7. BREKLE. *Meat-Poisoning by Bacillus Enteritidis of Gärtner.*
8. REYE, E. *Tuberculosis of the Optic Nerves.*
9. KNAUTH. *Treatment of Diphtheria with Behring-Ehrlich Serum.*
10. EMMERICH, R. *Cholera Poison.*
11. *LÜDKE, H. *III. Studies of Nature, Early Diagnosis and Specific Treatment of Typhoid Fever.* (Concluded.)

2. Brückner shows with large figures that typhoid occurs more often in children under fifteen years than at any subsequent age. He draws the following conclusions: That the age between eleven and fifteen is the most susceptible period; that typhoid in children often runs such a mild course as to be ignored and that such cases may be an important source of epidemics; that to prevent the spread of typhoid careful watch of the schoolchildren is essential; and that the practitioner should make more use of the laboratory, especially in cases of fever when a definite diagnosis is lacking.

3. Experiments of the writer show that the rising of the diaphragm, sometimes observed with inspiration in pneumothorax, is due to mechanical causes and that when these are removed the diaphragm works in the usual way. This paradoxical movement is due to negative pressure in the affected side of the chest and to a lung which fails to expand. By admitting air freely through a fistula the negative pressure is removed and the paradoxical diaphragm phenomenon disappears.

11. The complement-binding reaction tried in 30 cases of typhoid did not occur in 7 of these. The writer says that the blood culture is the best means for early diagnosis, that next to this comes the white count, the agglutination test follows in percentage of value and the complement-binding test follows that. Leucopenia (i. e. counts below 7,000) appears in the first week, increases later and is present in a high percentage of cases. The results in this respect correspond with those of other writers. Lüdke reports also on the use of a serum of his own. No harm followed its use, but although the writer believes it did good beneficial results were not striking. [G. C. S.]

ZEITSCHRIFT FÜR KLINISCHE MEDIZIN. Bd. 70.

HEFT 3 AND 4.

11. DETERMANN. *Critical Investigation into the Measurements of the Viscosity of the Blood.*
12. JANOWSKI, W. *The Esophago-Cardiogram; Its Reading and Significance.*
13. *TORNAI, J. *Contribution to the Examination of the Function of the Heart.*
14. PORGES, O. *Pathology of Addison's Disease. II. Diminution of Glycogen After Bilateral Extirpation of the Kidneys in Dogs.*
15. NEUKIRK. P. *On the Iodophilic Substance of Leucocytes, and Its Action with Bests' Stain.*
16. *SHIROKAUER, H., AND WILENKO, G. G. *Diastatic Ferment in Adrenalinglycosuria, and Observations on Glycogen Splitting.*
17. FOCKE, C. *Significance and Extent of Diapedesis in Spontaneous Bleeding.*
18. GEELMUGDEN, H. CHR. *Further Studies on the Relation Between Optical Activity and Reduction of Diabetic Urines; also Concerning their Inversion and Fermentation.*
19. *PAWINSKI, J. *Relation Between Innervation Disturbances and Organic Disease of Heart and Vessels.*
20. CERAULO, S., AND VETRANO, G. *A Form of Mixed Septicemia.*
21. RZENTKOWSKI, C. v. *Chemical Changes of Heart Muscle in Heart Disease.*
22. PAWINSKI, J. *William Heberden. Angina Pectoris. Historical-Clinical Sketch.*
23. HOLZKNECHT, G., AND HOFBAUER, L. *Observations on the Influence of Respiration upon Blood Pressure and Size of Heart.*

13. By listening with a stethoscope to an artery compressed above by a band, different tones and different volumes of sound will be audible depending upon the amount of constriction; these may usually be divided into three successive classes as pressure is reduced on the artery. Variations from the normal in the occurrence of these auscultatory phenomena were obtained by the author mechanically, by the use of drugs and in disease. He feels that in this method we have another means of testing the physiological efficiency of the heart.

16. Shirokauer and Wilenko examined the blood and organs of rabbits for diastatic ferment after producing glycosuria by administration of adrenalins. Finding no increase in amount of ferment, they are led to believe that the rapid formation of sugar in this condition is due to increased activity of the normal liver diastase.

19. Of the two influences on the heart, Pawinski considers the nervous as important as that of organic disease. He speaks first of the effect of heart disease upon the patient's spirits and finds two general classes of mental effect, the one an excitation and happy disposition seen particularly in young people with aortic insufficiency, the other bad temper and hypochondriasis associated with mitral disease.

He then classifies five forms of neurotic heart conditions which may be readily mistaken for organic.

(1) Takes the form of a sudden dyspnea coming on especially during rest. Symptoms may disappear for weeks to recur with some nervous excitation.
(2) Simulating asthma, in women at the climacteric.
(3) Hyposthenia cardio-vasculosa climacterica.
(4) A pseudo-angina occurring in men.
(5) Pseudo-angina of young nervous women.

Sclerophasia is to be counteracted in every way.

From the point of view of diagnosis, prognosis and treatment the author feels that these forms of cardiac neurosis should be recognised more generally. [J. B. A.]

REVUE DE CHIRURGIE.

MAY, 1910.

1. LEJARS AND RUBENS-DUVAL. *Primary Sarcomata of the Articular Synovial Membranes.*
2. MONOD, C., AND VANVERTS, J. *Documents and Remarks on the Treatment of Arterial Aneurysms.* (To be continued.)
3. *GROSS, G., AND BINET, A. *Sudden Death in the Course of Hemostasis by Momburg's Procedure.*
4. *VANDERBOSSCHE. *Traumatic Radicular Paralyses of the Brachial Plexus.*
5. PICQUÉ, R. *Subphrenic Abscesses.* (To be continued.)
6. WEISS, T., AND SENCERT, L. *The Employment of the Continuous Current of Oxygen in Abdominal Surgery.* (Conclusion.)
7. CHEVASSU, M. *The Surgical Treatment of Cancers of the Testicle.* (Conclusion.)
8. KÜSS, G. *Pelvic Pericolic Strictures, Principally in the Female.* (To be continued.)

3. The occurrence of a death, the second on record, during the use of Momburg's method of artificial anemia of the lower half of the body is reported by Gross and Binet. The patient in considerable cachexia from prolonged, suppurative tuberculous arthritis of the knee, but without demonstrable cardiac lesion, died from sudden cardiac standstill at the moment of removal of the waist tourniquet, after disarticulation of the hip-joint. The authors believe the death due to sudden change in blood-pressure, and report the case as indicating the need of great caution in the use of this method. [It may be suggested that the death may have been due in part to chloroform and might not have occurred had ether been employed instead as an anesthetic.]

4. From the study of paralyses due to injuries to the roots of the brachial plexus, the writer concludes that there are such paralyses of a complex type, differing sensibly from the classic types of brachial paralysis, with predominant motor phenomena, liable to confusion on account of being masked by associated symptoms of disability due to concomitant trauma of other tissues and structures. The ultimate prognosis of this group of lesions he considers fairly good, at least functionally. Treatment may be by primary suture of the injured nerve trunks or by secondary orthopedic repair of the peripheral deformities consequent to the paralysis. [R. M. G.]

Correspondence.

THE QUESTION OF SERUM THERAPY.

BOSTON, June 28, 1910.

Mr. Editor, — There seems to be so much zeal shown at the present time for "Serum Therapy" and the strict scientific method in medicine, that I wonder if the average enthusiast in those lines gets a very practical perspective of some of their untoward effects. The man who is so dependent upon his microscope and test tube becomes, as it were, immune to seeing the bugs which are developed in the mental and spiritual mediums. The little entities are very interesting as studied in laboratory hot houses but there is a large world outside of entirely different perspective and dimension, and this is peopled with devils of a very different character.

A year ago I attempted to discuss some "Principles of Therapeutics by Sense Culture" in this JOURNAL. I have been led to see more and more the subtle effect of such influences, light, color, dimensions; odors have a power in influencing our state of mind and the effect of music is familiar to all.

"Baths" promote good feeling and "taste" should always be up for consideration.

The devotion to laboratories and hospitals may harden a physician to a clear understanding of the finer humanities, methods which, though justified by some ultimate results, may be adding to the flames that drive patients to schools of thought and practice which the regular practitioner cannot countenance.

The true physician is to become more and more a sanitary engineer and counsellor. He must collaborate with the architect and minister. He must be trained to foresee and avert what affects the finer human sensibilities. By such fineness of instinct and training he will regain confidence which he once held — he will return to his own fold those who have been wandering in other pastures.

Very truly yours,
P. W. GOLDSBURY, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JUNE 25, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,337	492	Waltham	1	1
Chicago	631	199	Pittsfield	16	6
Philadelphia	—	—	Brookline	7	1
St. Louis	—	—	Gloucester	7	—
Baltimore	—	—	North Adams	6	2
Cleveland	—	—	Northampton	8	1
Buffalo	—	—	Chicopee	4	3
Pittsburg	—	—	Medford	3	1
Cincinnati	—	—	Beverly	6	—
Milwaukee	—	—	Leominster	1	—
Washington	—	—	Hyde Park	2	1
Providence	—	—	Melrose	3	1
Boston	178	58	Newburyport	5	—
Worcester	38	10	Revere	9	2
Fall River	—	—	Westfield	5	1
Cambridge	23	4	Woburn	1	0
Lowell	40	15	Peabody	—	—
New Bedford	36	25	Marlboro	4	1
Lynn	31	7	Attleboro	3	0
Springfield	35	16	Adams	2	1
Lawrence	29	12	Clinton	1	0
Somerville	13	3	Gardner	5	1
Brockton	11	0	Milford	—	—
Holyoke	27	8	Watertown	3	1
Malden	10	1	Plymouth	—	—
Chelsea	6	2	Southbridge	7	2
Newton	7	2	Weymouth	—	—
Salem	5	2	Framingham	2	1
Haverhill	13	2	Wakefield	1	—
Fitchburg	1	1	Webster	3	2
Everett	2	1	Arlington	1	—
Quincy	—	—	Greenfield	3	1
Taunton	12	3			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JUNE 22, 1910.

GLENNAN, A. H., assistant surgeon-general. Granted one month's leave of absence from July 11, 1910.

COFER, L. E., assistant surgeon-general. Granted four days' leave of absence from June 22, 1910.

WERTENBAKER, C. P., surgeon. Granted four days' leave of absence from June 27, 1910.

WILLE, C. W., passed assistant surgeon. Detailed to attend the joint meeting of the Ohio State Board of Health with local boards of health, to be held in Cleveland, Ohio, June 30–July 1, 1910. June 15, 1910.

LONG, J. D., passed assistant surgeon. Relieved from duty in the Hygienic Laboratory and detailed for duty in the Bureau as Assistant Surgeon-General in charge of the Division of Domestic (Interstate) Quarantine, effective June 16, 1910. Paragraph 12, Service Regulations.

STIMSON, A. M., passed assistant surgeon. Granted four days' leave of absence from June 15, 1910, under paragraph 191 Service Regulations.

ROBERTS, NORMAN, passed assistant surgeon. Granted one day's leave of absence June 13, 1910, under paragraph 191, Service Regulations.

FROST, W. H., passed assistant surgeon. Granted two days' leave of absence en route to station.

MULLAN, E. H., passed assistant surgeon. Granted thirteen days' leave of absence from June 17, 1910.

STILES, C. W., professor, chief, division of zoölogy, Hygienic Laboratory. Detailed to attend the annual meeting of the Medical Society of North Carolina, to be held at Wrightsville Beach, June 23, 1910. June 16, 1910.

DELGADO, J. M., acting assistant surgeon. Granted twenty-six days' leave of absence from July 1, 1910.

HOUGH, J. SPENCER, acting assistant surgeon. Granted thirty days' leave of absence during the calendar year 1910.

HUNTER, W. R., acting assistant surgeon. Granted ten days' leave of absence from June 18, 1910.

O'NEILL, A. A., acting assistant surgeon. Granted three days' leave of absence without pay, from June 10, 1910, under paragraph 210, Service Regulations.

RICHARDSON, S. W., pharmacist. Relieved from duty at the Pensacola Quarantine Station, and directed to proceed to Boston, Mass., and report to the medical officer in command for duty and assignment to quarters. June 14, 1910.

ILTIS, G. W., pharmacist. Relieved from duty at Boston, Mass., and directed to proceed to Pittsburg, Pa., and report to the medical officer in charge for duty. June 17, 1910.

APPOINTMENTS.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. — The Board of Directors of the Rockefeller Institute for Medical Research announce the following promotions and appointments for the year 1910–1911. Laboratory Staff: Member, Jacques Loeb, experimental biology. Associates; W. A. Jacobs, biological chemistry; D. R. Joseph, physiology and pharmacology; Peyton Rous, pathology; B. T. Terry, protozoölogy; D. D. Van Slyke, biological chemistry. Assistants: M. T. Burrows, experimental surgery; P. F. Clark, bacteriology; I. S. Kleiner, physiology and pharmacology; Hardolph Wasteneys, experimental biology. Fellows: F. J. Birchard, biological chemistry; F. B. La Forge, biological chemistry. Scholar: J. Bronfenbrenner, pathology. Hospital Staff: Resident physician, G. Canby Robinson. Internes: George Draper, H. K. Marks, F. W. Peabody, H. F. Swift. General manager: Jerome D. Greene.

SOCIETY NOTICE.

AMERICAN HOSPITAL ASSOCIATION. — The twelfth annual conference of the American Hospital Association will be held at the Planters Hotel, St. Louis, Mo., Sept. 20, 21, 22 and 23, 1910.

RECENT DEATH.

DR. CHARLES ZELLHOEFFER, of Brooklyn, N. Y., died on June 29, at the age of fifty-nine years. He was graduated from the medical department of the University of the City of New York, in 1873, and at the time of his death was consulting to the German and the Eastern District Hospitals, Brooklyn.

BOOKS AND PAMPHLETS RECEIVED.

The Action of Extracts of the Pituitary Body. By H. H. Dale, M.A., M.D. Reprint.

Mortality Statistics, 1908, Department of Commerce and Labor, Washington, D. C. Ninth Annual Report, 1910.

Thirty-First Annual Report of the State Board of Charity of Massachusetts, 1910.

Fortieth Annual Report of the State Board of Health of Massachusetts, 1909.

Transactions of the Fifteenth Annual Meeting of the American Laryngological, Rhinological and Otological Society, Atlantic City, N. J., June 3, 4, 5, 1909.

The Johns Hopkins Hospital Reports, Vol. XV. Baltimore, 1910.

Original Articles.

THE OCCURRENCE OF INFANTILE PARALYSIS IN MASSACHUSETTS IN 1909.*

REPORTED FOR THE MASSACHUSETTS STATE BOARD OF HEALTH, BY ROBERT W. LOVETT, M.D., BOSTON.

THE medical profession of to-day is confronted with the task of constructing a new literature on the subject of infantile paralysis. What was written five years ago is to-day largely out of date and the standard textbooks cannot naturally present the latest point of view, so rapid has been the recent progress of our knowledge in regard to this disease. The chief contributors to this rapid advance have been, first and foremost, Flexner and Lewis in demonstrating the etiology, Wickman, of Sweden, in giving us a new symptomatology and defining types not before recognized, and Harbitz and Scheele, of Norway in formulating the pathology.

The present paper will consist, first, of a condensed report of the recent progress of our knowledge with regard to the disease, and, secondly, of the data obtained with regard to the disease in this state in 1909 by the State Board of Health.

I. REPORT OF PROGRESS.

The most important step in our knowledge of the disease consists in the establishment during the past year of its infectious character by several observers. With the ability to produce the disease in monkeys by inoculation, there has been given the opportunity to study its etiology, symptoms and pathology, which opportunity did not exist before.

EXPERIMENTAL PRODUCTION.

Infantile paralysis has been recently shown to be an infectious disease caused by a living organism so small that it can pass through the finest bacterial filter. It is invisible to the microscope and the ultramicroscope.[17] This places the disease in a class with those caused by a filterable virus, similar diseases of this class being yellow fever, foot and mouth disease, pleuropneumonia of cattle, etc. It can be caused in monkeys by inoculation with an emulsion of certain tissues from a human being dying of the disease, and from affected monkeys.[41, 17, 10, 30, 50]

The virus is contained in the brain and spinal cord, the mucous membrane of the nasopharynx, infected lymphatic glands, in the salivary glands,[10] and in the acute stage in the blood and cerebrospinal fluid.[17]

The disease may be caused by inoculation by the following routes: intracerebral, subdural, intra- and peri-neural, intraperitoneal, subcutaneous, by the circulation, and by implantation in the anterior chamber of the eye.[10, 17, 41]

By the digestive route it has been caused by introducing an emulsion into the stomach by means of a catheter and by introduction of the virus into intestines paralyzed by opium.[41]

By the respiratory route the disease has been caused by rubbing the nasal mucous membrane after scarification[17] with a virulent suspension, by the same procedure without scarification, by inhalation of a virulent emulsion, and by implantation of infected tissue in the trachea.[41]

The fact that the disease may be caused by virus entering both respiratory and digestive tracts must be remembered when we come to inquire how the virus enters the human body.

Inoculations into horses, calves, goats, pigs, sheep, rats, cats, mice,[30] rabbits,[39] chickens,[42] guinea pigs[30] and dogs, have proved negative except for the results of Krause and Meinicke,[24] who caused paralysis in rabbits by inoculation with virulent material, but their results are not generally accepted by other observers as they are in contradiction to practically all other experimental work and not sufficiently supported by pathological evidence.

The virulence of an emulsion is not impaired by drying for seven days, by freezing nor by suspension in glycerine,[10, 17, 30] but is injured by a temperature of 45° to 50° C.[17] The virus is not always affected by dilution, a solution of one to a thousand working as quickly and effectually as the full strength.[41]

The stage of incubation in monkeys is from six to upwards of thirty days, and the long incubation period in monkeys suggests the possibility that in the human being some of the late fall and early winter cases may have acquired their infection when the disease was prevalent in August and September. The ordinary incubation period in human beings is not known. It is generally stated as from one to fourteen days.

IMMUNITY.

One attack of the disease apparently confers immunity to future attacks.[17, 10, 31, 41] This is the accepted clinical history in human beings, and has been found to be the case in monkeys inoculated experimentally.

Active immunization in monkeys has been secured by the repeated injection of small doses of virus repeated many times, after which a full dose has had no effect.[17]

Passive serum protection has been obtained by mixing with an active dose of the virus an equal amount of the blood serum of a recovered monkey, which neutralizes the effect of the virus, and in the same way the blood serum of children who have recovered, when mixed with the virus in proper proportions neutralizes its effect.[17] Attempts to secure a neutralizing serum from horses who have received repeated injections of virus have not been successful. Even if we had at hand a therapeutic serum for this disease, it must be evident that such a serum to be of use must be used early in the disease, and at present our diagnostic knowledge is not sufficient to enable us to use it before the destruction occurs in the cord. The diagnosis is now rarely made

* Portions of this report were read in abstract before a joint session of the American Orthopedic and Pediatric Societies in Washington on May 4, 1910, and before The Massachusetts Medical Society in Boston, June 8, 1910.

before the paralysis occurs, and a better knowledge of the early symptoms and diagnostic signs of the disease is one of our most urgent needs and indicates the line in which our investigation for the present year should progress.

DIAGNOSIS.

In the matter of clinical diagnosis, the last year has added a little to our knowledge, chiefly in the way of a better knowledge of early symptoms. The eight types of the disease as described by Wickman are not, however, sufficiently known in the English language, and a translation of his book would be of great value (Wickman: Beiträge zur Kenntniss der Heine Medinschen Krankheit, Berlin, 1907), although a short abstract has been made of it.[18]

Müller,[22] investigating at the request of the authorities an epidemic in Westphalia in 1909, considered three symptoms of great importance in the early stages. These were (1) tendency to profuse sweating; (2) hyperesthesia and sensitiveness to movements, and (3) leucopenia. Respiratory and digestive symptoms were common in the earlier stages, and the incubation period was at least five days.

Krause,[23] was commissioned by the government in 1909 to investigate an epidemic, consisting of 436 cases, occurring in Germany in the neighborhood of Hagen. He found digestive symptoms present in 90% of all cases at the onset, and occasionally respiratory symptoms. He calls especial attention to the importance of sweating and tenderness as early symptoms.

The later laboratory findings suggest that certain characteristics of the blood and cerebrospinal fluid in the stage preceding paralysis may enable us to make an earlier and surer diagnosis, but these findings have not yet appeared in print.

INCREASING FREQUENCY OF OCCURRENCE.

It is generally believed that infantile paralysis is becoming more common and more widespread of late years, but one must bear in mind that there is a possibility that this is because the disease is better known and more frequently recognized. As this is a matter of importance, it seems proper to examine the evidence on this point.

The recognition of outbreaks of infantile paralysis is of comparatively recent date. Bergenholz, a Swede, writing in 1881, is generally credited with having been the first to recognize and describe such an outbreak with sufficient accuracy to make it acceptable. Since that time, outbreaks have been reported with increasing frequency. From the time of the first generally accepted outbreak until the close of 1909 is roughly thirty years. If this interval be sub-divided into periods of five years, beginning with 1880–1884 inclusive, and ending with 1905–1909 inclusive, and if we set down in each period the number of outbreaks reported, we have the following table:

	Cases.	Outbreaks.	Average Number of Cases.
1880–1884	23	2	11.5
1885–1889	93	7	13
1890–1894	151	4	38
1895–1899	345	23	15
1900–1904	349	9	39
1905–1909	8,054	25	322

DISTRIBUTION OF OUTBREAKS.

The recent outbreaks have been widely distributed. From Norway and Sweden have been reported large and carefully studied epidemics, especially in the last ten years. Zappert,[46] in 1908 and 1909, collected 266 cases in Vienna and lower Austria, and Ghon noted many cases in upper Austria (Styria and Carinthia). In Germany, in 1909, the disease was very prevalent. The Westphalia epidemic of 436 cases [23] has been spoken of above. In Rhenish Prussia there were said to have been about 100 cases, and around Marburg about 50. There were cases in the province of Hanover and about 50 cases in Silesia. Numerous small epidemics were reported. It is estimated that there must have been over 1,000 cases in Germany in 1909.[47] In Holland, 24 cases were reported from Leyden, and others between August and October in other parts of the country.[47]

England seems to have been comparatively immune, and only a small epidemic of 8 cases was reported from Spain. Although no large epidemic occurred in France, there was a consensus of opinion among the medical men quoted by Netter that an unusually large number of cases of infantile paralysis had been seen in 1909.[47], [49]

The United States suffered severely. Minnesota [48] had several hundred cases; Nebraska,[36] 619; Kansas, about 80; and Massachusetts, nearly 1,000.

The report [51] of the New York epidemic of 1907 has just become available for study. The fact that this epidemic of 2,500 cases was the largest ever reported, the painstaking character of the work done and the scientific standing of the committee in charge of the investigation make the report of the greatest importance and value. It is impossible in this place to abstract so condensed and exhaustive a work.

A most interesting and important epidemic of 140 cases has been reported as occurring in 1909 in the Province of Santa Clara, in Cuba.[53] Previous epidemics have been reported from the temperate zones of the north and south hemispheres, chiefly in the northern parts of the former. The Cuban epidemic, as the first reported from the tropics, possesses peculiar interest as to season, distribution, etc. Apparently the disease did not exist in Cuba prior to 1907. In 1907 and 1908 one or two suspicious or authenticated cases appeared in the neighborhood of Havana, the disease becoming epidemic in the Province of Santa Clara in 1909. A survey of the field makes it seem very probable that the disease was imported from New York as a result of the 1907 epidemic there, and that certain unknown determining conditions made the Province of Santa Clara suscep-

tible to a severe outbreak. As in the temperate zones, the disease occurred during the summer, reaching its maximum in July and August. The chief incidence was between the ages of one and three; males were predominantly affected; and the black race was evidently much less affected than the white, in 72 cases the proportion being: Whites, 60; mixed race, 4; negroes, 8. The mortality rate was 7.89%.

The time has gone by when the routine reports of epidemics is of any especial value, nor is the exact tabulation of numbers of epidemics of any particular use except as throwing light on the general distribution of the disease, and possibly in this way defining some of its characteristics.

The disease is manifestly prevalent, and it is widespread and increasing. Useful work in the future will consist in the exact and careful house-to-house study of epidemics both large and small.

Of the 8,054 cases reported in the last five years (a number, of course, only approximately correct), the United States contributed 5,514 cases or about five sevenths of the total number of cases. The bulk of these cases has, moreover, been reported from the Northern states, the outbreaks in the Southern states being insignificant. In the same way in Europe, Norway and Sweden contributed about 1,500 cases and Germany practically the rest, except for an outbreak in Australia, which occurred in March, which is their early fall.

As the literature has been very carefully gone over, and as, in the present state of interest in the subject, it seems fair to assume that large outbreaks in any civilized country have been reported, it would seem that the following conclusions were justified:

1. That outbreaks of infantile paralysis have very greatly increased in several parts of the world in the last five years in a measure not to be explained in any way by the increased interest in the disease.

2. That it is more prevalent in cold than in warm countries.

3. That from the northern part of the United States have been reported more cases than from any part of the world.

The study of these 70 outbreaks, reaching over a period of thirty years, has led, of course, to the knowledge of certain facts with regard to the disease, but they have not given us the essential facts as to how the disease enters the body nor how to prevent or check its spread.

RELATION TO INFLUENZA.

A recent book [42] deals with the theory that the disease is merely a form of influenza, a contention already discussed prior to 1905 and antagonized by Wickman. The book in question deals with a study of 303 cases occurring in Sweden, each case being considered by itself. The point of view of the author is shown in the following quotation, "I must, therefore, regard this (the intermittent type of influenza) as a very certain proof for my view, acquired on other grounds, that acute infantile paralysis is a nervous form of influenza." Recent progress in the epidemiology of infantile paralysis makes this view seem improbable.

TRANSMISSIBILITY.

In the writings of the last year there is no dissent from the opinion that the disease is communicable. Direct transmission is apparently frequent, transmission by means of a healthy carrier is more than probable, and infection occasionally appears to remain in a house where the disease had previously occurred.

On the other hand, the disease is evidently not very "contagious" in the ordinary acceptance of the term. In the epidemic in the Deerfield valley, in Massachusetts, in 1908, so carefully studied by Emerson,[2] there were 67 cases. There were 166 other children in the families of those affected, and 86 other children known to be in intimate contact with the 67. Of the 252, 4 later developed the disease.

Hill,[48] of the State Board of Health of Minnesota, has contributed a careful study of the transmissibility of the disease, written in a spirit of scientific skepticism. Of 161 cases reported as anterior poliomyelitis, he accepted only 85 as surely valid, and analyzed 81 of these occurring in 69 families. Sixty-nine of these cases were primary and 12 occurred secondarily in the same families. The secondary cases thus were 17% of the primary. Contrasting this with the records of other infectious diseases in the same state, the percentage of secondary cases to primary was as follows:

	Per cent.
Scarlet fever,	40
Typhoid fever, about,	30
Diphtheria,	29
Anterior poliomyelitis,	17

Of persons known to have been exposed to diphtheria, scarlet fever and anterior poliomyelitis, the percentage contracting the disease was as follows:

	Per cent.
Scarlet fever,	22
Diphtheria,	17
Anterior poliomyelitis,	6

The disease is thus apparently less readily transmissible than the diseases mentioned in persons exposed, but such figures cannot be considered representative until the abortive cases are included.

The study of the epidemiology of a disease falls into two parts, — the study in the laboratory and the study in the field. The most notable contribution as yet to our knowledge of this disease is from the laboratory, where Flexner and Lewis have established its infectious nature. This fact has narrowed the field of our inquiry and enables us to pursue a more definite and promising scheme, but one should remember that work in the field, comparatively fruitless as it has so far been, holds its place. We knew for many years the organism of malaria and the pathological changes occurring

in the disease, but we could not control malaria until we found that it entered the body through the agency of the mosquito. So it is quite possible to us to know much of the bacteriology and pathology of a disease from the laboratory without being able to control or suppress it, and such knowledge must be supplemented by field work; that is, a study of external conditions to round out our investigation and to make it as effective as we should wish.

II. INFANTILE PARALYSIS IN MASSACHUSETTS IN 1909.

In the year 1909, Massachusetts suffered as much from the disease as any country in Europe; as many cases were reported here as in the two other most severely affected states in the Union — Nebraska and Minnesota — taken together.

In Massachusetts, in 1907, we had begun the investigation of the disease by sending out inquiry blanks to be filled in by the general practitioner. That resulted in a loose collection of 234 cases, the results of which were published.[1] In 1908, half of our 136 cases occurring in the state were located in Franklin County, and these 67 cases were thoroughly studied by Emerson, who lived in the district a month for the purpose. These studies were published.[2]

In 1909 it was decided to take up the matter more seriously. A special agent, Mr. Sheppard, a fourth-year student at the Harvard Medical School, was detailed as a special investigator, and in February, 1910, another special investigator was added to the staff in the person of Dr. Hennelly, a recent graduate of the Harvard Medical School and of the Boston City Hospital. It was thought desirable to have expert advice in conducting the inquiry, and three gentlemen were requested to act as an advisory committee to the board. These were Dr. Theobald Smith, Professor of Comparative Pathology; Dr. M. J. Rosenau, Professor of Preventive Medicine and Hygiene, and Dr. J. H. Wright, Pathologist to the Massachusetts General Hospital and Assistant Professor of Pathology, all of the Harvard Medical School. The secretary of the board, Dr. Mark W. Richardson, has given freely of his time and effort in conducting the details of the inquiry. This advisory committee has met the members of the board who are concerned in the inquiry at frequent conferences, studied the reports submitted and advised as to the most promising lines of investigation.

The two investigators have conducted a house-to-house investigation and have filled out their own blanks; they have been instructed to work in all cases through the family physician; they have obtained from the family a careful history of the attack and they have examined the affected children. It has not been possible under these conditions to make rapid progress, and at this time only 150 cases have been thus carefully studied. It seemed to us better to confine the investigation to certain localities, making it exhaustive in certain affected districts in the neighborhood of Boston, rather than to take up a scattered investigation throughout the state. Up to this time the expense of the inquiry had been borne by the board out of its regular appropriation, but in January, 1910, the board asked the legislature for a special appropriation of $5,000 to enable the board to make a proper and adequate inquiry into this disease as it occurred in the state in 1910. This sum of money was voted without question or opposition. It is our purpose to have on hand a sufficient number of investigators during the coming summer to be able to look into the surroundings of every case within forty-eight hours of the time when the case is reported.

In presenting for the board some of the results obtained in 1909, it is only proper to say that in the present state of our knowledge no one can say which data are relevant and important and which are not. It is possible that certain facts which now seem of no importance may be of assistance to some future investigator. So far as practicable, our data are presented in graphic form. There are three classes of cases dealt with in this report: (*a*) The total number reported (923); (*b*) the number in which blanks were filled out (628); (*c*) the number thoroughly studied (150). All three classes are utilized in different tables, some being available for one purpose and some for another.

DISTRIBUTION IN THE STATE.

A consideration of the distribution of the disease in the state of Massachusetts for the past three years shows that in all three years the disease occurred in scattered foci in all parts of the state, but was more frequent in the river valleys than away from rivers; that a case rarely occurred in a town without one or more cases in contiguous towns, and that localities severely affected one year were lightly affected the next, e. g., the outbreak in the upper Connecticut Valley in 1908 was followed by very few cases in 1909 in that region. In the next year but one, however, localities markedly affected may again show many cases, e. g., in 1907 the extreme western end of the state showed many cases, in 1908 almost none, and in 1909 again many cases. The Metropolitan District shows, of course, a large number of cases, and it will be noted that in general there were more cases of the disease in the towns north of Boston than in towns south of it.

DISTRIBUTION IN BOSTON.

Analyzing the relative prevalence of the disease in the different parts of Boston, the distribution of the cases shows nothing. The incidence was greatest in Dorchester, which is on the shore and not altogether thickly settled; next in Charlestown, on the shore and densely populated; next in the city proper, densely settled, and so on, districts on the shore and inland alternating, and density of population having apparently no influence.

1907
STATE BOARD OF HEALTH
MAP OF THE
STATE OF MASSACHUSETTS.
SHOWING
THE DISTRIBUTION OF INFANTILE PARALYSIS IN 1907
SCALE OF MILES

FIG. 1.

· 1908 ·
STATE BOARD OF HEALTH
MAP OF THE
STATE OF MASSACHUSETTS.
SHOWING
THE DISTRIBUTION OF INFANTILE PARALYSIS IN 1908
SCALE OF MILES

FIG. 2.

1909
STATE BOARD OF HEALTH
MAP OF THE
STATE OF MASSACHUSETTS.
SHOWING
THE DISTRIBUTION OF INFANTILE PARALYSIS IN 1909

FIG. 3.

	Population 1905.	Number of cases.	Incidence per thousand.
Dorchester,	93,771	76	0.81
Charlestown,	39,983	24	0.60
Boston, city proper,	159,512	86	0.54
Roxbury, West Roxbury and Jamaica Plain,	161,097	67	0.42
Brighton,	21,806	9	0.41
East Boston,	51,334	20	0.39
South Boston,	67,877	17	0.25
Total,	595,380	299	0.50

RELATIVE DISTRIBUTION IN CITIES AND TOWNS.

There are 354 cities and towns in Massachusetts, in 136 of which there occurred cases of infantile paralysis in 1909. These 136 cities and towns were listed according to the prevalence of the disease in each per 1,000 of the inhabitants. The incidence ran from 526 per 100,000 inhabitants to 15 in 100,000. Taking the first 25 where the incidence per 1,000 was highest, the average population was 3,295, and only 4 towns were over 7,000. Taking the last 25 on the list where the incidence per 1,000 was least, the average population was 34,860, and no city or town was under 7,000 in population. Therefore in 1909 the disease was relatively much more prevalent in small towns than in the cities and larger towns.

LIST OF 25 CITIES AND TOWNS WHERE THE DISEASE WAS MOST PREVALENT.

Town.	Population.	Cases.	Incidence per thousand.
Plainfield,	382	2	5.26
Millis,	1,089	4	3.66
Leverett,	703	2	2.83
Great Barrington,	6,388	18	2.81
Lenox,	3,058	8	2.61
Ayer,	2,386	6	2.51
Walpole,	4,000	8	2.00
Hull,	2,060	4	1.94
Natick,	9,705	18	1.85
Easton,	1,089	2	1.83
Savoy,	549	1	1.81
Winthrop,	7,814	13	1.70
Richmond,	601	1	1.66
Athol,	7,305	12	1.64
Merrimac,	1,884	3	1.59
Scituate,	2,597	4	1.54
Sharon,	2,085	3	1.44
Egremont,	721	1	1.38
Cummington,	740	1	1.35
Groveland,	2,401	3	1.25
Salisbury,	1,622	2	1.23
Foxborough,	3,364	4	1.18
Adams,	13,685	16	1.17
Belmont,	4,360	5	1.15
Marshfield,	1,763	2	1.12

LIST OF 25 CITIES AND TOWNS WHERE THE DISEASE WAS LEAST PREVALENT.

Town.	Population.	Cases.	Incidence per thousand.
Gardner,	13,066	2	0.15
New Bedford,	85,516	13	0.15
Maynard,	7,147	1	0.14
Spencer,	7,121	1	0.14
Lynn,	84,623	11	0.13
Marblehead,	7,209	1	0.13
Saugus,	7,189	1	0.13
Montague,	7,707	1	0.13
Braintree,	7,595	1	0.13
Brockton,	55,039	7	0.12
Lawrence,	7,050	8	0.11
Ware,	8,858	1	0.11
West Springfield,	8,897	1	0.11
Methuen,	9,608	1	0.10
Fall River,	106,486	10	0.09
Chelsea,	40,080	4	0.09
Framingham,	11,749	1	0.08
Milford,	12,722	1	0.08
Taunton,	30,967	2	0.064
Beverly,	13,386	1	0.061
Fitchburg,	34,263	2	0.058
Salem,	39,019	2	0.051
Lowell,	94,889	5	0.05
Northampton,	21,075	1	0.04
Springfield,	84,237	1	0.012

GENERAL CONDITIONS.

Aside from the immediate environment of the patients, there are certain general considerations of possible interest.

Rainfall by Years.

The last six years have been very dry. In 1907 there was practically a normal rainfall, and 234 cases in the state. In 1908, a very dry year with 7 inches deficiency of rainfall, there were few cases — 136. In 1909, with more rain (3 inches deficiency) there were 923 cases. In Massachusetts the prevalence of the disease by the year has not, therefore, been coincident with deficiency of rainfall.

DEFICIENCY RAINFALL, 1904–1909, INCLUSIVE.

Year.	Cases in state.	Actual.	Normal.	Deficiency.
1904	...	43.81	45.16	—1.35
1905	...	37.60		—7.56
1906	...	43.21		—1.95
1907	234	44.49		—0.67
1908	136	37.61		—7.55
1909	923	42.10		—3.06
				—22.14

Rainfall by Months in 1909.

The chart of the rainfall in 1909 in the state, arranged by months, does not correspond with the prevalence of the disease in the state arranged also by months, the driest month preceding the month of greatest frequency of the disease in the same way that the driest year preceded the year when the disease was most prevalent.

Temperature by Months in 1909.

The curve of the average monthly temperature in Massachusetts in 1909 does not correspond with the curve of the frequency of the disease, the highest average temperature falling away before the highest incidence of the disease occurs.

NUMBER OF FAMILIES AFFECTED AND POSSIBLE ABORTIVE CASES.

To make the following analyses clearer, the following table is important as showing that the 150 cases carefully studied occurred in 142 families, and also showing the probable existence of a fairly large number of abortive cases associated with them.

The 150 cases of paralysis carefully studied occurred in 142 families. The total number of children under fifteen in these 142 families was 479.

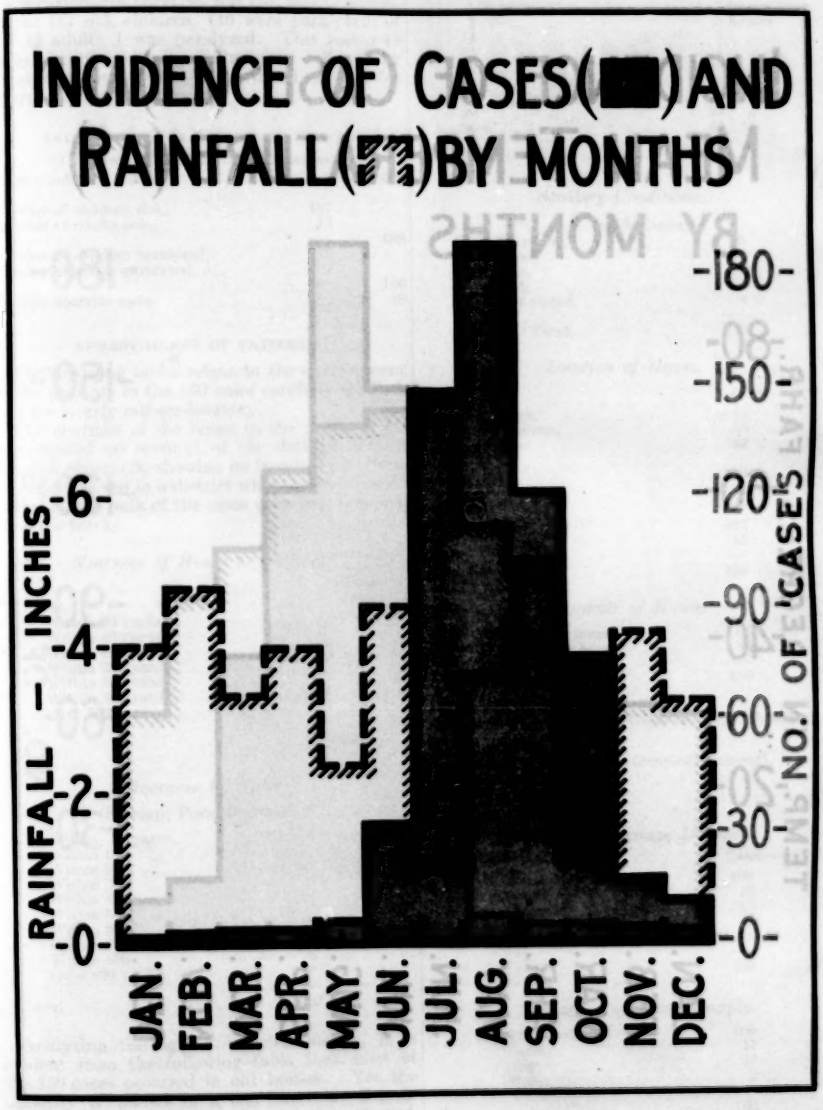

INCIDENCE OF CASES(■)AND
RAINFALL(▨)BY MONTHS
RAINFALL — INCHES
-0-
-2-
-4-
-6-
NO. OF CASE'S
-0-
-30-
-60-
-90-
-120-
-150-
-180-
JAN.
FEB.
MAR.
APR.
MAY
JUN.
JUL.
AUG.
SEP.
OCT.
NOV.
DEC.

Fig. 4.

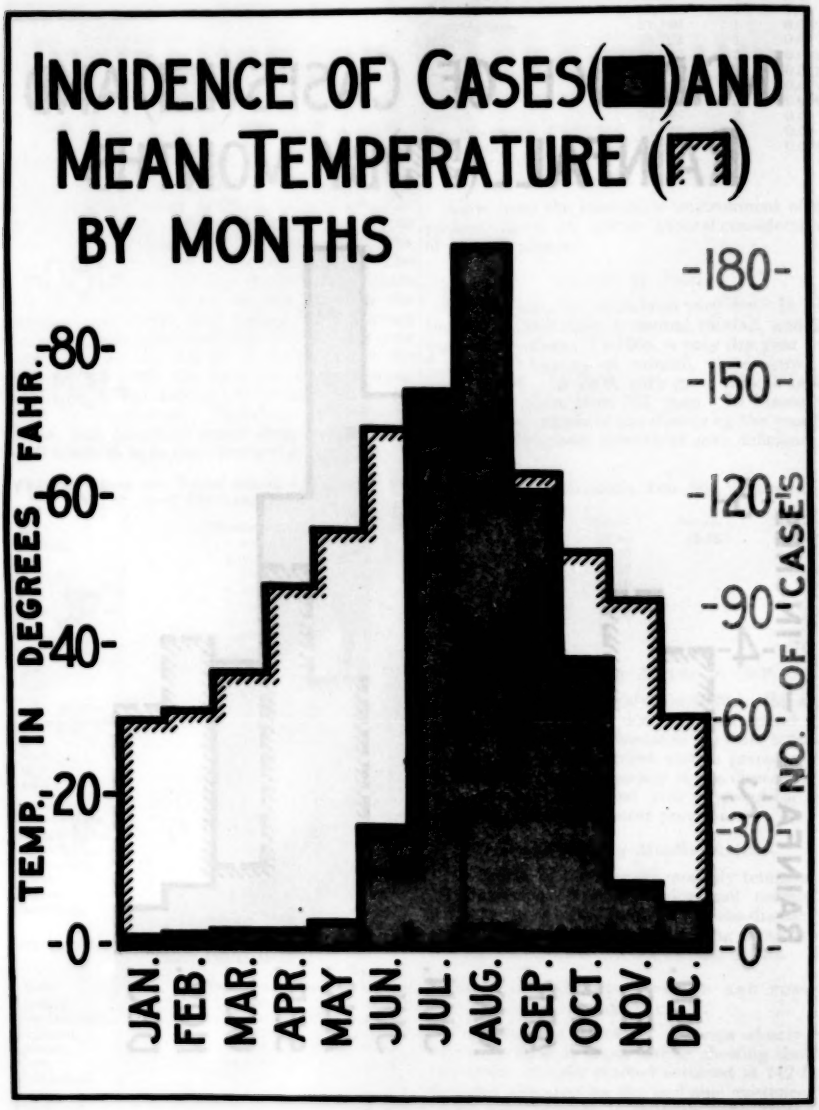

INCIDENCE OF CASES(■)AND
MEAN TEMPERATURE (▱)
BY MONTHS
TEMP. IN DEGREES FAHR.
80
60
40
20
0
NO. OF CASES
180
150
120
90
60
30
0
JAN.
FEB.
MAR.
APR.
MAY
JUN.
JUL.
AUG.
SEP.
OCT.
NOV.
DEC.

FIG. 5.

The total number of children sick from any cause in these families contemporaneously with the occurrence of paralysis was 187, and 12 adults. Of the 187 sick children, 149 were paralyzed; of the 12 adults, 1 was paralyzed. This leaves 49 cases of contemporaneous illness not followed by paralysis which are to be reckoned as possible abortive cases of the disease.

ANALYSIS OF CASES THOROUGHLY STUDIED.

(150 Cases of Paralysis in 142 Families.)

Total number of children,		479
Number of children sick,	187	
Number of adults sick,	12	
		199
Number of children paralyzed,	149	
Number of adults paralyzed,	1	
		150
Possible abortive cases,		49

SURROUNDINGS OF PATIENTS.

The following tables relate to the environment of the patients in the 150 cases carefully studied, and are largely self-explanatory.

The nearness of the house to the railroad was investigated on account of the data of certain Swedish observers, showing its frequency in these localities. Even in a district where railroads were frequent, the bulk of the cases were well removed from the tracks.

Nearness of House to Railroad.

	Cases.
On,	7
Within 20 yards,	4
Within 40 yards,	4
Within 100 yards,	17
Within 200 yards,	22
Within 300 yards,	13
Within 500 yards,	37
Over 500 yards,	46
	150

Nearness to Water.

(Stream, Pond or Beach.)

Within 50 yards,	6	houses
Within 100 "	27	"
Within 200 "	21	"
Within 300 "	8	"
Within 400 "	10	"
Within 500 "	7	"
Within 600 "	5	"
Within 700 "	1	"
Within 800 "	9	"
Over 800 yards,	56	"
Cases,	150	"

Analyzing the age of infected houses, it is evident from the following table that most of the 150 cases occurred in old houses. Yet the majority of houses in a city are old. But in Dorchester, where many cases were investigated, building is active and many of the houses are new. It seemed as if the average age of infected houses was probably higher than that of the houses of those districts taken as a whole.

Age of House.

1 year old,	2	houses
1½ years old,	1	house
3 " "	5	houses
4 " "	3	"
5 " "	4	"
10 " "	28	"
15 " "	24	"
20 " "	17	"
30 " "	22	"
30+ " "	44	"
	150	"

Sanitary Conditions.

In 150 Cases.

Excellent,	36
Good,	50
Fair,	37
Bad,	19
Not stated,	8
Total,	150

Location of House.

	Cases.
High,	43
Medium,	65
Low,	42
	150

	Cases.
Dry,	105
Damp,	45
	150

Character of House.

Detached house,	64
Tenement house,	86
	150

Floor of House Inhabited by Family.

The whole house,	55
The first floor (3 of which also occupied basement),	43
The second floor,	36
The third floor,	20

Character of Sewage Disposal.

	Cases.
Sewer Metropolitan,	109
Sewer, City,	19
Cesspool,	13
Vault,	8
Privy,	1
	150

Character of Water Supply.

Metropolitan,	109
Town,	17
City,	22
Well,	2
	150

The amount of dust as described by the families may be taken at its face value, the majority of cases reporting from a moderate amount upward.

Relation to Dust.

	Cases.
No dust,	0
Very little dust,	29
Moderate amount of dust,	83
Much dust,	37
Excessive amount of dust,	1
	150

Prevalence of Vermin, Insects and Rodents.

Inasmuch as the disease in many respects suggests that it is insect-borne, the following table was compiled from the account of the family aided by the observation of the investigators. It may be added that the investigators were fully aware of the importance of obtaining accurate answers to this question.

Among 142 families, 134 had vermin, etc., as follows:

	Families.
Flies were present in,	113
Mosquitoes were present in,	75
Mice (house) were present in	63
Rats " " "	54
Ants, red and black, " "	35
Roaches were " "	35
Bedbugs " " "	31
Spiders " " "	28
Mice (field) " " "	20
Squirrels " " "	6
Biting flies " " "	3
Grubs and caterpillars were present in	3
Fleas were present in	2
Brown-tail moth were present in	1
Moles were present in	1

Paralysis in Domestic Animals.

The occurrence of paralysis among domestic animals and fowls has been found to coincide with outbreaks of the disease in the human beings in some instances reported. Inquiries were, therefore, addressed to every veterinary surgeon and every animal inspector in Massachusetts as to the occurrence of such paralysis in animals in 1909. The reported cases were then carefully laid off on a map of the state and the relative distribution of the animal cases compared with that of the human cases. No correspondence was found to exist, so that, so far as these data can be depended on, no obvious connection on the whole existed between the two classes of cases in Massachusetts in 1909.

The health of the domestic animals in the 142 families is shown in the table. In 34 out of 87 families having domestic animals, sickness, paralysis or death occurred in these animals about the time of the paralysis in human beings.

The relation of this disease to paralysis in domestic animals is, however, a matter requiring much more extensive investigation and is at present wholly unknown.

Data as to Domestic Animals.

	Families.
No animals of any kind in	55
Animals in	87
Total,	142

(*a*) 22 homes had 28 dogs without sickness.
53 " " 73 cats " "
11 " " 760 hens " "
9 " " 17 birds " "
7 " " 11 horses " "
1 " " 20 cows " "
1 " " 3 pigs " "
1 " " 1 lamb " "

(*b*) 3 homes had 3 dogs with sickness.
10 " " 10 cats " "
4 " " 6 hens " "
1 " " 1 bird " "

(*c*) 2 homes had 2 cats with paralysis.
3 " " 4 hens " "
1 " " 1 dog " "

(*d*) 4 homes had deaths in 5 cats.
4 " " " " 4 hens.
1 " " " " 2 rats.
1 " " " " 1 dog.

18 homes had illness in 20 animals.
6 " " paralysis " 7 "
10 " " deaths " 12 "

Total, 34 homes had illness, paralysis or death in 39 animals.*

RELATION TO RABIES.

The relation of the disease to rabies was investigated and in three of the towns carefully studied epidemics had occurred in the past, but no outbreak of rabies in 1909 had any relation to these 150 cases of paralysis, and no one of the 150 paralyzed children had in the past received the Pasteur treatment.

COMMUNICABILITY.

With regard to evidences of communicability in our series of cases, it seems proper that in so important a matter our conclusions should only be presented after a very careful study of all the facts.

We have had instances of direct contagion from child to child with an incubation period of one to fourteen days. We have had a number of instances of what appeared to be indirect contagion by a healthy carrier, and finally we have had 11 instances in the 150 cases where the

* The following letter which reached the board through the State Board of Health of Minnesota is of possible interest in this connection.

" In my veterinary practice during the past five or six years, I have found a disease appearing among one- and two-year-old colts that show a line of symptoms corresponding very closely to *anterior poliomyelitis* of children. I have had from five to ten cases a year during this time, the cases always occurring during the summer months and the majority of them during the month of August. The affected colts are usually found in the pasture, unable to stand. The owner sometimes will notice an unsteady gait for twenty-four hours before entire loss of motion occurs. At first, these colts have a rise of temperature ranging from 103° to 104° F.; pulse and respiration accelerated; animal sweats profusely; appetite remains fairly good, but there is some trouble noticed in swallowing, especially water; slight derangement of the bowels, tending toward constipation; more or less tympanitis present; retention of urine, — for a few hours at least; head drawn back so the end of the nose tends to assume a position somewhat on a line with the neck. The death loss is less than 10%, but in those that do not recover the market value is depreciated to a very great extent because of the faulty gate the animal assumes after an attack of this disease due to atrophy and contraction of certain muscles, or certain groups of muscles. It seems that the flexor muscles of the limbs especially are more often affected than the extensor, and in almost all the cases some of these deformities are likely to remain permanent. The flexors of the limbs are liable to contract and cause volar flexion of the fetlock. The elevators of the head are also likely to become affected, so as to cause the head to have a poky appearance; that is, it is carried out from the body.

" After one of these attacks, the colt will remain down from one to three weeks and will then continue to improve for a period of one year, but seldom, if ever, makes a complete recovery.

" LAKE CITY, MINNESOTA." " DR. C. S. SHORE.

disease followed intimate contact with persons with old infantile paralysis, often of many years' standing. The latter cases seemed to be unworthy of mention in a serious report, but after consultation with our advisory board it seemed worth while to allude to the matter for what it is worth, e. g., a child of two and one-half was not, so far as known, in direct or indirect contact with any acute case, but was, previous to his attack, daily fondled and cared for by a girl of fourteen paralyzed twelve years previously. On Aug. 14, 1909, he developed the disease. The board would not wish to be understood as advocating the view that chronic cases were sources of infection, but the frequency of such histories make it proper to mention the matter as one worthy of following up, although the general history of other diseases caused by a filterable virus would make it seem unlikely.

Instances of what would appear to have been contagion occurred in 35 out of 150 cases. They may be analyzed as follows:

Instances of Contagiousness.

	Cases.
Certain direct contact with acute case,	14
" " " " abortive case,	1
" " " " chronic case,	14
" " " " both acute and chronic case,	2
Certain indirect contact with acute case by third person,	4
Total,	35

The contact was so intimate between the cases, and so constant, that there is no sure means of determining the day of the illness on which the sick child gave the disease to the other, or, in other words, the period of incubation in the recipient.

Families with more than One Case.

134 families with 1 case.	
7 " " 2 cases.	
1 " " 3 cases.	
Total,	142

Cases among the Acquaintances of Patient.

(*a*) In 22 instances there occurred one other acute case, either shortly before or after.

(*b*) In 2 instances there were 2 acute cases each among acquaintances.

(*c*) In 2 instances, 4 acute cases each.

(*d*) And in 1 instance there were 6 acute cases.

(*e*) In 13 instances there was 1 chronic case each among the acquaintances of patient.

It is not demonstrated that contact necessarily took place between these individuals.

As bearing on the question of contagion, the places to which visits were made within a month before the attack was investigated.

Places Visited by Patient before Attack.

(*a*) No history of visits known, 42; (*b*) Revere Beach, 38; (*c*) City Point, 18; (*d*) Savin Hill Beach (Dorchester), 15; (*e*) Boston, 12; (*f*) Nantasket, 11; (*g*) Winthrop Beach, 8; (*h*) Dorchester Beach, 6; (*i*) Gloucester, 5; (*j*) Dewey Beach (Charlestown), 5.

(All these places were known to be infected areas.)

(*k*) Three other towns were visited by 4 cases each; of these 3 towns, 2 were known to be infected areas. (*l*) Eight other towns were visited by 3 cases each; of these 8 towns, 7 were known to be infected areas. (*m*) Ten other towns were visited by 2 cases each; of these 10 towns, 7 were known to be infected areas; (*n*) Forty other towns were visited by 1 case each; of these 40 towns, 25 were known to be infected areas.

Institutions for Children.

It was suggested by the advisory committee that it might be worth while to look into the prevalence of the disease in asylums, etc., where healthy children lived and were removed from the ordinary conditions of street life, many of which institutions were in the midst of infected districts. Forty-five such institutions were investigated where 3,600 young children lived. Only one child of the 3,600 developed the disease and this was under such remarkable conditions that the case may be mentioned.

E. R. (age two years and four months) entered the St. Mary's Infant Asylum in Dorchester on Aug. 28, 1908. In February, 1909, the child had measles and was taken to the South Department of the Boston City Hospital. No other sickness since becoming an inmate of the asylum.

On Sept. 30, 1909, the child had a typical attack of infantile paralysis; the diagnosis was made by the attending physician and confirmed at the Children's Hospital. Partial paralysis of one leg still persists.

This child is one of a class of walking children in the institution numbering in all 40. At the time of his illness, 2 or possibly 3 other children suffered from slight vomiting and diarrhea. Nothing else remarkable.

This child lived as regular institution children do, playing with his 40 companions on one floor and one porch.

The child never left the institution after he entered save to go to the City Hospital at the time of the attack of measles several months before. No one had visited the child or sent food, toys, etc., for several months before onset.

During the month of September only 6 new children were admitted to that part of the asylum. None of these had any illness of any sort.

The child, at the time of onset, showed no marks or bites or wounds. His diet was that usually given in an asylum for children, viz., mashed potatoes, meat juices, soups, bread and milk, oatmeal, and, very rarely, fruit. The children sleep sixteen in a room and all eat in the same dining hall.

The child was not isolated during his illness and no other cases occurred.

CONDITIONS, GENERAL AND SPECIAL, PRECEDING THE ATTACK.

The general and individual conditions preceding the attack are shown in certain matters in the following tables:

Swimming or Wading.

The frequency with which swimming or wading was mentioned as an antecedent in previous years

attracted our attention and was embodied in a question on our blank. Nearly half of the cases had been swimming or wading in water contaminated by sewage shortly before the onset of the disease.

Out of 150 cases, 62 were swmiming or wading just before onset.

Water was contaminated by sewage in	54	instances
" " " more or less in	8	"
	62	
No history of swimming or wading in	88	instances
	150	

Exposure to Heat, Cold or Dampness Preceding the Attack.

	Cases.
To heat,	39
" cold,	25
" dampness,	36
Not exposed,	50
Total,	150

Accident, Fall or Overexertion Preceding Attack.

107 cases had no such history.
34 " " history of fall.
9 " " " " overexertion.
150

Diseases Prevalent in Town at Time of Occurrence of Infantile Paralysis.

	Families.
Not known,	103
La Grippe,	5
Measles,	7
Whooping Cough,	4
Digestive troubles,	8
Rheumatism,	3
Mumps,	2
Scarlet fever,	2
Malaria,	2
Tonsillitis,	2
Coryza,	1
Chickenpox,	1
Typhoid,	1
Diphtheria,	1
	142

Diet.

General (45 had limited or modified diets),	105
(*a*) raw cow's milk,	120
(*b*) condensed milk,	14
(*c*) breast milk and other food,	14
(*d*) breast milk alone,	0
Fish,	80
Fruit,	100
Berries,	89
Meat,	90
Canned goods: (*a*) fruits; (*b*) vegetables; (*c*) or fish,	82
Cereals,	15
Bread and butter,	23
Vegetables,	90
Stews and soups,	11
Eggs,	14
Tea, 2; cocoa, 3; coffee; 1,	6
Malted milk,	2
Ice cream,	8
Predigested and beef juices,	4
Candy,	2
Bananas,	6

Articles of diet are said to have been taken by the affected children, as shown in the accompanying table. As many of the cases partook of several kinds of food, the total is much in excess of the total number of cases.

It is important to note that no child living on breast milk alone in the 150 cases carefully studied was affected by the disease.

Data as to School Attendance.

	Cases.
School was not attended by	115
School was attended by	35*
	150

Of the 35 cases attending school:

Edward Everett, Dorchester, was attended by,	3 cases
Winthrop Primary (including center), was attended by,	4 "
Concord Street, Boston, was attended by	2 "
Savin Hill School, was attended by,	2 "
Each at a different school,	22 "
School unknown,	2 "
	35 cases

Possibly Favoring Conditions Preceding or Attending Infection.

Insect bites or stings, 35; wounds, 13; sore throat, 42; diarrhea, 35; otitis media, 2; coryza, 4; measles, 1; pin worm, 1; bronchitis, 1.

Ninety-three had one or more of the above possible sources of infection; 57 had no such history. Total, 150 cases.

INCIDENCE OF THE DISEASE.

Sex: 363 males and 263 females were affected.

Age: By the figures it is seen that the incidence is greatest between the ages of two and three. After ten years of age the chart deals only with ten-year periods and the average number of cases per year only is represented.

In the chart of age periods it is shown that only 7% of the cases occur in the first year of life, but 71% of cases occur in the first five years and 87% of cases in the first ten years.

BY AGES.

Age.	Cases.	Age.	Cases.
3 weeks,	1	9 years,	13
2 months,	2	10 "	15
3 "	1	11 "	5
4 "	1	12 "	9
5 "	2	13 "	4
6 "	2	14 "	11
7 "	2	15 "	2
8 "	5	16 "	3
9 "	3	17 "	2
10 "	3	18 "	1
11 "	6	19 "	7
12 "	16	20 "	2
13 "	5	21 "	4
14 "	11	22 "	5
15 "	3	23 "	3
16 "	12	25 "	3
17 "	5	27 "	1
18 "	22	28 "	1
19 "	6	29 "	2
20 "	12	30 "	2
21 "	12	33 "	2
22 "	5	34 "	1
2 years,	121	35 "	2
3 "	90	40 "	2
4 "	60	41 "	1
5 "	32	62 "	1
6 "	31	72 "	1
7 "	30	Not stated,	13
8 "	9	Total,	628

* School attendance was not, however, necessarily continuing up to the time of the attack.

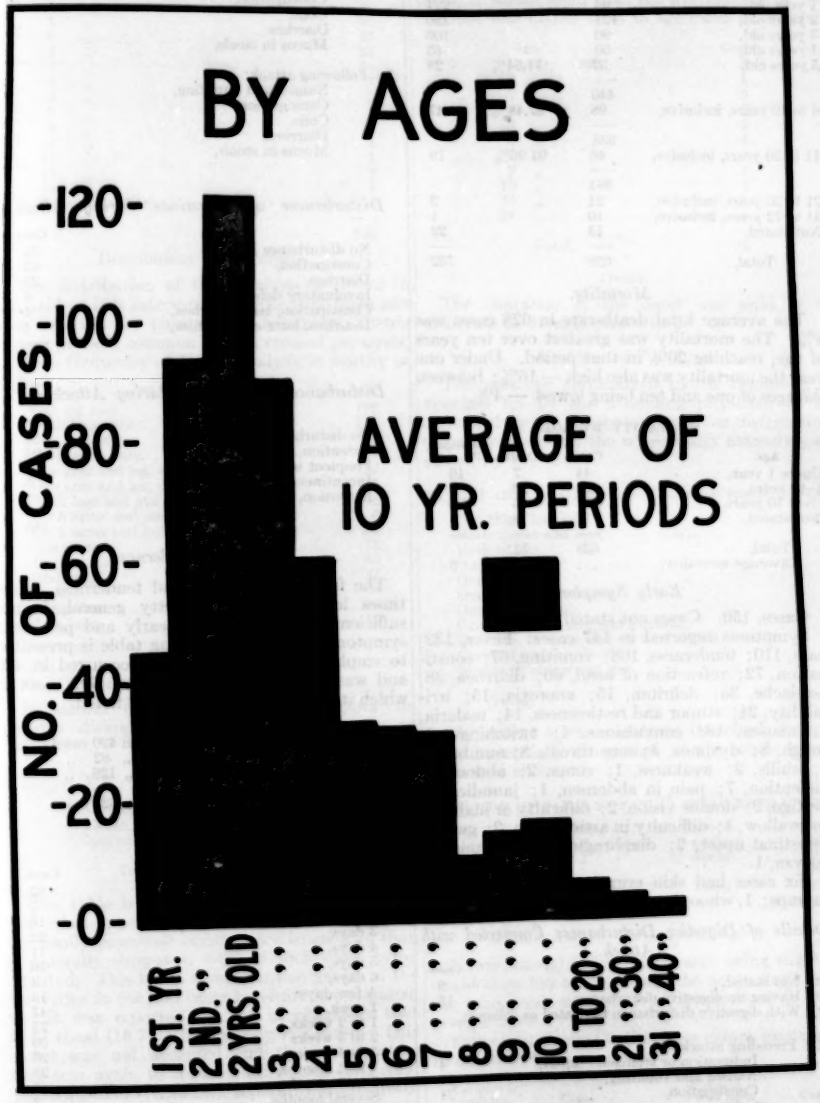

BY AGES
NO. OF CASES
120
100
80
60
40
20
0
AVERAGE OF
10 YR. PERIODS
1 ST. YR.
2 ND. "
2 YRS. OLD
3 " "
4 " "
5 " "
6 " "
7 " "
8 " "
9 " "
10 " "
11 TO 20 "
21 " 30 "
31 " 40 "

Fig. 6.

BY AGE PERIODS.

			New York.*
From birth to 12 months, inclusive,	44	7.15%	62
1 year old,	93		221
2 years old,	121		180
3 years old,	90		106
4 years old,	60		63
5 years old,	32	71.54%	28
	440		
6 to 10 years, inclusive,	98	87.48%	47
	538		
11 to 20 years, inclusive,	46	94.96%	19
	584		
21 to 30 years, inclusive,	21		2
31 to 72 years, inclusive,	10		1
Not stated,	13		23
Total,	628		752

Mortality.

The average total death-rate in 628 cases was 8%. The mortality was greatest over ten years of age, reaching 20% in that period. Under one year the mortality was also high — 16%; between the ages of one and ten being lowest — 4%.

MORTALITY BY AGE.

Age.	Cases.	Deaths.	Mortality, Per cent.
Under 1 year,	44	7	16
1–10 years,	494	20	4
Over 10 years,	77	16	20
Not stated,	13	8	—
Total,	628	51	..
Average mortality,	...	..	8

Early Symptoms.

Cases, 150. Cases not stated, 3.

Symptoms reported in 147 cases: Fever, 132; pain, 110; tenderness, 108; vomiting, 67; constipation, 72; retraction of head, 60; diarrhea, 38; headache, 33; delirium, 15; anorexia, 15; irritability, 24; stupor and restlessness, 14; malaria, 9; nausea, 18; convulsions, 4; twitchings, 3; cough, 8; dyspnea, 4; sore throat, 8; numbness, 3; chills, 2; weakness, 1; coma, 2; abdominal distention, 7; pain in abdomen, 1; jaundice, 1; vertigo, 2; double vision, 2; difficulty or inability to swallow, 4; difficulty in articulation, 2; gastro-intestinal upset, 2; diaphragmatic breathing, 1; coryza, 1.

Six cases had skin eruptions; 1, measles and mumps; 1, whooping cough; 1, malaria.

Details of Digestive Disturbances Connected with Attack.

	Cases.
(a) Not stated,	9
(b) Having no digestive disturbance,	15
(c) With digestive disturbance tabulated as follows:	
(1.) Preceding attack:	
Indigestion or stomach "upset,"	4
Nausea and vomiting,	37
Constipation,	31
Colic,	2
Diarrhea,	12
Mucus in stools,	2
(2.) Accompanying attack:	
Indigestion (indefinite),	3
Nausea and vomiting,	51
Constipation,	55
Colic,	8
Diarrhea,	24
Mucus in stools,	1
(3.) Following attack:	
Nausea and vomiting,	4
Constipation,	37
Colic,	2
Diarrhea,	10
Mucus in stools,	2

* For purposes of comparison the New York figures are included.

Disturbances of Intestines during Attack.

	Cases.
No disturbance in,	53
Constipation,	63
Diarrhea,	22
Involuntary defecation,	4
Constipation, later diarrhea,	4
Diarrhea, later constipation,	4
	150

Disturbances of Bladder during Attack.

	Cases.
No disturbance,	114
Retention,	23
Frequent micturition,	3
Incontinence,	9
Retention, later incontinence,	1
	150

Pain and Tenderness.

The frequency of pain and tenderness, sometimes local, sometimes pretty general, is not sufficiently regarded as an early and persistent symptom. The accompanying table is presented to emphasize the point that it occurred in 420 and was absent only in 82 out of 502 cases in which its presence or absence was noted.

Pain or tenderness was present in	420	cases
" " " absent	82	"
" " " not stated	126	"
Total,	628	cases

The pain or tenderness lasted:

	Cases.
No pain	82
1 day or less,	7
2 days,	16
3 days,	22
4 days,	11
5 days,	10
6 days,	3
A few days	13
1 week,	47
1 to 2 weeks,	75
2 to 3 weeks	36
3 to 4 weeks,	26
1 to 2 months,	28
2 to 3 months,	5
Several months,	3
Until death,	11
Present when report was made,	107
Not stated,	126
Total,	628

Appearance of Paralysis in Days after Onset of Fever.

	Cases.
Same day,	30
1 „	36
2 „	27
3 „	23
4 „	14
5 „	7
6 „	5
7 „	1
8 „	1
11 „	1
12 „	1
14 „	2
16 „	1
Not known, fatal	1
	150

Distribution of Paralysis.

The distribution of the paralysis is shown in the table. It is interesting to note that when one arm and leg are paralyzed a hemiplegic distribution is more common than a crossed paralysis, and the frequency of facial paralysis is worthy of note.

One leg only,	192
Both legs only,	151
One arm only,	32
Both arms only,	11
One arm and leg, same side,	57
One arm and leg, opposite sides,	17
Both legs and one arm,	38
Both arms and one leg,	6
Both arms and both legs,	82
Not stated,	12
Back,	83
Abdomen,	37
Face,	8
Right face,	16
Left face,	10

PROGNOSIS.

Recovery Rate in 628 Cases.

In answer to the question, "Has paralysis entirely disappeared?" The replies were as follows:

Yes,	62	10.8%
No,	404	
Partially,	61	
Death,	51	
Not stated,	50	
Total,	628	

This table is intended to emphasize the fact that what appears to be recovery in the eyes of the family physician occurs more frequently than is generally supposed, 10% of such cases being reported. This led to a closer investigation of the recoveries in the 150 cases carefully investigated, and it was reported by the investigators that 25 of these (16.7%) had wholly recovered. This report was not accepted and the investigators were sent again to these children, and each child was stripped naked and the separate movements of ankle, knee, hip, spine, abdomen and arms were separately tested. From this careful examination it is sure that 25 children out of 150 have recovered since the disease in 1909. The following tables deal only with these 25 cases:

Age of 25 Recovered Cases.

So far as one may generalize from these few cases, it would seem that the average age of the children was higher than in the cases in general.

Age.	Cases.
1 year,	3
2 „	1
3 „	5
4 „	5
5 „	2
6 „	4
7 „	1
9 „	1
10 „	1
14 „	1
21 „	1
Total,	25

Onset.

The character of the onset was mild in 6, moderate in 17 and severe in 2.

Evidence of Paralysis.

The presence of paralysis in the beginning is vouched for by the attending physician in 23 cases and by the family in 2, and the distribution of paralysis was on the whole fairly extensive, as shown by the table.

EXTENT OF PARALYSIS IN 25 RECOVERED CASES.

One thigh and leg,	4
Both thighs and legs,	8
Both thighs,	1
One leg,	2
One arm,	1
One leg, arm and back,	1
One leg and back,	1
One thigh, leg, arm and forearm,	1
One arm, forearm and cervical region,	1
Cervical region,	4
Indefinite staggering gait,	1
Total,	25

The extent of the paralysis, therefore, did not differ essentially from that of the whole group presented above.

DURATION OF PARALYSIS IN 25 RECOVERED CASES.

Time.	Cases.	Time.	Cases.
3 days,	2	8 weeks,	8
1 week,	3	12 weeks	4
2 weeks,	3		
3 „	2	Total,	25
4 „	3		

Tenderness in Recovered Children.

It was thought that such cases being slighter might show less tenderness in the acute stage, but the tenderness was about as frequent as in the severer cases.

Pain or tenderness in the acute attack existed in 19 out of 25 recovered cases.

Duration of tenderness.	Cases.	Duration of tenderness.	Cases.
2 days,	1	3 weeks,	1
3 „	1	4 „	3
7 „	6	6 „	1
10 „	1	8 „	2
2 weeks	2	12 „	1

The statement may, therefore, be made that in the whole group of 628 cases, 10.8% were reported as wholly recovered; that in the smaller group of 150 cases, 16.7% are known to have recovered, and that a study of character of onset, distribution and tenderness in these cases gives no means of distinguishing them from other cases at the time of the attack.

PREVENTION.

In the matter of prevention of the disease in Massachusetts, in November, 1909, it was made one of the notifiable diseases, like scarlet fever, etc. In a recent circular addressed to physicians it has been advised by the board that such cases should be quarantined and that urine, stools and sputum should be disinfected, and we have called attention to the existence of abortive cases as probable sources of contagion.*

CONCLUSIONS.

These data are presented as a report of progress in an investigation which will be continued, and no conclusions are drawn from them.

That the effort of the state Board meets with general approval is shown by the fact that the following resolution was adopted in Washington, on May 5, 1910, by the American Orthopedic Association and the American Pediatric Society.

"It having been shown by recent epidemics and investigations connected with the same that epidemic infantile spinal paralysis is an infectious, communicable disease which has a mortality of from 5% to 20%, and that 75% or more of the patients surviving are permanently crippled, state boards of health and other health authorities are urged to adopt the same or similar measures as already adopted and enforced in Massachusetts for ascertaining the modes of origin and manner of distribution of the disease with a view to controlling and limiting the spread of so serious an affection."

What the course of the disease may be in 1910 in Massachusetts cannot be predicted. It would be expected from the history of the disease that a year of comparative immunity in the state as a whole would follow the great prevalence of the disease in 1909 and it is, therefore, disappointing to find 22 cases reported in the first five months of 1910, as against 15 cases for the same five months in 1909. Whether this means merely an increased attention on the part of the profession or a really increased prevalence of the disease, time alone will show.

The object of the inquiry in 1910 will be twofold.

First, the formulation and classification of early symptoms and types of the disease with especial reference to early diagnosis and, second, a study of the conditions under which contagion seems to occur, with a continued search as to the mode of entry of the virus into the body.

The medical profession must remember that the Board of Health acts only as the agent of the profession in assembling the data provided by them, and depends on them for the same willing co-operation that it has met and is profoundly grateful for in the past.

The report for 1910 will be what the profession makes it and the board is anxious not only for the prompt and full report of typical cases, but also for notification of suspicious and atypical cases which are possibly of the abortive type and a most important link in the chain of evidence.

* In a recent communication, Flexner and Lewis report that a 1% solution of peroxide of hydrogen in perhydrol has been found to destroy the virus. In view of their belief that the entrance of the virus is probably by the respiratory tract, the use of a nasal douche of this character would seem advisable.

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BILIOUS ATTACKS IN CHILDREN.*

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IT was with some hesitation that I chose this very common ailment as the subject of my paper rather than something of a research nature, but lately, in reading Dr. George F. Still's book,[1] this chapter deeply impressed me. For the term "bilious attack," while belonging to popular rather than to scientific phraseology, and conveying the idea of a simple digestive upset, may have a much deeper significance than it implies. He strikes the keynote when he says, "Herein lies the danger of a vague term like this; it has a misleading sound of innocence which may inspire an altogether unjustified feeling of security."

When we see a child with fever, vomiting, headache, constipation and perhaps some abdominal pain, and having probably attended this same child several times before with the same set of symptoms, are we justified in telling the mother that it is only a "bilious attack?" While, indeed, it may be nothing more than this simple term implies, nevertheless, there are other conditions which we should always have in mind.

APPENDICITIS.

In every "bilious attack" this possibility should be foremost, for if unrecognized, very serious consequences for the little patient may develop. The classical symptoms as seen in the adult may be very slight in the child. So slight have they been at times that nothing was thought of them, and after several so-called "bilious attacks" there came a time when all the symptoms were intensified, and a laparotomy showed the true state of affairs. Moynihan[2] says he has long recognized that "bilious attacks" of children — the sharp abdominal pain, headache, vomiting, languor, brief malaise, often associated with constipation, and ascribed to an unwholesome meal — culminated sometimes in a flagrant, and obvious attack of acute appendicitis for which an operation then or at a later stage of the disease was performed. After the loss of the appendix, no more was heard of the "bilious attacks," which before had been so frequent.

In one of Dr. Still's cases, a girl nine years of age, had been subject to "liver attacks" for four years; there was vomiting and some slight pain in the abdomen, but the attacks were so slight that the mother had been told by her doctor just to give the child a dose of calomel whenever the attack occurred; then a more severe attack than usual happened; at first, as before, it was called a "bilious attack," but it soon became evident that it was serious, a laparotomy showed not only a perforated appendix, but an encapsulated abscess with dense fibrous matting which must have been the result of previous attacks of appendicitis.

In another case, where the appendix showed considerable inflammation and ulceration of its wall, there had been no vomiting and the temperature had not been above 100° F.

In all cases of a history of bilious attack a careful examination of the child's abdomen should be made, and if possible made at the time of the attack.

RECURRENT VOMITING.

Sometimes preceded by a few prodromal symptoms such as anorexia, malaise, irritability, headache and dark rings under the eyes, there is a sudden onset of vomiting without apparent cause, lasting from one to six days, and then disappearing as quickly as it came. The child now regains its normal condition, and then again anywhere from two to six months passes through an exactly similar attack, when the condition is easily recognized.

During the attack the constant cry for water, with its immediate rejection, forms indeed a pitiful picture. As little or no fluid is retained in many of these cases, the tissues soon become drained of water, and as a result emaciation is rapid and accompanied with marked prostration. Moderate fever, which is almost always present under ten years, occurs early in the disease and is continuous for two or three days, then becomes subnormal. The constipation which precedes the attack now becomes obstinate. The breath has a peculiar sweetish odor. The urine, which is scanty and high colored, is strongly acid and contains indican; acetone and diacetic acid. The urates are increased and the xanthin bodies in great excess.

While Snow[3] thinks it is possible that some cases are the result of an intermittent form of hypersecretion of highly acid gastric juice, Rachford considers this rather a symptom and not an etiological factor. Lately Comby[4] has become very much impressed by the idea of appendicitis being an etiological factor. In 100 of his cases, 40 clearly showed appendicitis as the cause, and 5 a probable cause. In 3, appendectomy had no effect on the disappearance of the attacks. This idea is already gaining much ground among surgeons.

In quoting the following case I must confess that I am still in doubt as to whether I have a true case of recurrent vomiting or not.

* Read before the Onondaga County Medical Society, Syracuse, N. Y., May 10, 1910.

J. C., five years old. Father died of nephritis one year ago. Mother healthy but of a nervous disposition. First and only child; breast fed for fourteen months, at which time supplementary feeding was begun. The development was normal, and the boy has always been healthy except somewhat nervous. Two weeks ago he had his adenoids removed under ether anesthesia. Was sick all day and vomited a great deal. This soon ceased and five days later he began to vomit again, vomiting every little while. He cried a great deal for water. Small sips were given him, but it would immediately return. He has always had some tendency to constipation, but for the last four days he has been very constipated. His mother said the movement which took place after a suppository was pale, foul and contained much mucous, also that the urine was much diminished and dark.

His physical examination showed nothing out of the way except for lively patellar reflexes and a peculiar odor to the breath. The temperature was normal, pulse strong but intermittent. The urine was 1034, strongly acid, very abundant urates, no albumin or sugar. There was a slight amount of indican, acetone and diacetic acid.

At the time, not considering this a case of recurrent vomiting, but rather an intestinal intoxication, he was given high rectal salines and put on commercial buttermilk. Vomiting ceased immediately, the peculiar odor of the breath cleared up and he made a prompt recovery.

Arguing that an acetonemia which implies a diminished alkalinity of the blood bore a direct casual relation to the vomiting, Dr. Edsall suggested large doses of soda bicarbonate in the treatment. This acts almost as a specific in the prevention of the attacks and undoubtedly curtails attacks if given during the first few hours after the onset.

If it can be retained, 15 gr. in two teaspoonfuls of water with 5 or 10 drops of brandy is given every hour until six doses have been taken, then every two hours. If not retained, it is given by the rectum 2 drams of the soda in half pint of water.

In the preventive treatment, 10 gr. of the soda bicarbonate is given three times a day, instructing the mother to give it oftener if an attack threatens, and if vomiting begins, to give it every hour.

RECURRENT PYREXIA.

This term, suggested by Dr. Still, represents a condition sometimes called by the parents "bilious attack" and is thought to be closely akin to recurrent vomiting, occurring at intervals of weeks or months five or six times a year, and due to some auto-intoxication, allied to if not identical with that which produces recurrent vomiting.

The premonitory symptoms resemble those of recurrent vomiting. The onset is sudden, the fever running up quickly to from 102° to 105° F, remaining up, except for slight remissions for a week to ten days, and then within twenty-four to thirty-six hours quickly falling to normal. If there is vomiting, which is not always the case, it is very much like that of recurrent vomiting.

During the attack, the bowels are constipated and the stools pale. There is a slight headache. The pulse and respiration are increased. There is an absence of physical signs except occasionally a few rales in the chest. When there is no vomiting, these attacks with an abrupt rise of temperature, accompanied by rapid respiration and pulse, have been diagnosed as influenza or pneumonia, but after the patient has had several attacks of influenza or pneumonia every two or three months for several years, then we realize we are dealing with something else.

Dr. Still believes that the significance of these attacks are by no means clear and that they do not have the same significance in all cases. In some a dose of calomel has stopped the attacks; in others, while there has been a thorough cleaning out of the bowels, the pyrexia has continued, yet he believes it is due to some auto-intoxication from the bowel.

In the treatment of these cases the starches and sugars are excluded and calomel given, also arsenic to reduce the nervous excitability, as most all of these children, as in recurrent vomiting, are of a nervous type, a point to be remembered in their management.

MENINGITIS.

When we encounter a child with vomiting, headache and constipation, we are unable for the first day or two to decide whether we are dealing with a "bilious attack," a beginning of a recurrent vomiting or the first indication of a tubercular meningitis. This is mentioned merely to emphasize how easy it is to mistake the early symptoms for what the parents might take for a slight "bilious attack." I recall a case which I saw three years ago, in an infant under a year, who had some vomiting and constipation, but none of the signs of meningitis. It was thought to be a feeding case needing a rearrangement of the proteids, fats and carbohydrates. This was done without any results. About four days later the baby developed, if I remember correctly, a slight stiffness and rigidity of the neck, had a convulsion and died. Tubercular meningitis was found at autopsy.

MIGRAINE.

This is not uncommonly spoken of as a "bilious attack," and while not very frequent in childhood, occurs occasionally between five and twelve years of age. Here again we have the headache, vomiting, constipation and fever, differing in the latter respect from the migraine of an adult. This, again, may be akin to recurrent vomiting, for Rachford has noted in several cases the replacement of recurrent vomiting by attacks of migraine in adult life.

Beginning with a few prodromal symptoms such as burning and tingling of portions of the body, flashes of light before the eyes, dizziness and ringing in the ears, the attack is ushered in by an intense throbbing unilateral headache which increases in intensity, and followed in a few hours by vomiting, which usually marks the climax of the paroxysm. This is followed by a deep sleep, which is one of the most characteristic symptoms, the child waking up in six or eight hours free from pain. The temperature may

or may not be elevated, but during the paroxysm generally runs up from 1 to 4°, becoming subnormal following the sleep.

In a young child the pain in the head may be almost entirely absent, and frequent vomiting with nausea is the prominent symptom.

These attacks of migraine last from a few hours to two or three days, and occur at regular or irregular intervals. In some children it has been observed to recur weekly.

The urine is not unlike that of recurrent vomiting. It is highly colored, highly acid and of a high specific gravity, and contains an excess of xanthin bases. In some instances acetone and diacetic acid have been found.

The urea is diminished and ammonia increased. During the paroxysm there may be a slight amount of albumin.

An intense throbbing unilateral headache, increased by light or noise, associated with nausea, and followed by a deep sleep and an awakening free from pain, is not characteristic of any other type of headache.

RENAL VOMITING.

Renal vomiting due to hydronephrosis, pyelitis, or renal calculus may at times be considered, at the outset, nothing more than a bilious attack.

Again I would like to quote one of Dr. Still's cases to illustrate this. Walter F., six years old, was stated to have "bilious attacks" for the last three years. Every three or four weeks he had an attack of vomiting, usually lasting a few hours, but occasionally lasting several days; in a recent attack he had been sick ten days, not being able to keep down a drop of water; he was feverish during this time, constipated and had some pain in his abdomen. This pain was always on the left side, and on palpating the abdomen one found a rounded smooth tumor almost the size of a man's fist in the left lumbar region, over laid by bowel. He was admitted to the hospital and after a few days the tumor suddenly disappeared completely. The amount of urine passed on that day was about 4 to 5 oz. in excess of what he had passed on other days. The tumor did not reappear while he was in the hospital, so after remaining there a fortnight he was sent home. After a short time he reappeared with a history that another attack of vomiting had begun five days previously, he had had some pain in the left side of the abdomen, and the vomiting had been continuous. On palpation the tumor was now felt as previously, but not so large. He was readmitted and the tumor increased slowly in size, but the boy had no pain or vomiting and seemed well; eight days after admission the tumor completely disappeared again and as before it was noticed that he had been passing about this time a larger quantity of urine than usual. On operating, there was found a dilated pelvis with a valvular kink of the ureter at its entry into the pelvis.

OTITIS MEDIA.

Another remote possibility to keep in mind is an acute inflammation of the middle ear, especially in infants, who suddenly become fussy, vomit and run a temperature.

If one is not in the habit of using an ear speculum, and does not get evidences of pain and tenderness around the ear, his attention may become directed away by some of the reflex symptoms.

Although the vomiting is not characteristic of that in a "bilious attack," yet there have been times when, this symptom being to the front, and coincident with some indiscretion in feeding, the possibility of ear trouble was overlooked and the attack called a "bilious attack."

Case I. R. P., four years old. Has always been poorly fed since supplementary feeding was begun. For the past week he has been having a bronchitis. The day before I saw him he had eaten a great deal of chocolate candy. In the middle of that night he was found wandering around the house. He was put back to bed and then began to vomit frequently. His mother said he brought up a good deal of mucous and bile. She thought it was only a bilious attack due to the candy he had eaten. The next day the vomiting continued, not even small sips of water being retained. He was constipated. On examination he presented an apathetic condition, the face was flushed and the tongue brown and dry. There was a grunting respiration, a slight stiffness of the neck and lively patellar reflexes, no Kernig. The abdomen was negative and the chest showed only a few moist rales posteriorly. The temperature was 104° F., pulse 144, respiration 44. The tympanic membrane of the left ear was decidedly reddened; that of the right slightly so. The parents refused a paracentesis; local treatment was instituted. That night he had a very comfortable night and the next morning the temperature had dropped to 101.3° F., the vomiting had ceased and the child was decidedly better. The following day the temperature came to normal.

Case 2. This child, who was one and one half years old, was just recovering from scurvy. He was cutting his lateral incisors and has been having a slight cold for the past week. Lately has been much constipated, the movements consisting of small hard balls. Christmas Day he was allowed some chicken and blueberry pie for the first time. That night he became very fussy and began to vomit. He was very restless and kept rolling his head about and crying out sharply. The mother thought he had a "bilious attack" due to the chicken and pie.

He appeared very ill; face was flushed and the pupils dilated. There was a rapid grunting respiration, a very rapid pulse, and a temperature of 105° F. The examination of the chest was negative. The left drum membrane was fiery red. A paracentesis was done; also the removal of a large mass of adenoids. That afternoon the temperature dropped to 100.2 and the child became more playful. The following morning the temperature rose to 104.4 and the child appeared very ill again. The other ear was suspected, but on examination it proved to be normal. As his bowels had not moved in two days he was given a high enema, with the result of a very full and very foul movement, which contained mucous. The temperature now returned to normal.

DIGESTIVE DISTURBANCES.

These, the most common and of the least significance of what we call "bilious attacks," may be put under two headings:

1. Gastric indigestion.
2. Intestinal Toxemia.

GASTRIC INDIGESTION.

These children, after some indiscretion in eating, feel tired and out of sorts, and those old

enough complain of headache and stomach-ache. This is followed by sudden repeated vomiting. The tongue is coated, the breath offensive and the bowels generally constipated, although there may be a relaxed condition of the intestine. There is a slight temperature of 101° or 102° F.

Fred D., two and one-half years of age. Had always been healthy and strong until he was one and one-half years old. At this time the parents became less careful as to his feeding. He has been more or less constipated since birth. About three months ago he was given some grape-fruit just before his milk feeding. This was followed by an acute upset, and, according to his mother, his stomach would retain nothing for five days. He is a very nervous child, always has dark rings under his eyes, and sleeps poorly, awaking at the slightest sound and lying awake half of the night. He has nocturnal enuresis. Since his last attack, his breath has been foul. There has been a slight loss of weight, and lately he has been passing some mucous in his stools.

The morning of the day I saw him, he was given some peppermint creams by his father and then went for a long sleigh ride, the morning being very cold. On his way home he began to vomit copiously and became quite prostrated.

I found him very drowsy and very nauseated. The skin was cool, and the pulse rapid and weak. The temperature was 97.2° F., but within an hour it arose to 100. 1. The stool obtained by enema was well digested but foul and contained considerable mucous. The urine was very acid, the indican and urophain greatly increased. After the next forty-eight hours the vomiting ceased and the indican disappeared, the child having been put on buttermilk.

INTESTINAL TOXEMIA.

While components of dead bacteria furnish a certain amount of poisonous proteins, and living bacteria in the intestine excrete ferments or toxins, substances produced by bacteria from the culture media are possibly the most important source of intestinal intoxication, the virulence of the ptomaines formed depending not only upon the micro-organisms, but upon the character of the food material in which it is growing.

The products formed during the process of putrefaction are indol, skatol, phenol, cresol, leucin, tyrosin, ammonia and hydrogen sulphide; also volatile fatty acids, oxalic acid, uric acid and the xanthin bodies. The most important of these bodies is indol, varying amounts of which we find in the urine in the form of indican, whose etiological relationship to nervous symptoms has been demonstrated, although the absence of indican does not rule out intestinal intoxication, since severe forms have occurred in which indol was not an etiological factor.

Rachford [5] thinks that these severe albuminous fermentations are more common in a child than in the adult. He bases his view on the fact that the Hcl. formation of the stomach is not so well developed in the young child, and, therefore, not as capable of exercising the same control in preventing intestinal fermentation; also that the filtering function of the liver is not as well carried out as in the adult.

As an example of the severe nervous symptoms due to the absorption from the intestinal canal, I would like to quote the following case.

This occurred in a five-year-old Italian child who lived in a very ignorant family under very filthy conditions. The father, who was a market peddler, lost a child two years ago from meningitis. From what information I could obtain, the child was in the habit of eating some of the left-over slightly spoiled fruit. When I first saw him, so profound was the intoxication that it strongly suggested meningitis. He was semi-conscious, being aroused with difficulty. The temperature was 105° F., the respiration increased, as was the pulse, which was full and bounding. Nothing was found in the lungs. His face was flushed, pupils irregular, and responding slowly to light. There was slight rigidity to neck, increased patellar reflexes, marked Kernig's. There was no Babinski or ankle clonus. At times there were quick strong contractions of the muscles of the lower extremities. Rectal examination showed the lower bowel packed full of feces. Lumbar puncture was offered, but the father refused to let it be performed.

This child had been ill three days, the onset being ushered in by vomiting, headache, slight fever and some abdominal pain. The bowels had moved slightly every day. The first day his physician gave him a good cleaning out, with the result of a drop in the temperature and an improvement in all of the symptoms. As soon as the bowels became costive, the temperature went up again, so that at the time I saw him his temperature was 105. The movements now obtained from day to day were very foul, and contained a good deal of mucous. With a continued cleaning out, the nervous symptoms disappeared and he made a good recovery.

In conclusion, while the parent's tale of a "bilious attack" may mean the most innocent of digestive upsets, their diagnosis must be carefully sifted and a thorough physical and clinical examination made and the other possibilities excluded.

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THE ETIOLOGY OF COMMON COLDS.

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IN an editorial in the JOURNAL of May 26 [1] on the "Prevention of Common Colds," it is assumed that this term means an acute bacterial infection of the mucous membrane of the upper respiratory tract. With this assumption I am in sympathy, more perhaps because I think that in case of dispute it is the proper side to take, than because it is absolutely accurate. The term "cold" is a popular rather than a scientific term, and as such means different things to different men. As expressing a pathological condition it has long been abandoned by the medical profession. Its use is still forced upon the family practitioner by his patients, but as the word is no longer orthodox, he can twist its meaning to suit the occasion.

To many the word "cold," at least as far as it

[1] Vol. clxii, p. 718.

applies to the nose, is associated with a group of symptoms commonly called coryza. For instance, we have what is known as "rose cold," which is not a bacterial infection. The question is then one of a better definition of an ancient but still active word, which cannot be eliminated from the intercourse between physician and patient, even if it were desirable to do so.

A similar uncertainty of definition hangs over such words as "rhinitis" and "pharyngitis," which are often used to include not only true inflammation, but any disturbance of function or secretion or sensation which cannot be classified under some more definite pathological heading. With advance of knowledge a constantly increasing proportion of cases are found to be dependent upon some local lesion or definite infection or general condition which makes their classification and description more exact; there still remain, however, a large number of cases in which the etiology is obscure and the local appearances misleading. Among the acute disorders of the nasal chambers we may distinguish some as due to infection and others as arising from a local irritability and vaso-motor disturbance. A type of the first class would be a rhinitis where the infecting organism is known, and of the second the coryza induced in some persons by the pollen of certain plants or by sitting in a draft. In some cases both of these etiological factors may exist, and in many more it may be uncertain or a question of individual opinion whether an infection or some form of local or systemic irritation is the cause of the symptoms.

The more definite processes, such as diphtheria on the one hand and hay fever on the other, are no longer classified as simple acute rhinitis or "cold in the head." Among those that remain it is important to distinguish as far as possible whether we are dealing with an infection or with some systemic or local irritation.

Among the varieties of acute rhinitis or cold, there is one form which it seems to me is so common and constant in its symptoms that it should be classed as a distinct and definite disease. Briefly, the symptoms are as follows: The first suspicion on the part of the patient that he has such a cold starts from an irritation or sensation in some spot, often the nasopharynx, occasionally the larynx, nose or tonsil. During the next few hours this irritation extends to neighboring regions, and this continues perhaps for a few days, but the amount of its extension varies in different cases. It may involve the nose, the sinuses, the pharynx, the larynx, the trachea and the bronchi, rarely the stomach, but it may spare any of these parts. The local appearances are in most cases less marked than the severity of the symptoms would suggest. There is an increase in redness of the mucous membrane involved, and other signs of inflammation, generally of a mild type. In the nose the turbinates become engorged during the symptoms of coryza, and abundant watery secretion is seen. In the pharynx the mucous membrane becomes red, especially about the so-called follicles and the faucial pillars. In the larynx and the trachea there is a distinct reddening of the mucous membrane, especially in the latter. The vocal cords may or may not escape. But none of these local appearances are really characteristic; the diagnosis must largely be made from the patient's symptoms and history.

This common form of cold runs a more or less definite course. It is generally possible to trace its extension from one region of mucous membrane to another. Although the symptoms connected with it are dependent upon the region involved and the severity of the attack, these symptoms do not suddenly arise and suddenly disappear, as is often the case with vaso-motor rhinitis. It appears to spread between persons in close contact with each other, and with an incubation period of from two to four days. It occurs less frequently in summer than at other times of the year, and is rather more common in children than in adults, although persons vary in the frequency and severity of the attacks. The process is essentially an acute one, the period of extension seldom lasting many days, and all symptoms and appearances sometimes disappearing in a few hours or days. During this period there is seldom any rise in temperature, no formation of pus nor increase in the number of bacteria to be found. In some regions, however, notably the nasal and accessory cavities and the bronchi, there may be a purulent invasion following the acute stage, suggesting the result of local failure of resistance, due perhaps to a disturbance of function of the self-cleansing ciliated mucous membrane. This second or subacute stage is characterized by the formation of mucopurulent secretion containing different micro-organisms, it varies much in severity and length, and may lead the way to serious trouble. During the primary stage there is a varying amount of local and general discomfort depending upon the extent of the trouble and the idiosyncrasies of the patient. When a purulent stage follows, the temperature and the severity of the disease depend upon the locality and extent of the secondary complications and the invading organsim.

No specific micro-organism has been found to explain the cause of this most common form of acute cold, but this is equally true of other diseases whose nature is evidently contagious. As the community and even a majority of the medical profession insist on seeking some recent exposure to weather as the cause of each case as it arises, the sometimes obvious contagion is overlooked. The common belief is that the start is given to the process by some chilling of the skin, as a result of imprudence in exposure, or in dress, acting in some way through changes in the body temperature or through the nervous system; or that exposure frequently gives a chance to some pathogenic organism which is waiting for the opportunity. While this latter is perhaps sometimes true in such cases as an already existing bronchitis, I believe that a typical cold never starts in this way.

There is much evidence tending to show that these colds are often directly contagious. If we can prove that a definite pathological process is

often due to contagion, the same process is probably always due to contagion.

It is a matter of common knowledge that epidemics of simple colds may occur. Even more common is the observation that when they appear in a large family of children they go through the family or even a school. Families of children often remain in the country all summer entirely free, but soon after beginning school start a series of colds which spread to other members of the household. If, however, a cold should start in the middle of summer it may, in the same way, go through a family or several families. These cases do not begin all at once, as would be expected if they were due to the weather, but in sequence.

Evidence may be cited also that where no chance for contagion exists this usual form of cold does not arise from exposure. Nansen mentions that on his Polar expedition no one ever had a cold. In the more recent expedition to the Antarctic under Shackleton, Dr. Marshall reports that the only suggestion of colds in the head which occurred was on opening a bundle of blankets, when symptoms of acute rhinitis appeared in the hut, but soon subsided after exercise in the open air, — obviously a vasomotor and not an infectious rhinitis. I have notes of reports of other long voyages where, in spite of exposure, physical weakness and unhealthy surroundings, acute colds did not appear until after the vessel reached port. I have been told by the captain of a whaler that the people in Greenland never have colds except when it is brought by a ship.

My own experience tends to agree with those who have observed that colds have an incubation period of from two to four days, that they remain contagious for several days and that the acquired immunity is short. Also that the disease is carried especially by sneezing, coughing, embracing and speaking at close range, possibly by towels and other utensils, but only for a short time, and that much can be done to prevent its spread by acting along these lines. It spreads more frequently among children because they are in more frequent contact with each other than are adults. To prevent colds a little care given to avoiding close contact will accomplish much more than a great deal given to details of clothing and exposure to weather.

The susceptibility of different persons varies greatly. There would appear to be sometimes either a lack of general resistance to the infection or a local susceptible area. Perhaps the larger amount of lymphoid tissue in the pharynx of children increases their susceptibility. I have not been able to prove that there is any relation between a person's susceptibility to colds in the head and his general health and strength.

In addition to the above-described form of cold, there are other types which, although having some symptoms in common, differ enough to make it probable that, although infectious, they are due to some other organism. These generally run a more prolonged course. They may be accompanied from the start by a purulent secretion and sometimes by rise of temperature. They are, as a rule, less contagious than the more common form. Epidemics in which acute rhinitis is a prominent symptom are various and not uncommon. It accompanies measles and other constitutional diseases. It may or may not appear in infection by the bacillus of influenza. The micrococcus catarrhalis apparently sometimes causes an epidemic of rhinitis and pharyngitis. In other cases of acute or subacute inflammation the staphylococci, streptococcus, pneumococcus or a diplococcus are probably the primary cause of the disturbance, certainly they are there in large numbers. Some of these organisms are common in healthy throats, and consequently acute attacks caused by them would have to be explained by a lowered resistance and would not appear as an epidemic. But in the more common form of cold the theoretical micro-organism which starts the process and carries the contagion has not yet been proved, and is probably none of these. If we may classify it as contagious we may assume the micro-organism.

The criticism that the personal experience of many, and the common belief of centuries, proves that a common cold is generally the result of exposure may be answered in different ways. Within a comparatively short time the accepted etiology of several diseases has been radically changed, and generally in the direction of assigning a definite cause to a definite disease. In one sense a " cold " is not a definite disease inasmuch as the term may be used to include various symptoms of vasomotor origin. But this is not the kind that is commonly meant when the word " cold " is used. Symptoms of vasomotor origin come on at the time of exposure, and their duration is dependent upon external conditions. They do not run a definite course extending from one region of mucous membrane to another, and they seldom lead to purulent secondary complications.

When we recognize more definitely the common type of infectious cold, and the differences between it and coryza due to vasomotor disturbance, we may classify the latter with hay fever and its kindred, and announce that a " real cold " is a contagious disease. I think that the community would gain much by this assumption. The objection to drafts and wet and cold in moderation which induces humanity to shut itself into air-tight inclosures is often due to an unwarrantable fear of " catching " just those diseases which are, in fact, communicated by sneezing, coughing and poor ventilation.

RED CROSS MINE WORK. — The American National Red Cross plans to introduce in the bituminous mining districts the first aid to the injured system which has been in use for several years in Pennsylvania. The Pullman Car Company has donated a car in which visits will be made to the mines throughout the country, and instruction will be given to employers and employees in the most approved first-aid methods. The railroads over which the car will travel have, with the sanction of the Interstate Commerce Commission, agreed to furnish free transportation, and it is expected that the work will be begun during the latter part of the month under the supervision of Dr. M. J. Shields. — *Med. Record.*

Reports of Societies.

THE AMERICAN NEUROLOGICAL ASSOCIATION.

Thirty-sixth Annual Meeting.

May 2, 3 and 4, 1910.

Monday Session.

(Continued from No. 1, p. 26.)

DISCUSSION.

Dr. J. K. Mitchell, of Philadelphia: How does Dr. Thomas justify the diagnosis of locomotor ataxia with knee-jerks still present? In the last year I have seen one case of tabes in which gastro-enterostomy was done and two cases in which operation was done for gastric crises and two in which gallstones were hunted for. Presumably in none of these cases did the surgeons take the pains to examine either the knee-jerks or the eye reflexes.

Dr. Philip Coombs Knapp, Boston: I must confess that theoretically I am somewhat skeptical about the results of operating upon the posterior roots for the gastric crises of tabes, because of the physiological fact that the nerve supply of the stomach is dependent very much more upon the vagus than upon the sympathetic. The success of Dr. Thomas's case, however, has led me to have another case which is very similar to his operated upon by Dr. Blake a day or two ago. In answer to the objection Dr. Mitchell raised to the diagnosis in Dr. Thomas's patient, I would say that in the last few years, as well as previously, I have seen a good many cases with pretty clear tabetic symptoms but with retained ankle-jerk.

Dr. Harvey Cushing, Baltimore: I am far from being in accord with Dr. Mitchell's statement that surgeons are a bad lot, especially in Baltimore. However, I would like to make an arrangement with Dr. Mitchell whereby I would turn over for his collection the list of cases of the kind he mentions of which I have cognizance, in return for the list of cases of brain tumor long treated for gastric headaches. Just a day or two ago a patient, a woman who had very persistent crises, with great pain, was transferred from the medical to the surgical side for operation, but when I saw her I decided to delay operation as she was absolutely free from pain. I do not think any surgical cases of disease reported after they have been done a month really convey a fair general impression as to what the author's results are.

Dr. Joseph Collins, New York: In the discussion the Association is liable to lose track of what they started out for, that is, the feasibility and advisability of this operation. I am very much in favor of the operation in cases that are intractable. Relative to Dr. Mitchell's question in reference to knee-jerks being present in tabes, I would say that in ten out of twenty cases of tabes the knee and ankle jerks are present. If this statement is not accepted by the Association, I will have the members define what they mean by tabes.

Dr. F. X. Dercum, Philadelphia: A man seen by me many years ago, long before we had resort to the examination of the cerebrospinal fluid and the Wassermann test, had frightful suffering, apparently crises of tabes, though the knee-jerks were retained. There was no marked disturbance of sensation anywhere, but there were markedly contracted pupils. The patient was a user of morphia, but on being persuaded to do without hypodermics forty-eight hours he had a good pupil which responded to light. In other respects the symptoms varied somewhat. There were symptoms of a gastric nature. I had Dr. Keen examine him and he excised a small gastric ulcer and the man recovered. We all meet with such distressing cases, and I believe that this operation promises something in an otherwise very serious affection.

Dr. Thomas: I am very sorry that Dr. Mitchell should have been disturbed by the patient having knee-jerks. I agree fully with Dr. Collins in saying we frequently make the diagnosis of tabes in the presence of knee-jerks and ankle-jerks. The reflex of the pupils was absent to light, although retained at first, and the man had marked hypertonicity which I thought was fully as important to tabes as ataxia, and I felt justified in calling it one of tabes. I made the Noguchi test and it was positive for syphilis. The count of the cerebrospinal fluid was not made. At operation there was a marked degeneration of the pia.

OCULOMOTOR PALSIES DUE TO VASCULAR CONSTRICTION IN CASES OF BRAIN TUMOR.

Dr. Harvey Cushing, of Baltimore: Oculomotor and particularly abducens palsies, more or less fluctuating in degree, often occur in cases of tumor and are included among false localizing signs. Various explanations have been offered for their occurrence. Contrary to the usual anatomical description, these nerves underlie the lateral branches of the basilar artery, which have a rubber band effect, and so constrict the nerves as to block their transmission of impulses. The condition is most apt to accompany tumors of the posterior fossa.

Tuesday Morning Session.

A NEW TYPE OF PRESSURE MYELITIS.

Dr. Graeme M. Hammond, New York: The description of this disease is based upon the study of seven cases which have come under the author's observation. The pathological conditions seem to consist of the development of an enormous amount of new bone tissue, which is spread over a number of vertebræ and adjacent rib ends, obliterating all articulations and giving the affected vertebræ and ribs the appearance of being one single piece of bone. The development of new bone also occurs within the vertebral canal and gives rise to compression of the cord, causing both sensory and motor symptoms, but eventually leading to the most intense rigidity of the entire voluntary muscular system below the level of the lesion. There was the gradual development of the "Bible back" or forward curvature of the vertebral column seen in spondylose rhizomelique, but in none of the cases was there any evidence of rheumatism.

DISCUSSION.

Dr. B. Sachs, New York: I have seen a number of cases that have offered some difficulties in diagnosis, particularly in trying to make the differential diagnosis between such conditions as described and a simple myelitis. Within the last few months I have had at Mt. Sinai Hospital, New York, two cases of absolute spinal rigidity. An x-ray picture was taken in one case and showed a condition very much like the one presented by Dr. Hammond. In this case, a man of about thirty-five, the rigidity of the spinal column was absolute, from the third or fourth cervical vertebra to the very end of the spine. In fact, in this case there was no movement possible of the body except slight movement of the head forward and a slight lateral movement of both sides. There were extreme contractures and atrophies. The man as he now lies in bed has his knees so completely contracted that

you can hardly put a hand between the posterior surface of the thigh and the posterior surface of the calf, the legs are locked together and there is absolutely no motion of any part of the leg, except of the toes. The atrophy is more extreme than I have ever seen it in any case of ordinary spinal origin. There is hardly a bit of tissue left; when you press the skin it seems as if you had the bone in the hand. So far as the diagnosis is concerned, I am not ready to suppose this represents an entirely new type of disease, although I do not want to deprive Dr. Hammond of the honor if he could prove it. I think these cases are closely related to spondylose rhizomelique type. I hope that in all these cases of mysterious spinal disease an x-ray picture will be taken, for nothing is more serviceable in case of mysterious spinal disease in reaching a diagnosis when medical signs are wanting.

DR. D. J. MCCARTHY, of Philadelphia: My feeling is that we are dealing, in these chronic cases of rigidity of the spine, with not only a factor involving the bone and cartilages, but an involvement of the spinal dura on its external surface, and this should be examined very carefully microscopically. It is more rational to suppose that here you have an extensive process it would more likely be due to inflammatory changes in the dura, a condition localized to one group of joints. The bone changes are secondary and are not the primary disease.

DR. WILLIAM G. SPILLER, Philadelphia: I have not quite understood from Dr. Hammond the distinction between the type he has described and that which Von Bechterew describes. Von Bechterew makes a distinction between his forms and those of Marie. There are in this connection two other kinds of disease. They are not likely to cause confusion in diagnosis, but they are interesting to mention. Eight or ten years ago Dr. Mills and myself reported a case of a man who was paralyzed and had rigidity of the spinal column. We found that the dura was firmly adherent to the bodies of the vertebræ throughout the whole course of the spinal canal, and in removing the cord it had to be cut away inch by inch. This could be recognized by the x-rays. In the past winter I have had an interesting case in a man who developed paralysis and exaggerated reflexes of his lower limbs. The disease gradually progressed upwards, involving his left arm and then the other arm, and the course of the disease was only a few weeks. I found a growth on the outside of the dura which under the microscope shows probably endothelioma. This is the first case I have seen of real endothelioma developing primarily between the dura and the bodies of the veterbræ.

DR. HAMMOND, closing: In regard to the case Dr. Sachs spoke of, I think there is no doubt that it is a case of spondylose rhizomelique; he has the muscle changes which go with such conditions. In none of my cases was there any anchylosis of the hip-joints, or atrophy. The rigidity was a muscular spasticity just as we see in a myelitis of the crossed pyramidal tract with the attendant symptoms of clonus, Babinski reflex and exaggerated reflexes. This persisted until rigidity had become great. All these cases die; not so the cases of spondylose rhizomelique; many of them live on for years.

I agree with Dr. McCarthy that the bone changes are secondary. In all the cases the first symptom elicited was the curvature and rigidity of the spine coming on three or four years before the first spinal symptom was apparent.

In regard to the changes of the dura spoken of by Dr. Spiller, in the only case I have had a chance to examine the dura it showed no adhesions. So I doubt whether adhesions of the dura have anything to do with the symptomatology of this condition. It simply seemed to me that on account of the increase in the bony tissue the spinal cord is gradually compressed and destroyed and these patients die. I do not think it tallies at all with any of the cases described by Von Bechterew. It may not be a new disease, but it is new to me and I have no doubt that, when attention is called to it, we will find a good many cases of similar type, but it is not that of spondylose rhizomelique.

CYST (POSSIBLY TRAUMATIC) OF THE SPINAL MENINGES REMOVED BY OPERATION, WITH RECOVERY OF THE PATIENT. REMARKS ON THE LOCATION OF THE CENTERS FOR TESTICULAR SENSIBILITY.

DR. CHARLES S. POTTS, of Philadelphia: A farmer, aged forty-two years, received a blow upon the back eighteen years before coming under observation. No serious symptoms were caused at that time. Two years before admission to the German Hospital (12–8–09) he began to have attacks of severe shooting pains in the left hypochondrium. During the attacks the lumbar muscles of the left side were thrown into spasm. At this time a girdle pain extending through the umbilicus was also present. A few months before admission first noticed difficulty in walking. Examination showed a very ataxic gait. Muscular power of the legs good, knee-joints, plus; ankle joints, plus. Babinski on the right side. The cremaster reflex was present on the left side but absent on the right. Abdominal reflex absent. Station poor, heel to knee test poorly performed; unable to recognize the direction of passive movements of the toes. An area of possible hyperesthesia and hypalgesia extending about four inches below the right groin. Both testicles completely insensitive. Sphincters normal. The laminæ of the sixth, seventh, eighth, ninth and tenth thoracic vertebræ were removed. A soft growth, pronounced by the pathologist to be a traumatic cyst, was found extending subdurally from the lower angle of the wound (first lumbar segment) upwards for about three inches. Complete disappearance of pain. Testicular sensibility returned and there was nearly complete disappearance of all the other symptoms.

DR. SANGER BROWN, of Chicago: I was struck, in reading over the abstract of Dr. Potts' paper, with the fact that the author spoke of centers for sensibility in the spinal cord. Now if one speaks of a center of sensibility I think he usually has in mind a group of bodies of neurons which preside over a particular function. This is well understood to apply properly to motor neurons. We have pretty well-defined and pretty well-demonstrated centers for motion, but we may safely say that in this sense there are no sensory nerve centers in the sensory nervous system. I think that is, strictly speaking, incorrect, though not uncommon, to speak of sensory centers anywhere in the central nervous system.

DR. POTTS, closing: I admit that the use of the word "centers" was not strictly correct. I afterward changed that to "spinal centers," which would be more nearly correct. Still there are in common acceptation sensory centers; they are made up of sensory neurons. In this case they would probably be in the first lumbar and lower dorsal segments of the cord. The nerves derive their supply from these particular areas; therefore, they are in a sense centers.

TUMORS AND CYSTS OF THE SPINAL CORD AND ITS ENVELOPES.

DR. CHARLES K. MILLS, Philadelphia: I will speak of the revival of interest in the question of spinal tumors and cysts, especially with regard to operative

procedure. Special attention has been attracted to the subject recently by contributions of Horsley, Spiller, Oppenheim, Krause, Bliss and others, who have particularly discussed the subject of chronic circumscribed meningitis in its relation to cystic formations and their surgical treatment. I will next present the histories of three cases of intraspinal disease. The first was one of tumor of the lower cervical region; the second was a cyst of the thoracic region similar to those which have been described under the designation of circumscribed serous meningitis; the third was a sarcoma involving the cauda equina and lumbosacral roots, and, to some extent, the cord. In addition to these cases several cases of intrapelvic tumor are reported with the view of emphasizing the differential diagnosis between spinal and plevic growths. The chief points of interest in the case of subdural cervical endothelioma were the exact localizing phenomena present—early pain at the upper pole of the growth as indicated by its distribution; the moderate but distinct atrophy and loss of power in the hands and fingers; compression of the pyramidal tracts as shown by paresis and exaggerated reflexes in the lower extremity, and impairment of the reflexes in the upper extremity on the side of the tumor. Anesthesia in the case was very slight and chiefly confined to tactile loss in the postaxial portion of the hand and forearm. After the operation contraction of the pupil and ptosis or pseudo-ptosis were present, these apparently being caused by injury or section of communicating branches to the sympathetic. The case of thoracic "cyst" was distinctly in its appearance like those which have been described as instances of circumscribed serous meningitus. It was localized by hypalgesia, the upper limit of which was two or three inches above the umbilicus. Severe and persisting pain both in the back and in one of the lower extremities, at first without and later with, complete paralysis in both extremities, exaggerated reflexes, including the Babinski response, with bladder and rectal involvement, were the most marked manifestations. After evacuation of the cyst, the pain was for a time relieved, the patient recovered the use of his limbs so that at first coarse movements, and afterwards the movements of the toes, could be performed. He suffered, however, from serious cystitis and delirium, probably dependent upon toxemia. He made what might be termed a partial recovery, but relapsed. In the third case, that of sarcoma of the cauda equina and lumbosacral roots, the early manifestations were pain of an extremely severe character, which affected the back and the extremities, first on one side and then on the other. In this case the anesthesia which developed indicated involvement of the posterior nerve roots, at first of the conus and later of roots higher up, as high as the second lumbar. They were distinctly root areas, not segmental or of the extravertebral neural type. The patient eventually was completely paralyzed, with marked atrophy, paralysis of the sphincters, and the whole train of phenomena showing destructive implication of the nerve roots originating from the lumbosacral spinal cord. The cord itself was also apparently involved by pressure or extensions of the lesion. The differentiation between tumors and cysts, because of the vacillation of symptoms in the latter, is possible only in rare cases. Surgical treatment is advised in all cases like those recorded in the paper: Sometimes for radical treatment, that is, removal of the growths; sometimes for relief, as by emptying the cysts; and sometimes simply for what might be termed "spinal decompression." Effects comparable to those of compression by cranial operations are sometimes brought about by operations upon the spinal column. Instead of optic neuritis, headache, nausea and vomiting, being relieved as in cerebral decompression, the good results are seen in the relief of pains, hyperesthesia, spasticity, etc. Of course spinal decompression must be separated from cutting posterior roots, although both might be of service in the same case.

DISCUSSION.

Dr. William G. Spiller, Philadelphia: The case of circumscribed serous spinal meningitis, reported by Dr. Martin, Dr. Musser and myself, was the first of its kind reported. The patient is now in perfect health except that she occasionally has a little pain in the back, possibly from catching of some fibers. Dr. Weisenburg believes he can distinguish between a circumscribed serous meningitis and a tumor, and presented a case to prove his contention before the last meeting of the Philadelphia Neurological Society. There is no possibility of diagnosing a circumscribed serous meningitis from a tumor. As Oppenheim has pointed out, there will be variation with the fluctuation of the fluid in the dural canal. We cannot have symptoms which will enable us to decide as to whether the condition is one of circumscribed spinal meningitis or tumor.

Dr. George Jacoby, New York: I present two specimens. One was taken from a man who suffered with symptoms of gradually increasing pressure paralysis and paresis and disturbance of sensation for a period of ten or twelve years. He was able to walk to the hospital, but had marked weakness of both lower extremities. There was sufficient sensory disturbance to enable us to make a diagnosis of probable intraspinal tumor at the sixth dorsal vertebra. At operation we found at this sixty dorsal segment an enchondroma growing from the body of the veterbra into the spinal canal, compressing the cord so that the cord was attenuated to simply a filament. The second case was operated on by Willy Meyer and a glioma removed from the cord substance. In this case the entire history of disease was only three months. The first symptoms were weakness of the lower extremities, which progressed so that there was spasticity and paraplegia and all the symptoms of complete pressure paralysis of the cord. The tumor in this case was the size of a large cherrystone. You can easily understand how the difference in location will produce this difference in symptomatology.

Dr. George L. Walton, of Boston: With regard to the level of anesthesia as determining the position of the spinal tumor, one very practical point is to be borne in mind, namely, that the accumulation of fluids, whether in the cord itself or in the membranes, is likely to produce symptoms which may be erroneously credited to the tumor itself. It is true that in the majority of cases the point selected for operation should err in the direction of being set too high rather than too low. But if we always follow this plan, we may be misled, as in a case in which I recently had occasion to advise operation. In this case severe pain in the lower back and extending down the thighs was rapidly replaced by paraplegia, with numbness extending nearly to the umbilicus. Finding it hard to credit the tumor itself with such rapid growth, I was guided rather by the initial pain, and advised removing the tenth and eleventh dorsal laminæ. Operation at this point disclosed the upper limit of the tumor, above which the cord was apparently normal. If the cord had been exposed at the level indicated by the level of anesthesia, its normal appearance would have led to the erroneous conclusion that no tumor existed. I am inclined to credit accumulation of fluid with the rapid extension of symptoms.

DR. JOHN JENKS THOMAS, of Boston: I agree with Dr. Spiller in reference to diagnosing circumscribed serous meningitis from tumor. In regard to the point of differential diagnosis between growths of the spinal cord, whether from the pia or dura, I confess that I have less confidence in our ability to differentiate them exactly. In the case that Dr. Walton referred to I was rather opposed to operation because of the intense character of the symptoms, coming on suddenly, which seemed to him to point to total destruction. Within two or three days the man became completely paralyzed in both sensation and motion.

DR. HUGH T. PATRICK, Chicago: The upward movement of the umbilicus when the patient, lying with his arms folded across his chest, raised his head from the pillow, known as Beevor's sign, is of service in diagnosis in spinal cord tumors. The recti muscles are not paralyzed but the muscles below are paralyzed and the umbilicus makes an excursion of a half inch or even more.

DR. ERNEST JONES, Toronto, Canada: I was Dr. Beevor's assistant for a couple of years and I would add two points to what has been said of Beevor's sign. In some cases you will get it obliquely, not only drawn upwards, as one of the muscles is paralyzed below, but sometimes obliquely to the right or left, which gives a clue to the side of the tumor. Further, in cases of congenital dystrophy with paralysis, the umbilicus is drawn downwards.

DR. M. A. BLISS, of St. Louis: I have had quite a distinct case of circumscribed serous meningitis. A laminectomy was done, then a second laminectomy was done and an endothelioma was found.

DR. C. K. MILLS, of Philadelphia: I am not altogether satisfied with the term "circumscribed serous meningitis" or with the explanation which is involved in the use of this term. In the case which I reported I think it quite possible that there was more than was apparent. Horsley has written on chronic spinal meningitis with cysts, etc., and the probabilities are that there is a universal serous meningitis and possibly chronic meningitis, with perhaps two or three pockets, where cystic foci appear, as in the present case. The differentiation between intrapelvic and spinal tumors can be usually made. We simply have not been careful enough. With the exception of English workers, notably Head, and the earlier works of Dr. Weir Mitchell, and he did many of the things which were pointed out later by Head and his collaborators as early as 1874, the application to diagnosis has not been made.

(To be continued.)

Book Reviews.

Pocket Therapeutics and Dose Book. By MORSE STEWART, JR., B.A., M.D. W. B. Saunders Company. 1910.

This small book contains many facts in concise form. It has been carefully revised and remains a useful source of information on many matters relating to drugs and therapeutics.

New and Non-Official Remedies, 1910. Containing Descriptions of the Articles which have been Accepted by the Council on Pharmacy and Chemistry of the American Medical Association prior to Jan. 1, 1910. Chicago: Press of the American Medical Association. 1910.

This volume is the first of a projected series to be issued annually and to contain a description of the new medicinal substances examined each year by the Council and found to comply with its rules. Acceptance of such substances does not necessarily imply their recommendation. The book should prove a serviceable guide for the practitioner and a useful adjunct to the national Pharmacopeia.

Among School Gardens. By M. LOUISE GREENE, M.Pd., Ph.D. (Yale). New York: Charities Publication Committee. 1910.

The educational possibilities of gardens have been more or less well recognized, perhaps, since the days of Eden. It is only within the past half century, however, that the garden as a means of physical, mental and moral training has become a regular adjunct of schools for children. The present well-prepared volume, representing the results of work done by the author on the Russell Sage Foundation, describes, with admirable concrete illustrations and directions, the nature and purpose of school-gardens and the technic of their establishment and maintenance. The book should prove a useful manual, not only to school-gardeners, but to all amateurs in "agriculture, horticulture and the conduct of rural affairs."

The International Medical Annual. A Year-Book of Treatment and Practitioner's Index. By Various Contributors. Twenty-eighth year. New York: E. B. Treat & Co. 1910.

Presenting as it does a review of the medical literature of the world for the year 1909, this volume consists of a series of valuable articles on comprehensive topics, mostly by English authors. Especially noteworthy and timely are the chapters on seawater injections, on hormones and on bacterial vaccines. There are many admirable plates and other illustrations, and an appendix on sanitary science.

A Textbook of the Practice of Medicine. By JAMES M. ANDERS, M.D., Ph.D., LL.D., Professor of Medicine and Clinical Medicine at the Medico-Chirurgical College, Philadelphia. Ninth edition, thoroughly revised. W. B. Saunders Company. 1909.

The ninth edition of this well-known volume on the practice of medicine has been amplified somewhat to meet the demands of changing and increasing knowledge. The section on the nervous system, under the general direction of Dr. C. S. Potts, has been very considerably rewritten. In addition to this, certain serum tests and many minor points in the diagnosis of disease have been incorporated. The general appearance and size of the book is essentially as heretofore and it will, no doubt, continue to fill a place of usefulness as a general and necessarily brief textbook of medicine.

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MEETING OF THE NATIONAL EDUCATIONAL ASSOCIATION.

THE Meeting of the National Educational Association which was held in Boston last week, although having only an indirect relation to medicine, is still important from a medical standpoint as indicating certain definite tendencies of recent investigation.

It may, with justice, be said that the main effort of research in the past few years has been toward the prevention of disease in a large way. We hear much talk of preventive medicine as contrasted with the somewhat futile attempts toward the treatment of individual conditions. This well-marked tendency has unquestionably brought the medical profession into close relations with various other and apparently unrelated departments of investigation and nowhere could this be more strikingly shown than in some of the papers presented at the large meeting to which we have referred.

In the child study department the joint meeting was held with the elementary departments at which the main subject for consideratian was the "special child." Not many years ago the "special" child would have had small consideration at such a gathering but such has been the progress in practical psychology that the type of mental development offered by the unusual child provides a source of most interesting and profitable discussion. Dr. Grossmann of Plainfield, N. J., drew attention to the development of so-called nervous symptoms in childhood, pointing out the very great importance of recognizing the character of such symptoms and of directing the education of the child accordingly. He even went so far as to say that " no man or woman should be considered fit to marry who cannot give evidence of training in parental functions." Whether or not this Eutopian state will ever be reached it is not our present purpose to discuss but the fact is certainly being borne in upon physicians as never before that many of the nervous ills of later life are directly traceable to a misinterpretation of certain signs and conditions in childhood. What is called the exceptional child is not infrequently merely the result of defective methods of training and it is not to be questioned that the prophylaxis of certain neuroses in the future will lie largely in the recognition of their development in the child. That these matters, which are becoming increasingly apparent to physicians, should have a free discussion at a general educational meeting is a matter for congratulation and undoubtedly indicates a more comprehensive grasp in the future of the entire intricate subject.

Dr. Goodhart spoke of the so-called nervous child and bore out in great measure what Dr. Grossmann had said. He maintained that the atypical class has by no means received the attention which its importance to society warrants. Such children are a valuable intellectual asset but manifestly they cannot be classified with average children and demand individual instruction and close personal study. All this is a certain reaction against the too popular theories of late so much in vogue, that the regeneration of the world must consist in the elimination of those persons commonly called the unfit. The subject must be looked at from a broad standpoint and both what the world gains and what it loses by the existence of such unusual persons must be most carefully considered before any far-reaching theories are promulgated. In any event the present tendency to regard the unusual or atypical child as worthy of profound study is a step in advance which should be most widely recognized and encouraged.

Matters relating to school hygiene also brought certain meetings of the Associatian in close relation with medical progress. Dr. R. C. Cabot read a highly suggestive paper on " The Deeper Significance of the School Hygiene Movement " in which with his usual directness he pointed out certain definite defects in our present methods. He deprecated permitting hygiene to become a master rather than a servant and also the somewhat common tendency to be " acutely conscious of one's physical health." An excellent bit of philosophic medicine was condensed into the following statement " One should not be thinking of his body or of his soul. He should be thinking of his job and of his God." Dr. G. Stanley Hall

of Clark University spoke on "The Psychological Aspect of Physical Education" and pointed the way to a proper conception of the significance of athletics. There were many other papers of similar interest to physicians. Although medicine is not directly represented in the numerous sections of the society it is apparent that such educational bodies can no longer afford to ignore its contributions to the great problem of secondary education.

PUBLIC ENLIGHTENMENT ON MEDICAL SUBJECTS.

In *Harper's Magazine* for July, 1910, is an article by a well-known surgeon of Philadelphia entitled "The New Surgery." Briefly, yet clearly and without technicalities, he outlines the newer operations and the reasons for their performance. Such articles as this supply the same information although to a different audience, as do the public lectures such, for example, as have been given on Saturday evenings and Sunday afternoons at the Harvard Medical School and elsewhere. As a result of these, and of the reports concerning milk inspections, pure food legislation, the fight against tuberculosis, and other matters of public health, the people are gathering, first and last, a considerable store of hygienic and medical knowledge. Mysticism in medicine is fast losing ground; the people want to be "shown."

To hold the confidence of the public, medical men must supply accurate information as it is demanded. While it remains a very open question as to how much the laity should be instructed in matters which at best they can only partially understand, there is a growing feeling that they can be made to appreciate essentials and that their better understanding of medical situations will benefit both patient and physician.

As people acquire more and better knowledge of general medical facts, they will try the "family remedies" less rather than more. Many a case of appendicitis will be saved a long period of drainage when the mothers cease to give castor oil before calling a doctor. In hospitals operations can be better performed, and better nursing obtained than in the home, yet the fear of the hospital, due to the idea that people are taken there, only to die, is still an obstruction, though a fading one to the best practise. Consent to operation or other therapeutic measure can often be obtained quickest by a simple statement of the nature of the disease and the purpose of interference.

EXTERMINATION OF MOSQUITOES ON STATEN ISLAND

The warfare which Dr. Doty, health officer of the port of New York, has been waging against the mosquito on Staten Island for the past ten years has at last been crowned with almost complete success. At the time when he set about this undertaking it was common knowledge that nowhere along the coast was the mosquito situation worse than there. After a long series of experiments he was able to prove that the striped-legged variety, which comprised 90% of the whole number of mosquitoes, is a salt-water insect and bred only in the marshes along the shore, and that the brown-legged, or malaria-producing variety is bred only in inland waters, and cannot live in salt water. The problem then was to make these marshes uninhabitable by the pests, and with that object in view the systematic drainage of the marshes was undertaken. Dr. Doty now reports that these marshes have finally been turned into hard ground, with the ditches, about ten inches wide and two feet deep, in perfect working order, and the result has been the practical extermination of the salt-water mosquito. Moreover, he has been informed by a number of professors of the agricultural department of Cornell University, whom he asked to make an inspection of the reclaimed marshes, with a view to ascertaining their agricultural possibilities, that within a short period they will make fine farm lands, which could be made to yield several crops a year. In the meanwhile, systematic efforts have also been made to exterminate the brown-legged variety, and Dr. Doty hopes soon to see this accomplished also. As a result of this work, malarial fever, which was formerly very prevalent on the island, has been gradually diminishing, and at present is a comparatively rare affection.

MEDICAL NOTES.

PLAGUE IN HAWAII. — On July 6, 1910 occurred the first death from bubonic plague in three years. There have been several cases of plague during the past few months, but only one case resulted fatally.

A CENTENARIAN. — Ignatius Neggersmith, the first and oldest jeweler in the Borough of the Bronx, died on July 6, in his one hundred and second year, having celebrated his one hundred and first birthday in March last. He was born in Westphalia, Germany, and came to this country sixty-four years ago. He is survived by two sons and two daughters, and the eldest son

is seventy years old. He leaves also thirty-seven grandchildren, twenty-seven great-grand-children and four great-great-grandchildren.

A New Cause of Accidents. — The recent accident to Baroness Delaroche while driving an aëroplane at Rheims, points to another and rapidly increasing cause of injury or death. While 150 feet above ground, Baroness Delaroche lost her presence of mind when another machine whizzed over her, and, cutting the ignition wire to her motor, she caused her aëroplane to lose momentum and plunge to the ground. Laws are needed, and will doubtless soon be passed, prohibiting such interference between flying-machines.

The Importance of Malaria. — Among the problems which the South must settle, not the least is that due to malaria. The number of deaths from this disease in 1900 was 14,909, its annual cost to the nation from eighty to a hundred million dollars. In certain localities it causes one quarter of the deaths. The prevalence and economic significance of the infection was described by Dr. Searle Harris of Mobile, Ala., at the sixty-first annual meeting of the American Medical Association. He believes that malaria can be eradicated in one year in any community if the increase of the infection-bearing mosquitoes is limited, and if every person having the disease will take enough quinine.

Changes in the Personnel of the Medical Faculty at the University of Pennsylvania. — The trustees of the University of Pennsylvania have announced recently certain changes in the personnel of the teaching staff to go into effect at the beginning of the next academic session, Sept. 1, 1910.

To fill the Chair of Theory and Practice of Medicine made vacant by the resignation of Dr. James Tyson, Dr. David L. Edsall has been transferred from the Chair of Pharmacology and Therapeutics and the vacancy in the latter will be filled by the appointment of Dr. A. N. Richards, now Professor of Pharmacology in the Medical School of the Northwestern University.

One hundred thousand dollars has been received for the endowment of a Chair of Physiological Chemistry and Dr. Alonzo Englebert Taylor of the University of California will be its first occupant.

Dr. Richard M. Pearce of the University and Bellevue Hospital Medical College of New York, has been appointed Professor of Pathology. Dr. Pearce will also direct the work of the Department of Research Medicine recently established by an endowment of $200,000.

Dr. Allen J. Smith, the present Dean of the Medical School will be the occupant of the new Chair of Comparative Pathology and be at the head of the newly instituted courses in Tropical Medicine.

Dr. Paul Lewis, who will have charge of the laboratory of the Phipps Institute for the Study, Prevention and Treatment of Tuberculosis, now an integral part of the University, has been elected Assistant Professor of Pathology.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, July 13, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 17, typhoid fever 7, measles 84, smallpox 0, tuberculosis 93.

The death-rate of the reported deaths for the week ending July 13, 1910, was 20.20.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, July 9, 1910, was 220, against 180 the corresponding week of last year, showing an increase of 40 deaths and making the death-rate for the week 18.21. Of this number 115 were males and 105 were females; 215 were white and 5 colored; 143 were born in the United States, 72 in foreign countries and 5 unknown; 39 were of American parentage, 158 of foreign parentage and 23 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 45 cases and 4 death; scarlatina, 16 cases and 2 deaths; typhoid fever, 5 cases and 2 deaths; measles, 98 cases and 2 deaths; tuberculosis, 65 cases and 20 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 23, whooping cough 1, heart disease 19, bronchitis 3. There were 17 deaths from violent causes. The number of children who died under one year was 47; the number under five years, 71. The number of persons who died over sixty years of age was 41. The deaths in public institutions were 99.

Cerebrospinal meningitis, 1 case and 2 deaths.

Of the above infectious diseases the following were non-residents: Consumption, 1 case. Cerebrospinal meningitis, 1 case and 1 death.

Deducting deaths of non-residents, the total is 193 and the death-rate is then 15.98.

WORK OF THE FLOATING HOSPITAL.— The exceptionally hot weather of the past week has been partially mitigated for those admitted to the Floating Hospital. On Sunday, July 10th, the hottest day of the year up to that date, 183 mothers and children were on board. The following day, when the thermometer reached a still higher point, 234 were accommodated on the boat. New permanent patients are continually being added to those under treatment.

THE WALCOTT FELLOWSHIP.— It is announced that Dr. F. C. Shattuck, Jackson Professor of Clinical Medicine at the Harvard Medical School has offered a fellowship to the University to be called the Henry P. Walcott Fellowship in Clinical Medicine and that this offer has been accepted by the President and Fellows. Dr. Shattuck's offer was made in the following words: "It is my desire to testify to my grateful appreciation of what medicine has done for my family and for me, to my love for the profession, to my hope for its future, to my admiration for a dear friend who has greatly adorned it. I therefore wish to bind myself and my estate in the sum of twenty-five thousand dollars, when and as paid to become part of the general funds of the University and to receive its share of the income thereof.

"The income of this fund is to provide for the support of a Fellow in Clinical Medicine, who shall receive his appointment from the Corporation on nomination by the Jackson Professor of Clinical Medicine, who, while the holder of the Fellowship, shall not engage in private practise but devote his time to teaching and clinical research work. It is my hope that the hospital within which his work is done may give him some sort of residential position.

"It is my wish that the Fellowship be called 'The Henry P. Walcott Fellowship in Clinical Medicine,' in evidence of my affection and regard for Dr. Walcott, whose great abilities, rare wisdom and human sympathies have for so many years been unselfishly devoted to the University, state, and mankind, in many and varied directions.

"As soon as such Fellow is appointed, I will engage myself to see that he receive not less than one thousand dollars per annum up to such time as the payment of the full twenty-five thousand dollars is completed."

NEW YORK.

RETIREMENT OF DR. BURT G. WILDER. — Dr. Burt G. Wilder, Professor of Neurology and Vertebrate Zoölogy, is one of three Cornell professors who have just been retired on Carnegie pensions. Professor Wilder, who was a pupil and assistant of Agassiz, joined the Cornell Faculty in 1867, the year instruction was begun in the institution, and has served continuously since that time.

A REMARKABLE OLD MAN. — Brooklyn has a remarkable old man, one, Solomon Levy, who claims to be one hundred and six years old. He recently distinguished himself by falling from the roof of his two-story house without breaking any bones or apparently receiving any other serious injury. When admitted to the Jewish Hospital he was suffering from shock, and, from his extreme age, it was expected that he would certainly succumb, but two weeks' treatment completely set him up; so that when he was discharged at the end of that time he was able to walk some distance unaided to take a trolley car to his home.

Current Literature.

MEDICAL RECORD.
JULY 2, 1910.

1. SMITH, S. *Surgery as a Science and Art in the City of New York in the Middle of the Last Century.*
2. GORDON, A. *Superficial and Deep Sensory Disturbances in their Relation to Astereognosis and Asymbolia.*
3. MAYER, E. *Esophageal Diverticula.*
4. GUNTZER, J. H. *Nasal Osteoma. Report of a Case: Operation.*
5. HASSIN, G. B., AND HERSHFIELD, A. M. *The Treatment of Chorea Minor with Large Doses of Arsenic (Method of Comby-Filator).*
6. DRENNAN, J. G. *The Abstraction of Calcium Salts from the Mother's Blood by the Fetus a Cause of Large White Kidney in the Former.*
7. CURRIE, D. H. *Precautions in Laboratory and Morgue that Lessen the Danger When Dealing with Plague.*

NEW YORK MEDICAL JOURNAL.
JULY 2, 1910.

1. BORDEN, W. C. *The Trend of Medical Education in the United States.*
2. MARKOE, J. W. *A Case of Torsion of the Omentum.*
3. SATTERTHWAITE, T. E. *High Frequency Currents in the Treatment of Arteriosclerosis.*
4. TRACY, S. E. *The Cystoscope as an Aid to Diagnosis.*
5. HAWKINS, J. A. *A Few Observations on the Prostatic Urethra.*
6. LIVINGSTONE, R. T. *Erroneous Deductions from Physiological Experimentation with Ergot.*
7. OLIVER, J. *The Stimulatory Action of the Oösperm in the Uterus.*
8. SCHROEDER, E. C. *Tuberculosis.*
9. GOODMAN, E. H. *A Method of Examining Sputa for Tubercle Bacilli.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
JULY 2, 1910.

1. WENDE, G. W. W. *Dermatology as a Specialty and its Relation to Internal Medicine.*
2. SCHALEK, A. *Pemphigus Foliaceus.*
3. EINHOM, M. *Experiences with the Duodenal Contents.*
4. CASSELBERRY, W. E. *The Cutting in Two of a Large Steel Pin While Fixed in the Left Bronchus and Its Removal by Lower Bronschoscopy. A Bronchoscopic Pin Cutter and Fragment Holder Devised to Meet the Emergency.*
5. BABCOCK, W. W. *A Pneumatic Shield for Operations on the Lung.*
6. GRAVES, W. W. *The Clinical Recognition of the*

Scaphoid Type of Scapula and Some of Its Correlations.

7. *Pond, A. M. *Inguinal Hernia Following Appendectomy.*
8. *Percy, J. F. *Phrenitis Prostatica.*
9. Wilder, W. H. *Report of the Committee for the Study of the Relation of Tuberculosis to Diseases of the Eye.*
10. Blaauw, E. R. *A Case of Epistaxis.*
11. Bernheim, B. M. *Hyperemia Treatment in Infections of the Breast.*
12. Davis, D. T. *Experimental Study of Bacteria Isolated from the Tonsils.*
13. Armstrong, J. J. P. *An Electrode for the Tonization of Silver, Zinc or Copper in the Treatment of Chronic Urethritis.*
14. Fancher, H. L. *Rational Treatment of Burns.*

6. Graves associates the scaphoid type of scapula with other signs of hereditary syphilis such as neuropathic tendencies, precocity or idiocy, nocturnal incontinence, myelodysplasia, catarrhal affections, pupillary anomalies and vasculoscierotic changes, and suggests that we should educate ourselves to early recognition of this disease by these syndromes.

7. Pond claims that when right inguinal hernia follows appendectomy it can usually be ascribed to an infection of the abdominal wall or destruction of the nerve supply of the inguinal canal.

8. Percy describes a very important and perhaps not heretofore often enough recognised condition: namely, the abnormal and excessive sexual desire produced in elderly men of from sixty-five to eighty years of age, in which the presence of a large soft prostate seems to be the cause of this condition. Absolute cure is established by removal of the prostate. [E. H. R.]

The Lancet.

June 11, 1910.

1. *Morris, H. *On the Operative Treatment for Preventing the Destructive Renal Changes in Hydronephrosis and Pyonephrosis.*
2. Scott, S. *Arris and Gale Lecture on the Physiology of the Human Labyrinth.*
3. Bland-Sutton, J. *The Ear Ornaments of the Masai and the Natives of Kikuyu.*
4. *Gray, H. T. *A Further Study of Spinal Anesthesia in Children and Infants.*
5. Morley, J. *Case of Papilloma Causing Hydronephrosis in a Horse-shoe Kidney.*
6. Middleton, G. S. *Rat-bite Fever.*

1. Morris gives various illustrative cases of pyonephrosis and concludes as follows: (*a*) Pyonephrosis should be drained through a lumbar incision as soon as the diagnosis is established; (*b*) in many-chambered pyonephrosis it is very important to see that all the chambers are opened and drained; (*c*) it is useless to try to drain a suppurating kidney through an incision in front; (*d*) in advanced cases nephrectomy is often the only cure.

4. Gray presents his last series of 100 cases of spinal anesthesia in children with comments as to technic and management; he uses 3% eucaine for preliminary anesthesia of the skin and punctures in the second or third lumbar space; the child should be immediately turned over and the pelvis raised for fifteen or twenty seconds. The level of the paralysis is regulated by the bulk of the fluid raised — i. e. the larger the bulk of fluid the higher will be the resulting anesthesia; the duration is influenced by the amount of stovaine used. This procedure involves far less surgical shock, little or no vomiting, much less pain and a great diminution in danger of pneumonia or bronchitis. [J. B. H.]

June 18, 1910.

1. Godlee, R. J. *Foreign Bodies in the Air Passages.*
2. McWeeney, E. J. *The Precipitation Test in Medico-Legal Work.*
3. Doyne, R. W. *Observations on Conjunctivitis.*
4. *Batten, F. E. *Influenzal Meningitis.*
5. Verdon, W. *A Comparison Made Between the Simple Gastro-Circulatory Seizure and the Angina Pectoris Attack.*
6. Stevens, B. C. *Four Cases of Sporadic Cretinism in one Family.*
7. Barnes, J. A. *A Note on the Treatment of the Partially Drowned.*

4. Batten reports 5 cases of influenzal meningitis with a few general remarks as to the previously reported cases and the history, symptomatology, diagnosis, and treatment of the rare condition. The first case was reported in 1892; Cohoe has collected 26 cases of this condition of which 50% occurred in children under one year with a fatal termination in every case. Accurate diagnosis is only made by a recognition of the organism. As to treatment, lumbar puncture does not seem to be of great value. The administration of urotropin seems to be of benefit. [J. B. H.]

British Medical Journal.

June 11, 1910.

1. *White, W. H. *A Clinical Lecture on a Case of Pernicious Anemia Having Changes in the Spinal Cord.*
2. *Bramwell, B. *Remarks on a Case of Subacute Combined Degeneration of the Spinal Cord, Simulating Disseminated Sclerosis, etc.*
3. *Llewellyn, T. L. *The Darran Explosion from the Medical Standpoint.*
4. Harris, W. *Tripeminal Neuralgia and Its Treatment by Alcohol Injection.*
5. Smith, E. A. *On Circular or End-to-End Suturing of Arteries.*
6. Geddes, A. C. *A Note upon the Mechanical Effects of a Massive Rightsided Pleural Effusion.*

1. In an interesting clinical lecture White gives the clinical and pathological findings in a case of pernicious anemia with changes in the cord. His case was at first diagnosed as anorexia nervosa.

2. Bramwell, in an article similar to the above describes a case of degenerative changes in the cord in which pernicious anemia developed shortly before death.

3. Llewellyn gives an interesting account of a mine disaster and describes the symptoms of carbon monoxide poisoning and the steps which should be taken to combat it. [J. B. H.]

June 18, 1910.

1. Allbutt, C. *Reflections on Faith Healing.*
2. Morris, H. *"Suggestions" in the Treatment of Disease.*
3. Butlin, H. T. *Remarks on Spiritual Healing.*
4. Osler, W. *The Faith that Heals.*
5. Shaw, T. C. *Considerations on the Occult.*
6. Rorie, J. *Abstract of a Lecture on Psycho-Pneumatology: or, the Interaction of Mind, Body and Soul.*

Deutsche Medizinische Wochenschrift. No. 23.

June 9, 1910.

1. Payr, E. *Diagnosis and Treatment of Fracture of the Skull.* (Continued.)
2. M'Cosam, R. *Operation for Perforated Gastric Ulcer.*
3. *Schumburg. *Recent Experiences on Alcoholic Disinfection of the Hands Without the Preceding Use of Soap.*
4. *Herzog, H. *Nature of Trachoma Bodies.*
5. Huber, O. *Treatment of Severe Anemia with Blood Injections.*
6. Beninde. *Question of Ambulatory Tuberculin Therapy.*
7. Ibrahim, J. *Treatment of Severe Bronchopneumonia in Early Childhood.*
8. Hart, C. *Cause and Importance of Spasm of the Muscles as a Sign of Apical Tuberculosis.*
9. Runeberg, J. W. *Pottenger's Light Touch Palpation.*
10. Meyer, R. *Is there Transmission of Acquired Properties?*

3. Schumburg in carrying further some previous experiments concludes that it is perfectly safe to wash one's hands in absolute or denatured alcohol with a view to sterilizing them without previously scrubbing them with soap and water. This is of great practical value for surgeons on the battlefield.

4. Hersog reviews some of the methods of treating

severe anemias by means of blood injections. Some authors have reported the injection subcutaneously of defibrinated blood and some of blood not defibrinated. In his work he has used about 20 ccm. of defibrinated blood and injected it into the gluteal region. He explains his technic and goes into a discussion of the theories by which it might have some effect. He has tried it on five cases and although he admits that there are too few for conclusions he reports distinctly favorable results and calls for a wider application of the method. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 24.

JUNE 14, 1910.

1. *TABORA, D. *Venesection in Circulatory Disturbances and Its Bloodless Substitute.*
2. *ZANGEMEISTER, W. *Distribution of Streptococci with Reference to Hemolytic and Infectious Peculiarities.*
3. NASSAUER, M. *Midwifery in the House and in the Clinic.*
4. KIELLENTHNER. *Treatment of Prostatic Hypertrophy.*
5. WASSERMANN, A., AND MEIER. *Serodiagnosis of Syphilis.*
6. SIEBERT, W. *Cell-Inclusions in Non-Gonorrheal Urethritis.*
7. SCHÖPPNER. *Atypical Breathing and Artificial distention of the Lungs.*
8. BRANDENBERG, F. *Polyarthritis Chronica Progressiva Primitiva in Childhood.*
9. ASCHENHEIM, E. *Hemolytic Family Jaundice.*
10. v. HERFF, O. *Michels' or Other Clamps?*
11. PULLMANN, W. *A New Instrument for Measuring Extremities.*
12. Z. VERTH, M. *Measuring the Systolic Blood-Pressure by the Optic Method.*
13. DYRENFURTH, F. *Transient Hemiplegic Paralysis.*
14. EHRLICH, P., AND SACKS, H. *Is the Side-Chain Theory of Ehrlich Compatible with the Facts?*
15. STRÜBE, K. *Gastric Lavage for New Indications and in Modified Form.* (Concluded.)

1. By means of an instrument of his own the writer studied the intravenous pressure in the median vein. He found the normal pressure at this point to be about 70–80 mm. of water. In compensated valvular diseases of the heart (with few exceptions) the venous pressure was normal, but in cardiac insufficiency pressures of over 200 mm. were recorded. With edema of the lungs increased venous pressure was repeatedly observed and high venous pressure was regarded as a warning of this danger. Venous pressure is reducible by diminishing the amount of blood in the veins or by increasing the output of the left ventricle; that is by venesection, by cardiac stimulation or by a combination of these. To reduce a high venous pressure nearly to normal by phlebotomy nearly a pint of blood had to be withdrawn. Similar results were obtained by entrapping the circulating blood in the limbs by means of rubber bandages put on in such a way that the veins of the limbs became full of blood. This method gave good results when actual bleeding was contra-indicated. Its chief disadvantage was the danger incurred if the bandages were suddenly removed. (This danger can be obviated.) In pneumonia, cardiac insufficiency with high venous pressure was observed and treated in the same way, but the writer emphasizes the fact that in pneumonia circulatory weakness is generally due to vascular dilatation, and that is such cases, the venous and arterial pressure are both abnormally low. This condition demands vasoconstriction.

2. The writer draws important conclusions for his work with streptococci. He says that virulent streptococci generally have the power of causing hemolysis, that this power is acquired by infection and lost when the streptococci grow in contact with the bodily secretions or on the skin, that the human is the carrier of the streptococcus and that these bacteria are numerous in the vicinity of infected persons. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 20.

MAY 16, 1910.

1. SCHEEBE, O. *Address at the Bicentennial of the Royal Charity Hospital in Berlin.*
2. KRAUS, F. *Clinical Methods and Instruction in the Past and Present.*
3. *JOCHMANN AND MICHAELIS, G. *New Point of View in the Treatment of Scarlet Fever.*
4. FRANZ. *A Case of Cortical Epilepsy with Operative Treatment.*
5. MEYER, F. *Sensitized Emulsion of Tubercle Bacilli.*
6. JOANNOVICS, G., AND PICK, E. P. *Hemolytic Action of Free Fatty Acids in the Liver in Acute Yellow Atrophy and Phosphorous Poisoning.*
7. MEYER, F., AND ROEDER, H. *Experimental Examination Concerning the Retention in the Stomach of Kissinger Mineral Water in Comparison with Other Fluids.*
8. ROSENDORF, W. *A Case of Veronal Poisoning.*
9. SALYWEDAL. *The Importance of Nursing as a Therapeutic Measure.*
10. SCHMIDT, G. *Innovations in Sanitation in the Administration of the Prussian Army During the Year 1909.*

3. Regarding the rôle of the streptococcus to be the important factor in the severity of an attack of scarlet fever these authors have been using both serum and vaccine in the treatment of their cases. They seem satisfied that the best results so far obtained have been from a combined use of these two agents. The fact that nephritis, one of the commonest sequelæ of scarlet fever, does not seem to be found in cases treated with this combination seems more than a coincidence. They report their observations on a series of 52 cases. [J. L. H.]

No. 21. MAY 23, 1910.

1. ELSBERG, C. A. *Narcosis in Man by Means of the Continued Intratracheal Insufflation of Meltzer.*
2. LILIENTHAL, H., AND ELSBERG, C. A. *The Intratracheal Insufflator of Meltzer in Practice.*
3. UNGER, E., AND BETTMANN, M. *Results of Meltzer's Insufflation Method of Narcosis.*
4. GIBB AND VOSS. *Clinical Data Referring to Congenital, Hereditary Paralysis of the Muscles of the Eyes.*
5. MARCHKE. *Report of Two Cases of Primary Sarcoma of the Stomach.*
6. BERLINER, M. *Further Results in Intramuscular Injections of Menthol and Eucalyptus in Bronchitis, Gangrene and Tuberculosis.*
7. *BURWENKEL, O. *Congenital Cyanosis for Four Generations.*
8. ZEISSLER, J. *Quantitative Determination of the Inhibiting Body in the Wassermann Reaction.*
9. *SCHMIDT, H. E. *Experimental Examination Concerning the Action of the Smaller and Larger Röntgen Rays on Young Cells.*
10. KAUSCH, W. *Extramucosal Pyloroplasty.*
11. WASSERTHAL. *Observations on Hydrotherapy in Urinary Disease.*
12. HOFFMANN. *The Products of the New Cancer Investigations.*

7. An interesting series of cases is here noted. The patient in question is an active business man of fifty-four years. His grandmother was "blue" from birth until she died of old age in her seventy-sixth year. His mother also was cyanotic her entire life. She enjoyed moderately good health and died in her forty-eighth year. The patient himself has always been very well and active. Though a slight heart lesion was detected at the time of his examination for the German army it was not considered sufficient to relieve him from service and he stood his two years of enlistment perfectly. His sister and her child as well as two of his children have the same cyanotic appearance without any apparent ill effects. [J. L. H.]

DIE THERAPIE DER GEGENWART.

MAY, 1910.

1. *HIRSCH, C. *Cardiac Disorders in Childhood and at Puberty.*
2. FORLANINI, C. *A Question of Priority Respecting Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis — and the Mechanics of Its Action.*
3. HALLERVORDEN, J. *The Use of Pantopon (Sahli).*

1. Hirsch discusses at length the subject of arterios clerosis and myocarditis in childhood and adolescence. Func-

tional changes, not luetic or secondary to nephritis, may well be present, though not demonstrable, in the arterial walls as early in life as this. Children suffering from palpitation and precardial distress often have no sign of cardiac hypertrophy except palpable arteries and prolonged pulse. In such cases of "juvenile sclerosis" there is thickening of the media not of sclerotic nature.

Irregularity of the pulse without demonstrable heart lesion is fairly common in childhood. Arrhythmia may occur after poisoning with digitalis or opium; after hard vomiting or other severe digestive disturbance; during convalescence from infectious diseases; in anemic and nervous children and in children harboring intestinal parasites. There is such a thing as physiological arrhythmia in childhood, a phenomenon sometimes observed during sleep. These functional arrhythmias of childhood are produced in a characteristic way. The separate pulse beats are equal in force and volume, but diastole varies in length. The irregularity disappears with accelerated heart action, because abnormally long diastoles are thereby shortened. Arrhythmia from organic disease of the heart muscle is as a rule very different in character, being due to extra systolic contractions.

In childhood harmless heart murmurs are relatively very common. Beyer found systolic murmurs in 42% of 830 school children examined; they were more numerous among the girls. Lüthje found 623 systolic murmurs in 854 children. Of these 623, 564 were heard only over the pulmonary area; only 2% had certain valvular insufficiency. These functional murmurs cannot be wholly explained. The writer thinks that many times they are due to mitral regurgitation from temporary muscular insufficiency. [L. D. C.]

DEUTSCHE ZEITSCHRIFT FÜR CHIRURGIE. Bd. 105.

HEFT. 1-2. MAY, 1910.

1. MEDOWAY, S. *Contribution to the Pathology and Clinical History of Intestinal Occlusion.*
2. HOLZKNECHT, G. *Duodenal Stenosis Radiologically Recognized by Filling and Peristalsis.*
3. BRANDES, M. *The Treatment of Spontaneous Dislocations of the Hip Joint Resulting from Acute Diseases.*
4. *MARTINI, E. *A New Procedure for Performing Gastro-Enterostomy and Entero-Anastomosis without Opening the Intestinal Lumen During the Operation.*
5. BURKHARDT, L., AND FLOERCKEN, H. *The Demonstration of Prostatic Hypertrophy in the Röntgen Picture.*
6. v. KARLOWICZ, E. *A Contribution to the Question of Combined Narcoses.*
7. *ZESAS. D. G. *The Significance of the Thymus Gland in Surgery.*
8. MARRO, A. *How Can Preliminary Artificial Anus and Entero-Anastomosis Be Combined with Realization of the Advantages and Exclusion of the Dangers of Both Operations?*
9. LÄWEN, A., AND SIEVERS, R. *Experimental Investigations on the Effect of Artificial Respiration, Cardiac Massage, Strophanthin and Adrenalin on Cardiac Standstill After Temporary Closure of the Aorta and Pulmonary Artery with Reference to Trendelenburg's Operation for Pulmonary Embolism.*
10. LÄWEN, A. *A Thoracic Deformity in Long-Existent Artificial Anus in Childhood.*

4. After brief review of other procedures for insuring asepsis in the performance of intestinal anastomosis, Martini describes a device of his own, a metallic clamp, called an enterotribe, by means of which he secures together the two viscera to be anastomosed. This clamp is then buried by a circular serous suture, and after a few days sloughs through into the lumen of the intestine, establishing the anastomosis, and is recovered in the stools. The author has excellent results in experimental operations performed on dogs by this method, for which he claims the advantages of quick and easy technic, avoidance of infection from intestinal contents, and opening of anastomosis only after formation of abundant adhesions to prevent leakage.

7. Zesas considers the subject of status lymphaticus and thymus death in its relation to surgery, and collects from the literature 21 cases of persistent or hypertrophied thymus treated by operation. He believes this condition is of the greatest importance, is capable of early diagnosis and has a relatively good prognosis under prompt surgical intervention. [R. M. G.]

IL POLICLINICO.

MAY, 1910.

Surgical Section.

1. *SERAFINI, G. *Lipomata of Unusual Situation.*
2. *GAUDIANI, V. *Contribution to the Knowledge of Epithelioma of the Basal Cells.*
3. *ALMAGIÀ, M., AND TATA, R. *Researches on the Defensive Action of Stasis.*
4. STEFANO, P.-A. *Congenital Cystic Lymphangioma of the Neck.* (To be continued.)

1. Serafini reports three cases of lipoma of the pericranium and two of lipoma of the sole of the foot. (Among unusual situations of lipoma these seem hardly so uncommon as the pericardium.)

2. From an extensive microscopic study of specimens from six cases, Gaudiani concludes that the greater part of the cutaneous tumors described under the title of endothelioma are in reality epithelial tumors, having origin in the corium, not by direct proliferation of the basal cells of the epidermis but from ectopic epithelial cells having the form of basal cells. He believes that they are distinguished from common cutaneous epitheliomata not only by their structure but by their more benign course, since they do not metastasize and rarely recur after removal.

3. The authors report briefly a piece of experimental research, from which they conclude that the hyperemia of stasis hinders the absorption of toxic substances and is in so far a defensive agent. [R. M. G.]

Medical Section.

1. NAZARI, A. *The Pathological Anatomy of Myasthenia Gravis.*
2. *LA FRANCA, S., AND CAMPESE, U. *Researches on the Respiratory Mechanism of Pneumothorax.*
3. PERGOLA, M. *The Isolation of the Spirillum of Asiatic Cholera.*
4. MAGGIORE, S. *The Influence of Various Aggressins on Experimental Infections with Micrococcus Melitensis.*

2. La Franca and Campese produced experimental pneumothorax in dogs in order to study the respiratory mechanism. They conclude that in unilateral closed pneumothorax it is not modified except that the respiration is less deep on the affected side. In open pneumothorax there is always marked dyspnea characterized by rapid respiration, dilatation of the thorax, inequality of the respiratory excursion, and (less frequently) deep respiration on the affected side. In valvular pneumothorax the respiratory rhythm is more or less like that in closed pneumothorax.

These experiments lead the writers to believe that the reflex dyspnea of open pneumothorax is not due to the presence of air in the pleural cavity or to its rapid filling with air. It is due either (1) to the free escape of air from the cavity at each expiration and the want of normal elastic resistance to the same, or (2) to some abnormal muscular sensation. The second explanation is supported by the writers' observations that anesthesia of the pleural nerve endings does not inhibit the reflex. [L. D. C.]

Obituary.

H. H. A. BEACH, M.D.

DR. H. H. A. BEACH, long a prominent figure in Boston medicine, died June 28, at the age of sixty-six years. Dr. Beach was born in Middletown, Conn., Dec. 18, 1843, but during his childhood the family moved to Cambridge, Mass., where his preliminary education was secured. At the age of twenty he enlisted in the regular army and was given the post of Sergeant of Ordnance in

the hospital service. He served in this capacity until after the close of the Civil War when he was honorably discharged and accepted the position of surgical house pupil at the Massachusetts General Hospital. He was graduated from the Harvard Medical School in 1868.

After leaving the Massachusetts General Hospital he at once began the practice of medicine in this city. He was appointed a surgeon at the Boston Dispensary and an assistant demonstrator of anatomy at the Harvard Medical School. He later became demonstrator in the same institution and a member of the faculty. For fifteen years he taught anatomy in connection with the lectures of Oliver Wendell Holmes, then professor of anatomy. Later his teaching became more clinical in character and he was for many years an instructor in the department of clinical surgery. This came about naturally through his connection for nearly thirty years with the Massachusetts General Hospital as one of its surgeons. At one time Dr. Beach was an assistant editor of the BOSTON MEDICAL AND SURGICAL JOURNAL. He held membership in various medical societies both state and national and contributed many articles to medical journals.

In 1871 Dr. Beach married Miss Alice Mandell, of New Bedford, Mass., who died in 1880. Five years later he married Miss Amy N. Cheney, of New Hampshire, whose highly cultivated taste for music found a ready sympathizer in her husband.

In the death of Dr. Beach, Boston loses a surgeon long associated with its best traditions. For many years he combined hospital work with a very extensive private practice which was both exacting and time-absorbing. Although his activities had been somewhat modified during the past few years he was still active preceding his final illness which was a short one. Dr. Beach had, through the age limit, been retired as a visiting surgeon from the Massachusetts Hospital for several years, but he still retained his interest in the institution which he continued to serve in a less exacting capacity as consulting surgeon.

Correspondence.

PARIS LETTER.

THE EFFECT OF RADIUM ON CANCEROUS TUMORS.

[From our Special Correspondent.]

PARIS, JUNE 26, 1910.

Mr. Editor: One of my early recollections in clinical surgery is that of Verneuil passing through his huge wards at the Pétié with a crowd of students, and after examining case upon case of cancer of various sorts, raising his arms in the air with a gesture of despair and exclaiming: "*Ah, Messieurs,—toujours le cancer; partout le cancer!*"

My impression then was that a large portion of humanity must succumb to this dread disease, and that sooner or later it would overtake me with the rest of mankind. I afterwards found out that very fortunately the aspect of a large surgical clinic in a center like Paris does not reflect the conditions of general practice by any manner of means, and that cancer, while still only too frequent and fatal, is far from being as common as the state of affairs in Verneuil's wards led me to believe.

The treatment of cancer has been up for discussion at some length in Paris during the past month.

The indefatigable Doyen gave a course of six lectures on his "mycolysine" methods, in which he reaffirmed his former assertions as to zymotic diseases and their speedy disappearance under the influence of this substance and proceeded next, to tell his audience that the great majority of tubercular patients of the first and even of the second stage got well with it likewise; and finally ended with a lecture on his electro-coagulation method for cancer, in which he states that under the action of this caustic serious cancers of the tongue, pharynx and intestine had been cured in a single sitting, and had not recurred in the eighteen months that have elapsed since treatment!

No one would be more delighted to believe all this than myself; but I am really surprised that Doyen does not realize how heavily the chances are against him. He offers us *too* much at once! Any one of the three results he announces would suffice to raise him to a pinnacle that would satisfy the most ambitious of mortals; but the three together! Nor do I think that Doyen would be altogether flattered if he could hear the appreciations of his French colleagues as to his veracity in scientific matters.

He closed by saying that surgery must rapidly change its ways, in cancer. In the future the knife must only be a means of exploration, "for it cannot heal and often infects"!

Now just about the same time as Doyen was bewildering his "*mondain*" audience with his discoveries, which somehow or other never seem to get beyond the walls of the clinic in the rue Piccini, the Paris Society of Surgery, of which he is not a member, had before it for discussion the treatment of cancer by radium, and, incidentally, the various other means of treatment were brought into the debate. Now two facts stand out prominently in the reports of these two sittings as published in the society's official bulletins: one is that no tumor should be treated by radium alone, so long as it is in a proper stage for surgical removal first; the other is that Doyen's electro-coagulation method was not even mentioned! This does not look as though the results of his latest discovery are quite as overwhelmingly demonstrative as he would have us believe.

The radium discussion was about as exhaustive a one as I remember to have seen take place before the Society of Surgery, a large proportion of the prominent surgeons of Paris reporting the results of their personal experience in the matter. In this instance, as was the case with their news on the late regretted fulguration method, opinions in this learned body were singularly unanimous. There were minor differences in some details, but the general consensus was, I think, the following: nothing that can be called *cures*, in the serious forms of cancer, but striking and most interesting results in many cases, amounting to what might be called complete remissions or cures *pro tem.*

In view of the practical interest of this discussion, and of the authority of the opinions emitted, it may be of service to cite the speakers personally and in order.

The origin of the discussion was a paper presented by Wickham and Degrais, in which they laid stress on three points: That radium should not be used indiscriminately; that in the majority of cases it should be combined with surgical intervention; that the results obtained, though often favorable, are never more than local, and that there is a long way from the regression of a tumor to the definite recovery of the patient from his disease.

The different artifices used by the radium-men are probably well-known to your readers: The crossed-fire, whereby a maximum of rays are brought to bear on a given region; the filtration, whereby the effective, gamma-rays are separated from the alpha and beta rays, were detrimental to the superficial tissues; the spreading out of radium salts onto broad plasters for application; and the introduction of radium salts in tubes into the substance of tumors themselves, singly or in numbers. All this is more of the domain of the specialist.

Professor Segond, the first to speak, began by resuming his experience in the following words: "In no case have I seen radium cure a neoplasm. But on the other hand I have observed it gives rise to such changes in the evolution of malignant tumors, result in such curious transformations,

produce, in short, in certain cases such important improvements, that in all cases in which the disease is not, or is no longer, justifiable of surgical intervention, I think that for the time being radium is indicated."

Segond's experience is particularly interesting as regards cancer of the tongue, of which he reported five cases with most satisfactory results. Thus, to cite one of these cases: Cancer of the floor of the mouth, very extensive, the patient's condition being lamentable in the extreme, a single application of radium, pure radium sulphate in two tubes, produced a remarkable improvement. The ulceration healed up, and the patient was once more able to speak and swallow.

The results in his other four cases were equally striking, and he remarks: "With all of these patients there was manifestly no definite recovery; but these men, who suffered with violent pains, had extensive ulcerations which bled and emitted an offensive discharge, and whose cancers were rapidly progressing, found that with one or two applications of the radium tubes, the hemorrhage and discharge ceased, the ulcerations healed, the infiltrated region became more supple, pain diminished, and life became bearable at least for a certain time."

With uterine cancer, however, Segond's experience has not been as promising as some of his colleagues, and his opinion is that with tumors of this region there is peculiar liability to deep and treacherous extension beyond a cervix that is healed to external appearances.

Delbet, though reserving his detailed opinion on the question for the international Cancer Congress to be held in Paris next October, said that the enormous advantage in the radium treatment consists in the fact that you can put it just where you wish it to go. He either places his tubes in the fungous tissue itself (rectum, uterus), or he plunges them into the tumor substance with the help of an ordinary trochar. He does no ray-filtering, but takes advantage of the entire, composite emanation; with his method there are no superficial tissues to be spared, the tubes being in the tumor themselves.

He has found that the area about the tube that is affected by the rays is not more than two and a half ccm. deep, and even in this zone the cancer cells are not equally influenced; there is a first zone where the cells are destroyed; a second where they may either be destroyed or else have their evolution modified; and a third where they show signs of stimulation! The way to get around this short range and uneven action of the rays is to spit the tumor with tubes, particularly at its circumference, so that their action will extend beyond its limits, which is not always easy to accomplish. His view is that radium is in the nature of a caustic, but a caustic improved, refined and infinitely superior to other caustics.

In cancer of the uterus his experience has been diametrically opposed to that of Segond; he has found that cervical cancer, and in general pavement cancer, particularly in its mucous form, is peculiarly sensitive to the action of radium.

Tuffier claims to have shown that the action of radium is an elective one for the cancerous cell, the connective frame-work being respected, its nutrition modified without destruction of tissue. He thinks that the action of x-rays is identical with this, as opposed to high-frequency and thermotherapy, in which there is total destruction of tissue.

After citing several interesting cases of cancers apparently hopeless having been so much improved as to enable an operation to be carried out under fairly favorable conditions, he was the first to speak of cases in which the patient's condition had been unquestionably aggravated by the treatment. One was that of a cancer of the lip, treated with radium, with recurrence after eight months. "Never do I remember to have seen a cancer of the lip have an evolution so rapidly fatal."

In uterine cancer the local result is often remarkable, and Dominici has laid stress on the fact that it is precisely on these large fungous masses that radium has the greatest influence; but it is not possible to infer from this improvement that the case is cured, as the healed scar is simply a mask, back of which the trouble pursues its evolution in the depths. Tuffier concluded his remarks as follows: "In short, if I were asked to sum up my opinion on radium I would say that I do not know of a single case of mucous or deep cancer that has been cured, but that I have seen very remarkable local improvements which justifies its use when surgical intervention is impossible. It is certainly the best palliative that we now have at our disposal."

In Lucas-Championnière's opinion the action of radium in cancer is unquestionable, and in many cases renders the most signal service. In the case of a woman of thirty-six, with a cancer of the recto-vaginal wall, a large tumor making rapid progress, ulcerated and with profuse and fetid secretion, he and Segond considered the neoplasm beyond the limits of operative intervention, an operation requiring removal of the vagina, rectum and uterus, and the establishment of an artificial anus. Radium treatment with this woman produced such an astonishing improvement in the local and general conditions that her friends could not believe their senses when they saw her up and about and resuming her usual occupations.

At the end of seven months there was, however, recurrence, and death took place in fourteen months, — whereas at the time of the consultation between Segond and himself a fatal issue to the case was expected in a very brief delay.

Schwartz summed up his opinion on the matter as follows: radium relieves suffering, prolongs life, and renders operable some tumors that could not otherwise have been touched; but so far as he has seen it has never cured a deep cancer.

Ricard has only had one case, but with a favorable result, an inoperable cancer of the uterus with extension to both *culs-de-sac;* the application of several radium tubes was followed by an extraordinary regression of the tumor, so much so that after the second application the cervix gave the impression of a normal organ with healthy and smooth mucous membrane. The patient thereupon left the hospital, declining hysterectomy which he had proposed.

Nélaton has also had a case of cervical cancer favorably influenced by radium, the result being that he, Dominici and Champetier de Ribes, all look on the case as cured! They are the only ones who used that term.

Lejar's experience has been fairly extensive, twelve cases, nine of them uterine cancers. Five of the latter were not modified by the treatment, beyond slight amelioration of symptoms. He thinks that certain forms of uterine cancer are absolutely refractory to this agent, and that unless improvement shows itself after one or two applications it is useless to persevere. In the four other cases, however, the results were very striking, amounting fully to temporary recovery, in spite of the fact that with one of the women the vagina was filled with a vegetating, friable, bleeding mass the size of a fetus-head!

Morestin, while confirming the opinions of the speakers who had preceded him as to the remarkable palliative results of the treatment but the uncertainty as to the ultimate outcome, laid stress on the fact that these temporary results lead physicians to try radium from the start, while the tumor is still operable, and thus lose precious time that subsequently cannot be regained. He was also under the impression that in some cases there is distinct aggravation.

Sieur has likewise had a case in which the evolution appeared to be unquestionably hastened by the radium treatment.

Tuffier spoke a second time and queried whether in certain instances cancer-generalization is not to be laid to the door of the radium treatment.

Walther, in turn remarked that radium applications, though producing rapid cicatrization and apparent recovery, give rise to proliferation of the epithelium in the deeper tissues, and cited a case in point.

Rontier has had two cases, with unfavorable results. Quena has not tried the method. Guinard emphasized the opinion of the majority of the society's members, that so long as a tumor can be removed by the knife, no valuable time should be wasted in radium treatment. Monod then closed the discussion.

It is, as I remarked in the beginning, not every day that a question is taken up by the Society of Surgery with this throughness, and it is of the highest interest to hear the news of these distinguished men on this method. Some of the cases related *in extenso* are really quite remarkable, almost incredible, were their authority not so reliable. So that in spite of the generally discouraging ultimate results given by the radium emanations we must be truly thankful for these striking palliative successes.

"S."

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 2, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,289	499	Waltham	8	3
Chicago	586	166	Pittsfield	4	—
Philadelphia	—	—	Brookline	5	—
St. Louis	—	—	Gloucester	4	—
Baltimore	—	—	North Adams	7	—
Cleveland	—	—	Northampton	5	1
Buffalo	—	—	Chicopee	9	6
Pittsburg	—	—	Medford	5	—
Cincinnati	—	—	Beverly	5	—
Milwaukee	—	—	Leominster	3	—
Washington	—	—	Hyde Park	5	2
Providence	—	—	Melrose	4	0
Boston	188	66	Newburyport	6	—
Worcester	48	23	Revere	2	1
Fall River	63	40	Westfield	13	2
Cambridge	20	6	Woburn	2	0
Lowell	45	23	Peabody	—	—
New Bedford	44	26	Marlboro	5	1
Lynn	12	3	Attleboro	3	1
Springfield	—	—	Adams	3	1
Lawrence	35	21	Clinton	—	—
Somerville	21	4	Gardner	4	3
Brockton	13	3	Milford	—	—
Holyoke	19	10	Watertown	2	2
Malden	12	1	Plymouth	—	—
Chelsea	12	3	Southbridge	1	—
Newton	8	3	Weymouth	2	—
Salem	11	7	Framingham	—	—
Haverhill	15	5	Wakefield	—	—
Fitchburg	10	5	Webster	3	1
Everett	4	1	Arlington	—	—
Quincy	—	—	Greenfield	0	—
Taunton	11	1			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JUNE 29, 1910.

IRWIN, FAIRFAX, surgeon. Leave of absence for one month and ten days from Sept. 1, 1910, amended to read one month and ten days from Sept. 15, 1910.

BANKS, CHARLES E., surgeon. Leave of absence for twelve days from June 12, 1910, amended to read ten days from June 15, 1910.

WASDIN, EUGENE, surgeon. Granted one month's leave of absence from June 22, 1910, on account of sickness.

BROOKS, S. D., surgeon. Detailed to represent the Service at the meeting of the American Institute of Homeopathy to be held in Los Angeles, California, July 11–15, 1910. June 25, 1910.

COBB, J. O., surgeon. Granted seven days' leave of absence from June 26, 1910.

GEDDINGS, H. D., surgeon. Detailed to attend the First International Congress of Administrative Sciences to be held at Brussels, Belgium, July 28–31, 1910. June 27, 1910.

VON EZDORF, R. H., passed assistant surgeon. Granted five days' leave of absence from June 28, 1910, on account of sickness.

LUMSDEN, L. L., passed assistant surgeon. Reassigned for duty in the Hygienic Laboratory effective June 27, 1910. June 24, 1910.

HOLT, JOHN M., passed assistant surgeon. Granted one day's leave of absence from June 19, 1910, and one day's leave of absence, June 26, 1910.

LLOYD, B. J., passed assistant surgeon. Granted one month's leave of absence from June 20, 1910, on account of sickness.

BAHRENBURG, L. P. H., passed assistant surgeon. Granted eighteen days' leave of absence from July 1, 1910.

WARREN, B. S., passed assistant surgeon. Granted two months' leave of absence from July 5, 1910.

STIMSON, A. M., passed assistant surgeon. Reassigned for duty in the Hygienic Laboratory, effective June 29, 1910. June 24, 1910.

SPRATT, R. D., passed assistant surgeon. Granted seven days' leave of absence from June 14, 1910, on account of sickness.

HERRING, R. A., assistant surgeon. Granted fourteen days' leave of absence from July 15, 1910.

ADAMS, F. B., acting assistant surgeon. Granted four days' leave of absence from June 30, 1910.

DUNCAN, W. A., acting assistant surgeon. Granted twenty-eight days' leave of absence with pay and two days' leave of absence without pay from May 5, 1910.

FAHEY, E. W., acting assistant surgeon. Granted seven days' leave of absence from June 24, 1910.

PARKER, THOMAS F., acting assistant surgeon. Granted four months' leave of absence without pay from July 1, 1910.

STANTON, J. G., acting assistant surgeon. Granted four days' leave of absence from June 27, 1910.

WELDON, WILLIAM A., acting assistant surgeon. Granted thirty days' leave of absence from July 5, 1910.

WILSON, J. G., acting assistant surgeon. Granted seven days' leave of absence from June 22, 1910, under paragraph 210, Service Regulations.

SLOUGH, CHARLES, pharmacist. Upon arrival of Pharmacist C. H. Bierman, relieved from duty at Baltimore, Md., and directed to proceed to Pensacola Quarantine, Florida, and report to the acting assistant surgeon in charge for duty and assignment to quarters. June 24, 1910.

GIBSON, FRANK L., pharmacist. Reassigned for duty in the Leprosy Investigation Station, effective April 16, 1910. June 24, 1910.

BIERMAN, C. H., pharmacist. Relieved from duty at Portland, Me., and directed to proceed to Baltimore, Md., and report to the medical officer in command for duty and assignment to quarters. June 24, 1910.

ELDRIDGE, M. B., pharmacist. Relieved from duty at Vineyard Haven, Mass., and directed to proceed to Portland, Me., and report to the medical officer in command for duty and assignment to quarters. June 24, 1910.

APPOINTMENT.

DR. JOHN A. PETERSON, of Hingham, has been nominated by Governor Draper for the position of Medical Examiner for the Fifth Plymouth District to succeed the late J. Winthrop Spooner.

RECENT DEATHS.

DR. ASAHEL NORTON BROCKWAY, of New York died on July 4, from cerebral apoplexy, at Clinton, N. Y., where he had gone to attend the commencement of Hamilton College, of which he was a graduate. He was seventy-four years of age, and was graduated from the College of Physicians and Surgeons, New York, in 1861. During the Civil War he served for a time as assistant surgeon in the army, and he had practised in New York since 1864.

DR. FREDERICK AUGUSTUS LYONS, of New York, died on July 5. He was born in Toronto, Canada, in 1854, and was graduated from the College of Physicians and Surgeons, New York, in 1876, after which he studied in Paris, Berlin and Vienna. He was at various times connected with Bellevue Hospital, the New York Foundling Hospital, and the New York Throat, Nose and Lung Hospital, and from 1885 to the time of his death was surgeon to the New York Fire Department. For several years he was editor of the Hospital Gazette.

JOHNS HOPKINS HOSPITAL
JUL 25 1910

Original Articles.

ON THE ETIOLOGY AND TREATMENT OF THE PSYCHONEUROSES.*

BY JAMES J. PUTNAM, M.D.,
Professor of Neurology, Harvard Medical School.

THE subject with which I have undertaken to deal is such a vast one that I can obviously only touch on a few great mountain peaks of a vast country.

The various maladies classified as "psychoneuroses" cause perhaps more misery than any other single group with which the community is afflicted. Not only is this true, but the study of their etiology, their treatment and their prevention, on which you have honored me with an invitation to address you, has an importance far transcending the question of the comfort and happiness of those persons who come to physicians for advice. Without understanding the nature of nervous invalidism in the individual it is impossible to understand the true nature of many traits which count as normal, and of many great social problems which are constantly pressing themselves upon our notice.

There is an additional reason why an intelligent company of physicians should think this subject worthy of being taken up afresh. As matters now stand, some of the graver varieties of these psychoneuroses pass practically untreated, not because physicians fail to recognize them as serious, but because they are thought too serious, too nearly incurable, to be fit subjects for time-absorbing treatment. I have in mind, as examples, two patients, of excellent intelligence and warm affection, who live practically exiled from their homes because they have the obsession that they shall kill some member of their families. I know how hard the successful treatment of such cases is, but I believe that the method of treatment which I shall here mainly advocate holds out good hopes for unfortunate patients of these sorts.

The next point for which I beg your attention is with regard to the therapeutics of these affections. Have we reason to be satisfied with the means of treatment commonly employed? There is a tendency, even among neurologists, to answer this question substantially in the affirmative. It is widely felt that the various familiar measures,—such as seclusion in private and public sanatoriums, engrossing occupation, treatment by hydrotherapy, electricity, hygiene, rest, change, suggestion, persuasion and suitable drugs,—give us, when properly administered, all that we really need to supplement the healing powers of nature. This view I do not share. These modes of treatment are indeed of immense value. They should be cultivated and studied as frequently representing the best means at our command, and the fact should be recognized that when they are used with the confidence, skill and devotion that characterizes the work of the few best men, the results obtained are far better than those which follow their employment in a simply routine fashion. If time allowed I should describe and praise also the team-work of the neurologist and the internist, the surgeon, the orthopedist or the gynecologist. Nevertheless there are some forms of the psychoneuroses that these various measures do not touch and others where their use is often really mischievous because in securing temporary improvements they blind the patient and the doctor to the real diagnosis and the really needed treatment. The justice of this criticism becomes clearer when the question is no longer one of treatment by a neurologist with the aid of some skillful colleague, but of treatment by an orthopedist or a gynecologist or a specialist for the digestion, acting by himself. A good share of the practice of such specialists is among patients with strictly neurological affections. The practical outcome of their treatment is often very good and in many a given case, taken by itself, there is no room for anything but congratulation. But, often, too, patients are treated in these ways, perhaps with temporary or partial gains, who ought to have their illnesses studied on far different lines. The sentiments which one often hears that "neurasthenia is a surgical affection" or that "mental treatment should not be resorted to until other means have failed imply a misconception of the facts." Surgical measures are sometimes of great service and mental measures may be ignorantly used, but it is not an indication of advance in the general comprehension of these disorders that views like these should seriously be held. Good neurology may be rare, but it would be for the benefit of all physicians and of medical theory and practice as a whole if the responsibility and the confidence should be thrown at once where they ought to lie and eventually must lie. So, too, the immense importance attached in some quarters to "eyestrain" as a real cause of fundamental defects of character and of grave psychoneurotic symptoms may be characterized as a truly child-like hypothesis, in view of what we now know to be the facts. I fully appreciate the favorable practical outcome, in some cases, of the eyestrain treatment. But far too much importance has been attached to this argument from therapeutic success in the assignment of real causes. When a patient gets better under a certain treatment it is natural to think that the difficulty which the treatment removed was the essential cause of his illness. But in fact we all know that this is false reasoning and we all know it to be such.

There are two classes of physicians who are very prone, from somewhat contrary reasons, to reach warped judgments in these matters. The first class comprises those who fail to note the relapses from which psychoneurotic patients often suffer who have been relieved by treatments other than the really causal, and so overrate the value of some radically insufficient method. The other class is composed of those who note these

* Read before the Canadian Medical Association, Toronto, June, 1910.

relapses, but observe that they occur under various modes of treatment and then conclude that the relapses belong to the natural history of the disease (a severe form of hysteria or impulsion for example) and that, therefore, the disorder is hereditary and a sign of "degeneration," and that no treatment whatever can be of permanent value. But the former conclusion is a fallacy which any one's observation can correct, and the latter is an unverified assumption which no one has the right to adopt until he has thoroughly acquainted himself with the therapeutic results which can be obtained by the most radical mode of treatment.

The most distinctive feature of neurologic therapeutics has been its effort to utilize mental influences in the cause of health, and I wish to characterize this feature because it is here that important changes for the better are in prospect. You can all recall the stir made by the rehabilitation of hypnotism and what a flood of literature has been published upon "suggestion." You are familiar with the therapeutic work of Dubois and others of his type, and remember also the recent revival of the attempt to find a more scientific bond between medicine and religion.

The great bulk of all this therapeutic endeavor has been an attempt to cure the patient by leading him to dwell on the possibilities of the future and to forget the miseries of the past. He has been urged to "look forward and not back"; to abandon worry as illogical and useless; to see the world at its best; to project his vision beyond the obvious darkness into a region of imagined light. The slogan has been "Do not get discouraged; you can do better if you try," and many a kindly, devoted, ambitious and confident physician has stood ready to play the part of the inspiring leader, the friend toward whom the patient could gaze with veneration and on whom he could lean. In all these efforts there has been much skill and great devotion, but the results have not been wholly satisfactory. Too often the symptoms have been simply quieted for the moment; the disease veneered.

I have outlined the reasons for thinking the study of the psychoneuroses important, the familiar modes of treatment insufficient, and the descriptions of the natural history and course of these disorders often incorrect, because based on an underestimate of what the best treatment can accomplish. Let us now turn to scrutinize the commonly adopted causes.

In the minds of most persons the *hereditary or innate tendencies* take the first place as causes of these psychoneurotic illnesses. It is not remarkable that this is so, when we consider that the signs of nervous weakness in the child—usually taking the form of shyness, timidity, sensitiveness, self-consciousness or of excitability, jealousy and passion — are recognizable so early that they seem to be inborn. Something which prepares the way for these symptoms doubtless *is* inborn, but evidence has been rapidly accumulating of late years which tends to show that experiences after birth are more significant as causes than we have hitherto supposed. The first few years of a child's life are rich in emotions and vague thoughts. These years have never been adequately chronicled, but there are grounds for thinking that traits of character are founded or accentuated at that period which tend strongly to remain through life. In view of those facts, the old phrase "the boy is father of the man" gains a fuller and a richer meaning. A considerable portion of the evidence bearing on this point is associated with the name of Freud, a name to which I shall have frequent occasion to revert. It is obvious also that nervous children have often had nervous parents, and equally so that certain sorts of bodily weaknesses or delicacy which are apparently hereditary predispose to lack of nervous strength. The boy that can play hard and work hard and who comes of sound stock starts life with an obvious advantage, although it may be pointed out at once, as showing how difficult it is to arrive at positive conclusions in these matters, that some of the most striking forms of the psychoneuroses are found among professional and amateur athletes and that seriously nervous patients seem sometimes to have had healthy parents. Finally, common sense seems to demand an acquiescence with the view that the characteristics of the bodies and brains and physiological mechanism with which we are born *must determine* our actions to the strains of life, at least by establishing predispositions of important sorts.

But even though the hereditary or innate influences are fundamentally important as giving a *predisposition* to the psychoneuroses, it is extremely difficult to define with fairness in what this predisposition really consists. The anatomical study of the brains of psychoneurotic patients has thus far taught us nothing. The chemical studies of their excretions have been equally without fruit. We may surmise that if we had the power to make careful physiological tests upon all the nervous functions of the newborn infant we might discover differences in his responses which would foreshadow mental excitability or mental weakness; but the proofs of this are lacking.[1] Towards the close of the last century much evidence was adduced to prove that *physical marks of imperfect local bodily development* (the so-called stigmata) — as lack of facial symmetry, malformation of the ears or eyes—were to be found with such frequency among these patients as to indicate that processes of "degeneration" were silently at work, in psychoneurotic families, tending towards still graver disorders, such as idiocy and sterility, as their final outcome. Even when no obvious physical stigmata were present it was assumed that the nervous systems of such patients might be in some way defective, and many mental pecu-

[1] A very important series of observations bearing on the innate differences in functional vitality between the various mechanisms of the body and their significance for the subsequent evolution of character and temperament has been published by Adler (Alfred Adler: Ueber neurotische Disposition. Jahrb. für Psycho-analyt. u. Psychopath. Forschungen, Bd. 1, p. 526. See also earlier papers by the same author); this work is entirely in line with that of Freud and others of his school, but the principle involved is too important and complex to be discussed in a general summary of this sort.

liarities were enumerated which were supposed to be the outcome of these states. As a portion of this doctrine it was sought to bring every form of eccentricity and even genius into the baleful circle of the degenerative tendencies. But to take such an attitude as this was to assign to stolidity and commonplaceness a position of prominence in a way that mocked at progress, and the credit of the whole scheme suffered severely in consequence. Sterility and idiocy are not characteristic of psychoneurotic families. The creative genius of the artist and the imaginative writer does indeed rest on a similar basis with the symptoms of the psychoneuroses, but neither of these tendencies points necessarily or regularly to " degeneration " as their cause. The main thing to be said in this connection is that there is a real correlation between mental and bodily conditions such as is deserving of careful study. But it is essential that this should be made in a very liberal spirit.

It is true that defects of bodily nutrition are found among these patients which serve both as indications or consequences and also as intensifying causes of their impaired nervous states. The enteroptoses, the dry hair and skin, the impaired digestion, weak muscles, poorly acting hearts and feeble eye-muscles, which are observed so often amongst a certain class of neurasthenics, belong in this category of physical signs. But, important as these conditions are and much as they call for local treatment (which is too well known to need re-statement here), neither their clinical nor their biological significance is clear. Their own etiology is indeed in doubt. They certainly cannot be considered as essential causes of the psychoneurotic illnesses, and on the other hand there is much question whether they are not, to some extent, products rather than antecedents of the disordered nervous and mental states. Disorders of the bodily functions do certainly arise from disordered emotions and may lead in their turn to organic changes on a large scale. Indeed, between the " organic " and the " functional " it is impossible to draw sharp lines. Bodily processes are a sounding-board for mental processes, and *vice versa*. On the whole, the effect of thus seeking to shift the responsibility for these nervous illnesses on to the shoulders of our ancestors has been to make physicians pessimistic as to their power to help toward a cure. The hereditary tendency is conceived of too strongly as " biological " and therefore not to be materially modified in any given individual, and too great emphasis laid upon this point has tended to a gross sort of materialism and fatalism. The belief that a patient's mental sufferings are a reproduction of tendencies which his father or his mother showed before him is too often accepted as an excuse for doing nothing to relieve him. Meantime, another set of facts has been coming more and more prominently forward. The " something " that we inherit is, in most cases, a " tendency " indeed, but nothing more, and—as in the instance of tuberculosis—the actual disease may never show itself provided the patient can be suitably protected against causes operative after birth. So true is this that even where the disease " runs true " through several generations, as in those cases of hysteria or obsessional disorders, for example, where parent and child exhibit the same symptoms, it can often be shown to have been the influence of the ignorant, nervous mother, driven by a fatal impulse to strive toward reproducing herself in her child and the fatalistic impulse of the child to imitate the mother, rather than any real hereditary tendency, that brought the result to pass. This line of thought is so important that we must leave it now only to take it up again.

The *strain of modern living* is the next influence on which stress is often laid, but its consideration need not detain us long. The telephone, the morning paper, the noise of crowded streets, the seething competition and the pressure for a narrow and exclusive individualism such as everywhere makes itself manifest, seem foes of tranquility and health.

But it is probable that these strains appear to be greater than they are and, on the other hand, they bring, in a measure, their own remedies. The pace set is set, after all, by men for men, and while it is too fast for some it is not certain that on the whole it increases faster than the power of adaptation of the majority. At the worst the strains of modern living are mostly obvious and open enemies, whereas the enemies which we have most to fear are those which, in our ignorance, we do not see. If we could but secure all the power of meeting hard conditions that belongs to us by birthright we should not have to strive so hard to make these conditions easier. It is not so much overwork as worry and apprehension that really sap the nervous vigor, and while worry and apprehension doubtless accompany necessary competition and well-founded anxiety and doubt, yet it is a piece of common knowledge that the most harrassing worries are those which are without external provocation but which imply internal tumults of the emotions, the hidden causes of which it now becomes our duty to study at close range.

What are the influences, brought to bear within the lifetime of the individual, that lead to these emotional tumults? How can we best explain the conversion of the emotions into the symptoms of disease? Where shall we best find an adequate treatment? I beg you to take notice of the fact that the actual evolution of our knowledge in respect to these matters has not followed the lines indicated by the questions which I thus ask. On the contrary, the controlling factors in this evolution have been, partly, the scientific tendencies obtaining at the particular periods when the various advances were first made; partly, the qualifications, temperament and training of the particular investigators. It has long been plain to every one that emotional influences were important causes of disease, and various modes of combating these influences have been described, but it is only rather recently

that the origin of these emotions and the mode of production of the symptoms have been measureably understood. The physicians who have been the leading workers in this great field of study may be classified in three groups: (1) The group of the accurate observers, descriptive analysts, natural historians; (2) the group of the therapeutists; (3) the group of the constructive analysts, inductive reasoners, philosophic thinkers. It is possible to describe the symptoms of a disease and to observe many facts in the natural history of its development, as a naturalist studies the characters of an animal or a species, without being greatly drawn to see its real place in the great scheme of nature; it is eminently possible for men of practical instincts — the " nurturing instincts " perhaps they might be called — to treat patients with great success, up to a certain point, without having any adequate conception of the causes of their illnesses.

Consult your own memories and you will see the parts which men of these different types have played. For examples of the *observers and describers* we might go back to Falret and Briquet, who gave us such excellent accounts of *folie de doute* and of hysteria, even in the middle of the last century. The French have always been prominent in these lines, and I will next mention that truly great pioneer in descriptive clinical analyses, Pierre Janet, the pupil of the great Charcot, without pausing to mention those who with such brilliant success have followed similar lines. Janet's remarkable contributions marked the beginning of a new era of knowledge, and the data which they have furnished will be of enduring value. If they do not represent a movement capable of indefinite expansion it is because they have been of the nature of studies into this or that special problem of medical psychology rather than recognitions of typical facts lending themselves readily to great philosophic and sociological generalizations.

As examples of the *therapeutists*, the men of practical instincts, I need only mention Charcot, Weir Mitchell and his followers, and such men as Liébault, Bernheim, Van Eeden, Forel and Dubois. These names stand only for a few men out of hundreds and of course those who bore and bear them were not exclusively therapeutists.

Finally, we come to the third group of investigators, whom I have designated as *analysts, inductive reasoners and broad thinkers*. The foremost representative of this group,[2] at the present day, is unquestionably Sigmund Freud, a remarkable personage, whose observations and whose method [3] have opened for us avenues of inquiry into which men of the best minds are pressing forward in ever increasing number. No future student of human character and motives, whether these be called normal or morbid, will ever make studies deserving serious recognition without familiarizing himself with the researches of the school of thinkers and observers of which Freud was the leader and is still the central figure. Janet's work and that of men following similar lines (Morton Prince, Sidis, etc.) have made a revolution in the field of scientific psychology; Freud's work has extended this scientific revolution and has set on foot an equal revolution in character-study, educational psychology, race-psychology, child-study and folk-lore.

The Freud method (to which the name of " psycho-analytic " has been given) does not depend for its therapeutic success upon the ability of the physician to hypnotize his patient or of the patient to subject himself to the hypnotic influence. It is not an effort to spread the healing mantle of any " suggestive " influence over the painful details of the case. It is an attempt to enable the patient to penetrate with tireless zeal, increasing skill and fearless honesty, upon the details of his own emotions, life and thought, in the belief that nothing becomes less sacred or fails to become less painful, through being clearly seen. Such being its purpose it is hard to see why this method can justly challenge the hostility of any conscientious person, though easy to see why many physicians should shrink from the difficulties attending its successful application. "Suggestion," "isolation," improvement of the bodily nutrition, persuasion, explanation, all of which have their valued place, leave many of the great springs of emotion and of motive entirely untouched. They make no adequate effort to base themselves on any deep knowledge of human nature. Their influence, however important it may be, is bound to be limited in its scope.

The psycho-analytic method does not indeed necessarily give us all that we may need for spiritual progress, but it prepares the way and opens a long path. It does not exclude the other modes of treatment, but supplements some of them and often renders all of them unnecessary. If the slogan of the suggestive psychotherapeutics has been, " You can do better if you *try*," the distinctive slogan of this method is " You can do better when you *know*."

But when you know what? The answer has been already given, " When you know yourself." The symptoms of the psychoneuroses,—morbid fears, irresistible impulses to thoughts and acts, distressing doubts, nameless apprehensions,— and not these symptoms of illness alone, but also their congeners, selfishness, envy, suspicion, and temptations to cruelty and prejudice such as have filled the world with misery, have been largely the outcome of self-ignorance, in the sense that in this ignorance, the deeper sources of which have been, until now, imperfectly defined and largely unsuspected, lies the secret of the occurrence of these evils. It is the removal of this ignorance and the implantation of the desire as well as the ability to see things as they are that constitutes the best and only radical treatment.[4] This treatment, too, has its practical

[2] It will of course be understood that I am speaking of leaders in psychoneurology alone.

[3] Strictly speaking the originator of the psycho-analytic method was Joseph Breuer, Freud's older colleague and co-worker.

[4] Each person may be conceived of as representing the community in microcosm and the social sins of hatred, etc., represent conflicts between different aspects of our past and present selves.

limitations, but these are rather incidental to the difficulties of application of the method than inherent in its nature. It is a necessary condition for the therapeutic success of this method of radical re-education that the patients should be reasonably intelligent, not too old and inelastic, absolutely honest, absolutely unreserved in dealing with their physician, ready to join him in the inquiry, prepared to confide absolutely in his reliability and good faith. It is necessary, likewise, that the physician should be confident in his own motives and that he should have had a special training and special interest in this sort of psychological research. In other words, this kind of investigation, which seeks at once to discover the causes of the disorder and by that very fact to apply the remedy, implies a high degree of skill and training, or of natural aptitude. It is not, therefore, well adapted for the general practitioner or for the run of hospital patients, and no one should enter on such a course of treatment in any given case without being prepared to carry it to the end. If he does so he may find himself standing aghast at the task before him, as Faust stood before the Earth Spirit which his magic arts had summoned. But even though the general practitioner does not use this method, every physician should understand its scope and meaning, just as every physician should know the principles of many bacteriological procedures which he can never use.

It is important to note that the generalizations of which I shall now speak were worked out laboriously through the direct and prolonged questioning of many patients and the combined observations of many men, partly pupils and followers of Freud, partly independent workers in a much-neglected field. (Havelock Ellis, Krafft-Ebing, Moll, Fliess, etc.

I spoke a few moments ago of the "tumults of conflicting emotions" and also of "self-ignorance" as being the causes of the psychoneurotic symptoms. Both of these terms need amplification and explanation.

Before any one could be said to really know himself it would be necessary for him to know all the experiences, thoughts and emotions which he had had since birth. Of course this is impossible, but he might at least know them, or be able to summon them into the focus of his consciousness, by groups and samples, and every one would admit that a person did not know himself even tolerably well who had, either deliberately or in obedience to some blind impulse, selected certain groups of experiences, thoughts and emotions which he chose to take as standing for himself, and turned his eyes away from other groups, in spite of the fact that the rejected knowledge was of obvious importance. And yet this species of selection and rejection is continually going on with every one of us. It takes place also, and on a large scale, with communities and nations, and one of the chief functions of education and civilization is to obtain their rights for important groups of experiences, thoughts and emotions which had been repressed and rejected from the light of conscious knowledge.

We say we "cannot bear to think of"—and so strive not to think of—one or another matter, when in fact it is self-interest, or laziness, or blind obedience to an artificial code of social rules that really impels our choice.

Magna Charta, the abolition of slavery, the change of sentiment as to promiscuous almsgiving,—every true reform,—were all wrung from persons possessed of a certain power to maintain their views against the Cromwells and Washingtons and Wilberforces that rose up vigorously against them. The Cromwells are often narrow, too; they also are but partial knowers of themselves. But one great reason for their success is that they represent arguments the truth of which upholders of the established order already have divined but will not formulate to themselves or listen to when adduced by others.

And so it is with our own conscious attention in its dealing with rejected thoughts. We prefer to accept the established, traditional opinion rather than to investigate and think; we prefer, if need be, to show anger and bigotry rather than investigate and think; and yet we, too, divine the truth. For, be it clearly understood, the experiences, thoughts and emotions which we reject because they do not fit into the scheme of life which we select are not so far out of our minds as we suppose. We do not like to think of them, we do not dare perhaps to think of them, we say we do not think of them. But they are in our memories and in our minds, and they influence our acts; and it is the half-consciousness of their presence, and the fact that they represent deep instinctive cravings of our natures, in spite of our assumed hatred of them and our shrinking from them, that induce such emotions in us as anger and depression and envy and prejudice and jealousy and fear, and the impulse to adopt ceremonies and observances which are practically analogous to pagan ceremonies of propitiation and expiation. Indeed, the whole fabric of mythology is built on the projection outward of the sense of war and tumult and revolt and victory going on within ourselves between the thoughts and emotions which we clearly formulate and those which we only half or a quarter formulate and those which we do not formulate at all and affect not to know, yet which in reality influence our acts and thoughts.

Now, the leaders of the psycho-analytic movement have shown that these attempts to conceal ourselves from ourselves lead to mental conflicts and to illness and to false standards of civilization. They are insisting that those who wish not to be invalids shall not be encouraged to hedge themselves behind their lack of knowledge or their unwillingness to think or the divine right of some conventional code of morals, without its being made clear to them that these artificial rights are waging war within their minds with instincts older than morals and standing in no necessary antagonism to morals.

There is a sacredness in traditional customs,

the filtered wisdom of the ages, but there is also a sacred right to revolt against them and a sacred obligation in either case not to act or think without a reasonable knowledge of the facts. The typical signs and symptoms of nervous invalidism of the type that is now before us are really covers and substitutes instinctively adopted for the purpose of putting aside (concealing) thoughts, emotions, cravings and longings of forbidden sorts, or of sorts that it hurts one's sense of pride to face. They are all symbolisms, analogous to the symbolisms of dreams, and like them they point, for those who can read their hieroglyphic language, at the desires and repressions which are the real facts at stake. These thoughts and desires, half-formulated or unformulated, cause a sense of deep distress, for which the patient instinctively seeks reasons to account. Led by this instinct he adopts the figment of a fear of bridges or open windows or of railroad trains or of an impulsion to do injury to some one. In these symptoms, distressing though they are, the patient expresses in a rough fashion the cravings in which they had their birth; and for that reason he clings to his fears as to something which has the sacred fascination of a relic, though not realizing that he does so. If he would get well he must learn to see this, and for this purpose his *entire life*, and not merely the latest phase of it, must be made as transparent as glass, so that he may be able to see the whole of it at one glance. It will then appear that it is his own thoughts of which he is afraid and that his present fear has been preceded by other fears, the outcome of the same and other sets of mental conflicts, dating back, many of them, to days of childhood. To state the facts again in other words, his present fear represents a state of mental distress which arose as an expression of the fact that his thoughts or emotions relating to some important subject or subjects had become intolerable to him, and the open window, the bridge, the railroad train serve simply as so many molds into which the patient instinctively seeks to compress his vague and apparently causeless distress and so to explain it, even though erroneously, to himself. Every one recognizes that a bridge is a place from which people sometimes jump or fall, that a train journey is a common cause of accidents, that to be "shut in," whether actually or morally, has a certain element of the unpleasant. For reasons such as these, and perhaps many more, the situations indicated are really seized upon as excuses for the fears, simply because some excuse must be found. The patient, recognizing that he must find some way of accounting for his distress, instinctively grasps at causes which his neighbors would recognize as reasonable. This method of explaining the genesis of morbid fears is not a piece of *a priori* argument, but a mode of reasoning arrived at by questioning the patient's own experience and emotions. At first the patients do not see its logic, but gradually the truth enforces itself upon them and makes them able and willing to see themselves in a new light and to learn to substitute an intelligent scrutiny for an endless chain of morbid introspection. The physician who helps to make this scrutiny soon comes to realize that no symptom or trait of character can be adequately understood except on the basis of a relatively complete knowledge of the patient's whole environmental and emotional life since infancy. As this knowledge grows gradually wider and more accurate the element of time seems gradually to be eliminated from the history; infancy and age become approximated; the cause and the result are seen at one glance and as if coalescing; the present act, which one might have felt tempted to characterize roughly as selfish or cowardly or criminal, is seen as the logical expression of a repressed but natural instinct or of a misconception, formed in childhood but witnessed as if now living and active.

The immense significance of that rapid but hidden transition from babyhood with its animal instincts and emotions[5] to the later periods with their artificial morals and conventions is now for the first time clearly recognizable, through this process of rendering the whole life transparent, and its intensely dramatic features are susceptible of being clearly understood.

Then, as the research goes further, several other principles gradually get developed. The occasions on which these intolerable mental conflicts arose for which the fears were substituted are found to have been not one or two alone, but many and of various sorts. The recognition of this multiplicity of emotional traumata is an important supplement to the commonly accepted principle. A patient has a railroad accident, for example, or some severe emotional excitement, and these events (which in themselves involve considerable mental conflict) are considered as the sole and sufficient cause of the symptoms that result. But when his history is well analyzed many other events are found, different in appearance from the last, but psychologically of like import. "To fall," "to be overpowered," to "suffer loss," "to be in danger" are terms which apply to many emotional as well as physical situations of the most varied sorts, and such as every one has been exposed to not once alone, but many times, and the unconscious memories of these rush in, impelled by the force of mental association, to lend a new fulness of meaning to the railroad accident and to receive a new fulness of meaning for themselves from it.

But is there no difference in significance and standing between these various related and associated memories? Are there not some that have more power for harm as centers of emotional stress? The inevitable answer is (however gradually it may come to the surface in a given case) that those emotional conflicts have the greatest power to give a tone or color to the rest into which we originally put the deepest essence of ourselves, our strongest hopes, our most personal and secret and, therefore, most strongly repressed longings,

[5] This transition from the non-social period of infancy to the more and more social states of normal childhood and adult life, a transition in which the moral sense is first developed and when, therefore, an unfavorable judgment must be passed (of course unconsciously) on many antecedent acts and feelings, is of great importance for the whole theory of character formation and symptom-production. It hints, likewise, at a sort of biological basis for the doctrine of "original sin."

the feelings in which not only the prudent wishes of adult life, but the deep, uncensored cravings of infancy and youth could find expression. In other words, it is the emotions related to the great functions of reproduction, the sexual functions, that hold this position of prominence as giving color to the rest. It is in the conflicting tides of feelings of sexual origin, at which all romances, almost all imaginative and dramatic literature, love to hint, some prompting to intense expression, others to equally intense repression, all of which meet in fierce antagonism around the sexual instinct, that the real cause of nervous symptoms should be sought. But this should be understood with reference to the principle just stated, namely, that a vast number of emotions take their tone and value from the strongest or most fundamental one among them, just as a large school of artists may get its name from that of their greatest representative. It is only when this point is grasped that we can meet the objection of those who urge a host of other motives and emotions as of equal rank with those of sexual nature. So far as our conscious awareness is concerned, they may be of even higher rank. For the time when the sexual craving was so strong may have been in the forgotten period of infancy, and even then these cravings may not have been recognized as sexual at all. It may be only through our reasoning that their true nature is revealed. And yet they may have been intense enough to have founded the emotional traits of character which came, later, to be represented in the mental struggles from which, first the distress, later the specific fears and illnesses emerged.

It is not, then, necessary that every nervous invalid should accuse himself of having been "sexually inclined" in any objectionable sense, although it ought to be interjected here that the germs of the sexual perversions and inversions which when developed into an exaggerated form we characterize as criminal or morbid, are found in normal infancy and even in normal adult life. All these psychoneurotic illnesses, it cannot too often be repeated, are caricatures of normal tendencies. It is this which justifies the designation of them as "functional." This point is not brought forward as a mere bit of academic quibbling, but as a matter of the most practical importance. The infant is at first sexless, or, rather, both sexes are equally represented in his emotional life. It is often as natural to him to love *and love intensely* persons of his own sex as those of the opposite sex, his parents as those not standing in this relationship to him. Such intense love may reappear later in an exaggerated form and may lead to exaggerated expression of various morbid sorts. Children often exhibit a passion of objectionable intensity for teachers of their own sex, or for older children, and teachers for their pupils, and the exaggerated passion of children for parents may lead to relations of dependence, of instinctive imitation, of "identification," which dwarfs and limits their own development, or helps to foster the seeds of nervous invalidism in them, to a remarkable degree. It is interesting to recall, in this connection, that young children when passing through the period of transition from their "sexless" state to that of girlhood and boyhood, and, still more, when impelled by vague memory of that period, sometimes dream of themselves as of the opposite sex or as uncertain to which sex they now belong.

Two questions naturally present themselves to one who hears the merits of this psycho-analytic method described for the first time; first, Does not all this questioning about past matters lead to morbid introspection? then, supposing all these hidden facts have been obtained, What next? Where does the therapeutic influence come in?

To one who has become practically familiar with the working of this method these questions present no great difficulty. So far from morbid introspection being caused by this treatment it is prevented by it. Every patient is forced by the very terms of his illness to dwell upon his symptoms; he rolls them continually over in his mind like the tunes of a barrel-organ and without ever arriving at a satisfactory conclusion. The method of investigation which is here described substitutes an interested search, an intellectual inquiry, for this emotional treadmill of false reasoning.

As regards the therapeutic value of the method, much the same answer will suffice. The mental conflict to which I have referred, and which results in all the morbid symptoms, goes on without the patient's knowledge — although half-divined. The cure consists in bringing these unconscious processes to the light of reason. In their own nature they are imps of darkness and lose their power for harm when brought into the light. To be sure, it is not enough that this knowledge should be mere lip and ear information. Even this is something, but for the best result the knowledge of the truth should soak into the mind and express itself in the acts and become an integral portion of a new and reformed personality. In proportion as this is accomplished, the person in question approaches towards the desired knowledge of himself. He may still feel, and should still feel a craving for some further self-expression, a desire to take others, in increasing number, into the circle of his thoughts and interests and affections. But this craving will no longer tend so strongly to clothe itself in infantile, utterly personal and sensuous forms, which excite a feeling of mortification and the need of repression and suppression and expiation. The obsession of killing some person whom one really loves, of throwing oneself dramatically from an open window, are pretty certain to be recognized as ludicrously caricatured survivals from the days and phantasies of childhood; a railroad train takes its proper shape as a convenient means of locomotion.

It is, of course, clear, and clearer far to me than you, that this address is anything but complete. For one thing, I should have been glad to discuss further the important fact that much of the explanation for our mental conflicts, in which the symptoms of these maladies originate, takes place

wholly or partly within the bounds of that limbo which we call our unconscious mental life. Volumes might be written, also, with reference to the great struggle between instinct and social culture which, while it is responsible for civilization and progress, is responsible also for repression, bigotry, illness, misunderstanding and misjudgment of others and ourselves. Our cultural life with all its virtues is far narrower and more narrowing than most of us conceive. To broaden some of its tendencies should be our earnest effort, and to this great aim the art of psycho-analysis is partly consecrated. We should learn to deal less in moral judgments and more in knowledge. Moral judgments are, to be sure, needful for the rough exigencies of social life, as precursors of the jail and as affording protection against obvious practical evils. But for the scientific thinker they are out of place. The phrase "*tout comprendre est tout pardonner*" is not indeed applicable to the whole situation, especially in the case of the person mainly concerned. No one should wish to deny moral responsibility for his acts and thoughts. But it is nevertheless true that to "know all" is often justly to modify our judgment and our means of progress.

The familiar sins of "incontinence, violence and malice" which Dante punishes in his Inferno as attacks upon social stability and progress might justly be described in medical terms as equivalent to psychoneurotic symptoms; and in the sufferings and joys of those whom this great student of human nature sets toiling up the hill of Purgatory it is possible to read the symbolized history of that typical and desirable sort of convalescence from the miseries of nervous illness which leads not only to a better personal health, but to a wider sense of social opportunity and obligation. The community is the individual written large, and the so-called normal individual resembles the psychoneurotic invalid, but with the difference that he has learned, either instinctively or consciously, in infancy or in childhood or in later years, to establish a harmonious cooperation amongst the dominant tendencies of his mental life, or — what is the same thing transferred to another field of action — to adjust himself to some workable conception of community life. The invalid is he who is roughly studying this important lesson and within whose mind the struggle is still going on between native instincts, on the one side, and the forces arrayed to establish and maintain a series of moral and social standards imposed by the traditions of a conventional community, upon the other side.

If this thesis is correct, the physician's task broadens into that of reviewing these moral and social standards themselves and studying into the question of their justice, their desirability, their real origin. The sociological significance of the physician's task, as he studies nervous invalidism, is seen to take on a new importance in view of these considerations. The mischief which may be done by the ill-regulated emotions and prejudices of a "normal" person is always painful to contemplate. But there are many narrow and cruel social codes and customs, not only of the middle ages, but of the present day, which are of the same origin with these private prejudices, sins and symptoms. To labor against both sets of ills and for a better private and public status, is a worthy aim, and if the method of investigation here advocated can contribute towards this end it should be warmly welcomed and the labor which its application involves in any given case should be considered well-rewarded.

Furthermore, what applies to the neurologist applies almost equally to the patient. Nervous invalids should regard themselves not solely as persons in misfortune, but also as persons in position of opportunity and trust; they should feel themselves members of a band of investigators working in a great field, and as in a position to utilize their individual experiences, even though painful, as data towards the solution of a problem of universal interest.

A CONTRIBUTION TO THE ETIOLOGY OF ACTINOMYCOSIS. THE EXPERIMENTAL PRODUCTION OF ACTINOMYCOSIS IN GUINEA PIGS INOCULATED WITH THE CONTENTS OF CARIOUS TEETH.

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1. SUGGESTIVE PREVIOUS WORK.

J. ISRAEL [1] noted the presence of carious teeth in three of five cases with actinomycosis. In one of the three he succeeded in demonstrating the parasite of the disease not only in the pus of a subperiosteal abscess of the lower jaw, but also in the root canal of an extracted, neighboring and carious molar tooth. He inferred that the parasite was harbored in carious teeth. No mention is made in his publication of the presence of the organism in the teeth of any of his other patients or in individuals without the lesions of actinomycosis.

The first extensive studies on the biology of the micro-organism of the disease were made by Bostroem [2] and by Wolff and Israel.[3] Their widely different views are responsible for much of the confusion which has since prevailed.

Bostroem's opinion that both man and animals are infected from sources without the body by the implantation within the tissues of grains, especially barley grains or their fragments, has received general acceptance. It is now known, however, through the masterly work of J. H. Wright [4] that Bostroem and many subsequent investigators, beginning their experiments with material containing true actinomyces, have in many instances cultivated therefrom a group of organisms properly classed among the Nocardia. Organisms of this group are widely distributed

* This investigation was undertaken under a grant from the Proctor Fund of the Harvard Medical School.

[1] Virchow's Arch., 1878, 74. p. 15.

[2] Beitr. z. path. Anat. u. z. allg. Path., ix, 1890, pp. 1-240.

[3] Virchow's Arch., 1891, cxxvi, pp. 11-59.

[4] The Biology of the Micro-organism of Actinomycosis. Jour. Med. Research, vol. xiii, May, 1905.

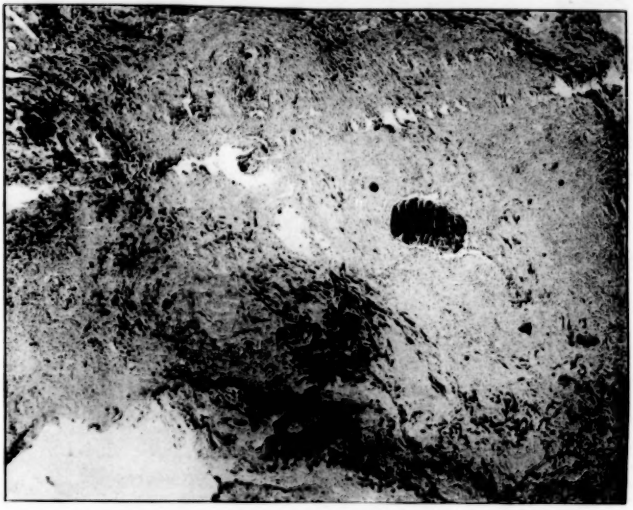


FIG. 1. Actinomycosis of the omentum in a guinea pig seventeen days after intraperitoneal inoculation with the contents of a carious tooth. (Case IV.) Colony of actinomyces surrounded by a wide zone of connective tissue (x30 app.)

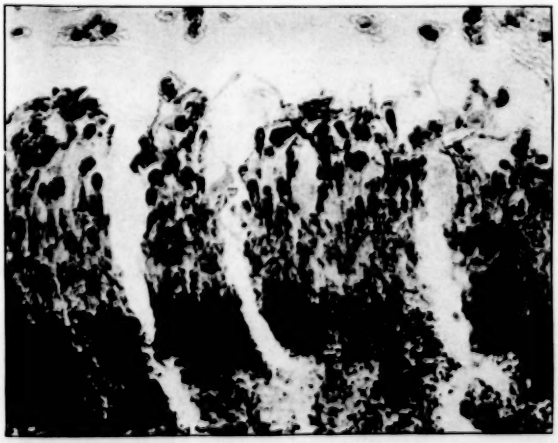


FIG. 2. Radially disposed "clubs," some of which show a central filament at the periphery of the colony (x 750).



FIG. 3. "Clubs" with central filaments (x 1500).



FIG. 4. "Clubs" with central filaments (x 1500).

in nature, being found not only as an occasional cause of suppurative lesions in man and cattle, but also on grains and grasses. They grow well on all culture media and in the incubator. They have never been shown to cause lesions like actinomycosis after experimental inoculation of animals.

Wright confirmed Wolff and Israel's findings and showed that one species of a branching filamentous organism could be constantly isolated from the lesions of the disease. This organism grows well only under anaërobic conditions and at body temperature. Characteristic colonies with peripheral "clubs" are produced by cultivation in such animal fluids as blood serum and serous pleuritic fluid (Wright). The intra-peritoneal inoculation of guinea pigs and rabbits gives rise to tumor growths having the histological appearance of actinomycotic tissue and containing typical club-bearing actinomyces granules. The organisms of the type described by Wolff and Israel and by Wright must therefore be accepted as the true cause of actinomycosis. Wright prophesied that actinomyces might be found as a normal inhabitant of the buccal cavity and the alimentary canal.

In 1904, while Wright was studying the biology of this organism and during my investigation of various bacterial infections of the respiratory tract, I noted the occasional presence in the sputum of organisms having the morphology and staining reaction of actinomyces. They appeared as isolated filaments or aggregations of filaments forming a small granule without "clubs" and much mixed with other bacteria. At that time I made unsuccessful attempts at isolation in pure culture. The subcutaneous inoculation of animals with the contaminated material grown in bouillon was also negative.

A recent review of the subject of actinomycosis again called my attentian to the uncertainty as to its method of origin. My previous finding of organisms resembling actinomyces in the sputum, the failure of true actinomyces to grow at other than body temperature and the lack of any convincing evidence that actinomycosis is a contagious disease suggested that infection arises from within the individual. The prevailing location of the disease about the jaw or neck naturally suggests the mouth as a source. As it happened, in two cases with actinomycosis recently seen in consultation and in one patient seen at my office, I obtained a history of much trouble with the teeth preceding the onset of the affection. My attention was thus turned to the teeth as a cause.

2. INVESTIGATION OF THE CONTENTS OF CARIOUS TEETH.

(a) *Method.* No patients with the lesions of actinomycosis were selected for study. From about three hundred patients recently examined, the contents of carious teeth were removed in 16. The material was lifted or scraped from the tooth cavities by means of a spatula and placed in sterile glass tubes. It was carried at once or within a few hours to the laboratory. Cover glass preparations were made from a part of the material in 11 cases. Cultures were prepared in most of the cases both in bouillon and in sugar agar suspension tubes. Pure cultures have not as yet been obtained. The culture experiments are not completed and will not be described at this time. A third portion in 5 cases was hardened and cut in serial sections. In 9 cases a portion of the material was placed in a glass dish containing a small amount of bouillon, divided into particles small enough to pass through a rather large bored needle of the injecting syringe and inoculated intraperitoneally into guinea pigs. All instruments used in the experiments were sterilized immediately before they were used. The inoculated animals were kept in separate cages.

That part of the contents of the cavities set aside for sections and the tissue obtained from the inoculated animals were hardened in alcohol, imbedded in paraffin and cut in serial sections. Great difficulty was at times experienced in obtaining a complete series because of the presence of numerous small, hard, foreign bodies. These indented the knife and tore the sections. The sections were stained with a weak solution of eosin, followed by Gram's stain, decolorized with equal parts of xylol and aniline oil, cleared with xylol and mounted in balsam.[5]

(b) *Cover glass preparations of the contents of cavities.* In smear preparations from cavities in all of 11 cases, Gram staining filaments mixed with other bacteria were found. The filaments stain deeply and evenly or present deeply stained points at intervals, giving them a beaded appearance. In places, small dense aggregates of filaments are seen. The filaments are for the most part slender and wavy. Both long and short forms are observed. Short, bent, bacillus-like organisms are not infrequently seen. The identity of these filaments with actinomyces is suggested by their similarity in appearance with the forms of that organism found in smear preparations from pure bouillon cultures. Branching is in rare instances seen in the isolated and clustered organisms. In the manipulation necessary for the preparation of smears from pure cultures of actinomyces grown in bouillon, the branches of the filaments are usually detached from the parent stem and appear as unbranched long or short filaments. The infrequency of branching forms in the cover glass preparations from the contents of carious teeth is probably due to the manipulation of the specimens. Neither in the fresh material crushed between cover glass and slide nor in the stained preparations have true "clubs" been found. At times an increase of the filaments toward one end is seen.

(c) *Serial sections of hardened masses of the material.* Serial sections were studied in 5 cases. By this method, the morphology of the organisms and their relation to the material in the cavities can be more satisfactorily determined. Branching organisms having the morphology and staining reaction of actinomyces were constantly found.

[5] This is practically the same as Mallory's Method No. 1. Mallory and Wright's Pathological Technic, second edition, 1901, p. 365.

The filaments are isolated or form small or large colonies resembling the colonies of actinomyces grown in bouillon or sugar agar suspension tubes. In some instances, they are found in great numbers within what appears to be a degenerated mass of organic material, at the margin of which is a dense network of more deeply staining organisms. From the marginal zone, radially disposed and at times swollen filaments project into the neighboring detritus. Such an appearance closely resembles the colonies of actinomyces in actinomycotic tissue. No "clubs" have been found about these colonies.

The number of organisms having the morphology and staining reaction of actinomyces both in the smear preparations and in the sections is variable. In some preparations they are present in great numbers and far outnumber other bacteria. Such an appearance suggests that actinomyces plays a fundamental part in dental caries.

Actinomyces grows best in artificial media under anaërobic conditions. The organism is not, however, an obligate anaërobe and multiplication in carious teeth is doubtless favored by growth in symbiosis with other bacteria and the reducing action of organic matter.

(d) *Animal inoculation.* Only five of the nine animal experiments are completed. A positive result in three of the five, however, justifies a preliminary report at this time.

The animal inoculated with material from Case I died at the end of six days.[6] The remaining animals were killed at intervals of twelve, twelve, seventeen and nineteen days respectively. All showed thickening of the omentum with the formation of tumors. From two to eleven hard tumors varying in size from about that of a pin's head to a lesion 12 by 5 mm. and of an oval, spherical or irregular contour were found in each of the five animals in the series. The tumors were slightly reddish in color. They were resistant on section and the cut surface was reddish, grayish or white. In all cases, the lesions were connected with the great omentum and for the most part were adherent to the stomach. Tumors were also found adherent to the root of the mesentery, the abdominal wall and the intestine. The formation of free pus in the nodules has not thus far been observed. No invasion of the glands by branching filamentous organisms was noted.

In the animals inoculated with material from two of the cases (Cases III and V) there was only slight thickening of the omentum and a few nodules not exceeding a pin's head in size. In the thickened omentum and the small nodules, numerous bacteria and foreign bodies invested by connective tissue were found, but no colonies of branching filamentous organisms.

In the animals inoculated with material from the three remaining cases (Cases I, II and IV) there was greater thickening of the omentum and more numerous and larger tumors. Colonies of branching filamentous organisms were found in these lesions. The colonies were surrounded by a zone of pus cells of variable width, beyond which there was round-celled infiltration or well-developed connective tissue. The extent of the inflammatory reaction about the colonies was large compared with the width of the colonies. The number of colonies in each tumor varied from one to five or six. The size of the tumor appeared to vary with the size or number of the colonies, being larger in the presence of single large or several small colonies. The colonies themselves varied in size from those discovered only after careful search with the oil immersion lens to a granule several times the diameter of the colony shown in the photograph. (Fig. 1.) They were composed of a network of slender, branching, Gram-staining filaments. The larger colonies showed a dense mass of faintly staining beaded filaments surrounded by a narrow margin of more deeply and evenly staining organisms. At the periphery of the colony isolated, radially disposed, swollen filaments projected in some instances to a considerable distance into the neighboring tissue. The peripheral filaments were often invested with a club-shaped eosin-staining mass. These "clubs" some of which show a central filament may be seen in the photographs. (Figs. 2, 3 and 4.) "Clubs" were demonstrated about some of the colonies in all the three positive cases. In the first two cases (Cases I and II) the clubs were small in size and number. In the third positive case (Case IV) they were numerous and of large size.

Bacteria and foreign bodies were also found in the lesions. In one instance (Case IV), a dense network of filaments with peripheral "clubs" was seen to have developed about a foreign body.

In their histological appearance, the lesions are identical with actinomycotic tissue. The colonies of branching filamentous organisms are typical actinomyces granules.

A brief account of the inoculation experiments in the five cases is as follows:

CASE I. *Positive.* M. L., female, age twenty-nine. Hospital No. (O. P. D.) 150775. Clinical diagnosis: Salpingitis. Material obtained from a carious first molar in right upper jaw. Guinea pig inoculated June 3, 1910. Died. Interval six days. Autopsy June 11. Great omentum much thickened and injected and contains two hard nodules about 4 mm. in greatest diameter. A third nodule 2 to 3 mm. in diameter firmly adherent to the root of the mesentery and connected with the great omentum by a narrow band of connective tissue. Serial sections of the three nodules show in one, two colonies without clubs. In a second nodule a large colony with clubs. The third nodule is composed of inflammatory tissue and is without colonies of actinomyces.

CASE II. *Positive.* H. T. G., male, age fifty-nine. West Medical Service. Hospital No. 170194. Clinical diagnosis: Pyonephrosis. Gastric irritation. Material obtained from between lower middle incisors which are carious and neglected. Guinea pig inoculated June 3, 1910. Killed June 15. Interval twelve days. Autopsy showed thickening and injection of the omentum which contained two nodules about 2 mm. in greatest diameter and several smaller nodules. In this case, the entire omentum was folded together and cut in serial sections,

[6] Aside from the specific lesions to be later described this animal showed a diffuse peritonitis.

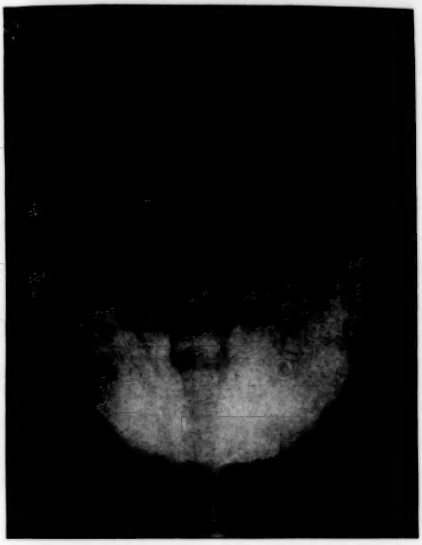


FIG. 1. X-ray of Case I. Tube in common position for stone in the lower portion of the ureter. A fair plate totally negative.

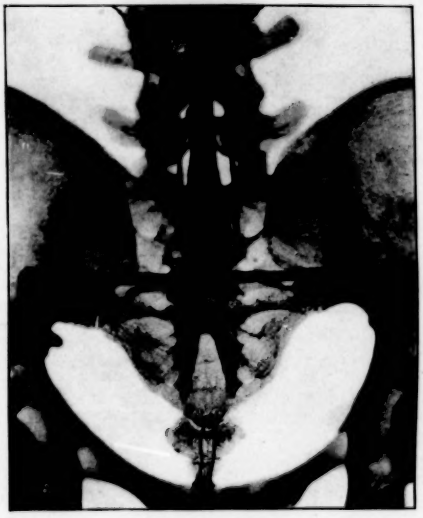


FIG. 3. X-ray of skeleton with calculus removed from Case I placed on the bone in the line of the ureter.
Note that calculus is practically invisible under extremely favorable conditions.



FIG. 2. X-ray of calculi removed from Case I and Case II.

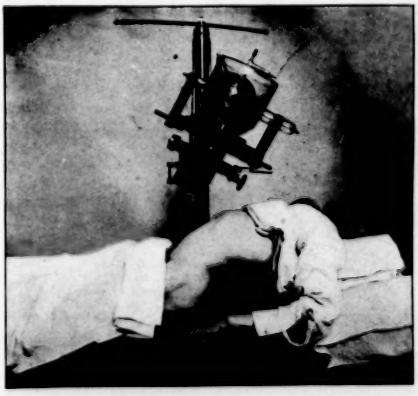


FIG. 4. Showing relative positions of patient and tube used in taking Figs. 5 and 8. The Edebohl's bag is placed under the lumbar vertebræ to give obliquity to the lumbar spine while removing the patient's face from the neighborhood of the tube. Distance from anode to plate, 30 in.

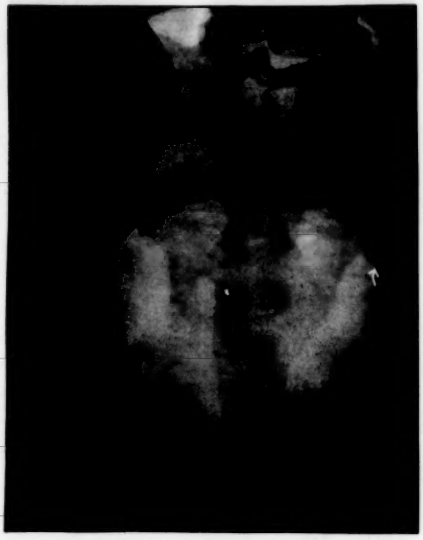


FIG. 5. Plate of Case II, taken in position shown in Fig. 4. Position of stone indicated by arrow.



FIG. 7. Plate of the same specimen as Fig. 6. Tube placed in oblique position and skeleton moderately inclined. Note that two shot have been displaced into the pelvis; also the foreshortening of the sacrum and the changed relation between the transverse process of the fifth lumbar vertebra and the top of the sacrum.



FIG. 6. Plate showing skeleton with artificial iliopsoas muscle built up, on which were placed six lead shot just outside the normal position of the ureter. Tube focused exactly over shot. Note that the whole sacrum shows, and that the relation between the transverse process of the fifth lumbar vertebra and the top of the sacrum is on this side normal.



FIG. 8. Plate of the same specimen as Fig. 6. Tube and skeleton in relative positions shown in Fig. 4. Note displacement of all the shot into the pelvis and that the space between the shot is much diminished. The lower segments of the sacrum cannot be seen and the transverse process of the fourth lumbar vertebra now occupies the position held by the fifth process in Fig. 6.

Many small colonies without clubs are found in the sections. Two fairly large colonies with clubs are found in the larger nodules.

CASE III. *Negative.* D. R., male, age forty-six. West Medical Service. Hospital No. 170106. Clinical diagnosis: Myocardial insufficiency. Arteriosclerosis. Material obtained from many carious stumps in upper and lower jaw. Guinea pig inoculated June 3, 1910. Killed June 15. Interval twelve days. Autopsy showed only very slight thickening and no injection of the omentum. Two nodules smaller than a pin's head were found. Examination of the remainder of the omentum pressed between two glass slides shows under the low power of the microscope numerous small cellular areas. Serial sections of the entire omentum and the two nodules show inflammatory tissue, but no colonies of actinomyces.

CASE IV. *Positive.* T. W. J., male, age twenty-eight. East Medical Service. Hospital No. 170123. Clinical diagnosis: Acute articular rheumatism. Mitral regurgitation. Material obtained from a carious molar in left lower jaw. Guinea pig inoculated June 14. Killed July 1. Interval seventeen days. Autopsy showed intestine and great omentum adherent to the site of the inoculation in the abdominal wall. The omentum is much thickened and contracted and contains near the point of the inoculation an ovoid mass about 12 mm. long and 5 mm. wide. The mass is made up of two fused nodules of about equal size and is somewhat constricted in the middle. The omentum is elsewhere adherent to the intestine in various places. It contains about ten other nodules varying in size from that of a pin's head to 3 to 4 mm. in diameter. The lesions are more numerous and larger than in the previous cases. Sections of the largest mass show two large and several small colonies. Club formation is well marked, as shown in the photographs.

CASE V. *Negative.* C. W., female, age forty-four. East Medical Service. Hospital No. 169939. Clinical diagnosis: Gastroptosis. Gastric dilatation. Material obtained from many carious teeth. Guinea pig inoculated June 14. Killed July 3. Interval nineteen days. Omentum very slightly thickened and adherent to the site of the inoculation. Contains one nodule smaller than a pin's head. Serial sections of the omentum and the nodule show inflammatory tissue, but no colonies.

3. SUMMARY.

Organisms having the morphology and staining reaction of actinomyces have been constantly found in smear preparations (11 cases) and in serial sections (5 cases) of the contents of carious teeth from individuals without actinomycosis. They are present in such numbers as to suggest that they play a fundamental part in dental caries.

Following the intra-peritoneal inoculation of guinea pigs with the contents of carious teeth, omental tumors histologically identical with actinomycotic tissue and containing typical club-bearing actinomyces granules have been produced in 3 (60%) of 5 animals.

4. BEARING OF THE FINDINGS ON THE ETIOLOGY OF ACTINOMYCOSIS.

The constancy with which organisms having the morphology and staining reaction of actinomyces are present in carious teeth suggests that under certain conditions persons with carious teeth are liable to develop actinomycosis. Lack of free drainage of a tooth cavity whether arising spontaneously or as the result of filling an imcompletely sterilized tooth may be regarded as favorable to the production of the disease about the jaws or neck. In such cases the root canal of the tooth is the channel of infection. Organisms derived from the teeth may also be implanted in neighboring tissues or find lodgment in more remote parts of the body by way of the respiratory tract or the alimentary canal. Local injury of the tissue may be regarded as an important predisposing factor.

Although actinomycosis is doubtless more common than is generally believed, it cannot be regarded as of frequent occurrence. In explanation of its infrequency compared with the numberless chances for infection it may be suggested that invasion of the tissues by actinomyces and associated bacteria does not always give rise to actinomycosis. In the two negative inoculation experiments with the contents of carious teeth in the present series (Cases III and V) organisms resembling actinomyces were present in smears from the extracted contents and it may be assumed that actinomyces was also present in the injected material but failed to multiply in the body of the animal. Here, as in other infections, the varying numbers and vitality of the seed and fertility of the soil are of importance. It is probable that only in a small proportion of cases in which implantation of the organism occurs does it actually take root in the tissue and lead to progressive lesions, with club-bearing actinomyces granules.

The investigation was carried out in the Clinico-Pathological Laboratory of the Massachusetts General Hospital. I am indebted to J. H. Wright for helpful suggestions regarding technic and to the staff of the hospital for permission to investigate their cases. The photographs were made by Mr. L. S. Brown.

THE DIAGNOSIS OF STONE IN THE PELVIC PORTION OF THE URETER.*

A PRELIMINARY REPORT ON CERTAIN LIMITATIONS OF RADIOGRAPHIC DIAGNOSIS AND A SUGGESTED REMEDY.[1]

BY HUGH CABOT, M.D., AND W. J. DODD, M.D., BOSTON.

IN a recent scholarly monograph by Jeanbrau the following causes of non-visibility of calculus in the ureter by means of the x-ray are laid down.

(1) Faulty technic. (Absence of compression, tube of too high penetration, etc.)

(2) Chemical composition of the stone.

(3) Its small size.

To this must be added a fourth:

The position of the stone.

* Read at meeting of the American Association of Genito-Urinary Surgeons at Washington, D. C., May 3, 4 and 5, 1910.

[1] Report presented at the XIII Sessions de l'Association Francaise d'Urologie.

This fact was brought forcibly to our attention a few months ago by the two following observations which, coming close together, served to make the findings impressive.

These patients were seen at the Massachusetts General Hospital, and it is through the courtesy of Dr. S. J. Mixter and Dr. J. G. Mumford that we were enabled to look after them.

Case I. M. M. D., male, age twenty-four. Entered the hospital Feb. 16, 1910. Six years ago had an attack of painless hematuria, lasting two days. Two years ago another attack of hematuria also painless but followed by the passage of three small calculi. Two months ago colicky pain in the right lower quadrant of the abdomen. Pain shooting to the right testis and penis. Since that time has had several such attacks but no marked hematuria, though the urine has been smoky. Two weeks ago was laid up in bed for several days with a dull pain in the region of the cecum and was thought to have appendicitis.

Examination showed tenderness with some muscular spasm in the right lower quadrant of the abdomen, but was otherwise negative.

Cystoscopy showed a normal bladder with the orifice of the right ureter slightly larger than the left, but not otherwise abnormal. Normal urine from the left side, none from the right. Ureter catheter entered right ureter for nine and a half cm. and could be passed no further. Several x-ray plates were negative. (Fig. 1.) At operation a fair-sized calcic oxalate stone was removed from the ureter at the point where it crosses the iliac vessels. (See Fig. 2, Case I.)

The stone was then placed upon a skeleton pelvis as nearly as possible in the proper position and an x-ray plate taken, which again failed to show the stone. (Fig. 3.)

Thus we have a calculus of fair size, of high density, studied with good technic by an expert and yet totally invisible.

On Feb. 25, 1910, C. C. B., male, age forty-two, entered the hospital with the following history: Seven years ago pain in the right loin and side. Hematuria for several days, followed by the passage of several stones. Well until ten days ago when he began to have pain in the right side similar to but not so severe as the previous attack. This was accompanied by moderate frequency of micturition, amounting to three to five times at night. No blood. Pain lasted two days and then disappeared, but the frequency of urination continued and the urine contained pus. It was for this that he applied for treatment.

General physical examination negative. Series of good x-ray pictures was negative. The urine was pale, cloudy, alkaline, 1013, albumen slightest possible trace, sediment, mostly pus with rare red blood corpuscle.

Cystoscopy showed bladder generally normal. Right ureteral orifice slightly thickened and slightly ulcerated. Ureter catheter enters the right ureter for 7 cm. A smaller catheter was then tried and passed 10 cm., but would go no further. Catheter passes the left ureter freely and draws normal urine. Indigo carmine excreted in nine minutes by left kidney, not at all by the right in an hour. Here again the diagnosis of stone seemed probable, and yet x-ray was totally negative. Believing that the stone occupied a position quite similar to that in the first case, and that if advantage were taken of the fact that at this point the ureter lies some distance from the bone on account of the thickness of the iliopsoas muscle, the shadow ought, so to speak, be thrown into the pelvis by taking the plate with the tube placed over the region of the umbilicus and focused obliquely downward into the pelvis. The relative positions of the patient and tube are shown in Fig. 4. Plates taken in this way showed stone (see Fig. 5).

At operation the stone was found lying over the iliac vessels in a position nearly similar to that of Case I, and proved again to be an oxalate calculus of rather large size and high density. (Fig. 2, Case II.)

These two observations led us to the following conclusions:

(1) That, even with good technic, stones of moderate size and high density may fail to show when they lie in the portion of the ureter lying in front of the sacro-iliac joint, if the tube be placed in the ordinary position.

(2) That some, at least, of the calculi lodged in this position can be detected by x-ray if the tube be placed in the position above described.

Since these observations the time at our disposal has been too short to thoroughly investigate the problems thus raised, but we have made certain investigations which seem to us at least suggestive, and we desire to submit them as confirmatory evidence.

We took a skeleton, built up an artificial psoas muscle and placed upon it a rubber tube containing six lead shot, in a position intended to correspond to that of the ureter, though as will be seen the position was not strictly accurate, but does not, we think, at all vitiate the results. The skeleton was then placed in the ordinary position and a plate taken with the tube focused over the shot. The result is shown in Fig. 6. With the position of the shot and the skeleton unchanged, the tube was then moved upward and focused obliquely into the pelvis, giving the position of the shot shown in Fig. 7. The tube and skeleton were then placed in the position shown in Fig. 4, but the tube was focused over the shot. (Fig. 8.) It will be observed that the shot are now clear from the bone, that their relative position is very much foreshortened, but that all of the shot show. This seems to prove that displacement of the shadow by this technic is possible, and that the displacement is sufficiently great to throw a shadow away from the bone and therefore render calculi of reasonable density visible.

The application of these observations to actual conditions depends chiefly upon the thickness of the iliopsoas muscle. A large muscle will make detection of calculi by this method relatively easy, while a thin muscle will make it difficult.

PREGNANCY, NURSING AND THE CARE OF YOUNG BABIES. AN EXPERIMENT IN PREVENTIVE MEDICINE.

BY MRS. WILLIAM LOWELL PUTNAM,
Chairman Committee on Infant Social Service of the Women's Municipal League.

THE object of the Committe on Infant Social Service of the Women's Municipal League of Boston has been to improve the efficiency of the future citizens by beginning with the health of the babies. A person without health may be a worthy object of admiration, but he is not so likely to add to the wealth or efficiency of the community as a healthy one, nor indeed is he likely to be as sane or as estimable a citizen; the ranks of the degenerates are mostly recruited from the physically unfit. It is universally accepted now that the illness of young children is one of the predisposing causes of lifelong debility. Von Behring says that in Germany only one sixth of the males born grow up fit for military service, or physically perfect, and this he attributes to infection derived in infancy from milk. With all due allowance for the exaggeration of a possibly one-sided point of view, this statement is very impressive. Believing that prenatal influences must be still more potent for good or ill over the child's whole future than even those of early childhood, the Committee have begun their work with pregnant women as early as they could be reached, and continued it throughout the first year of the child's life.

The work was undertaken for a year as an experiment with the hope that if it justified itself it would be taken over by other agencies. It began in April, 1909, with two nurses. The time of one nurse has been given almost entirely to the prenatal work, and the other wholly to babies under a year of age. The principal desire of the Committee has been of an educational not a philanthropic nature. It has been most anxious that the women helped should pay whatever they could toward the expense of the work and has tried to make them feel that in so doing they are making it possible to help more women as they themselves are being helped.

At the time of beginning in both of its lines of work, the Committee was practically a pioneer in Boston, and in the care of pregnant women but little has even yet been attempted anywhere else, which makes this branch of peculiar interest. This part of the work has been carried on with the help and encouragement of the Boston Lying-In Hospital. The names of those patients who are registering to become House-patients, and who are, by the way, of rather a better class than the Out-patients, are given to us daily, and immediately visited by the nurse in their homes. The first visit is necessarily one of making acquaintance and requires much tact, but the nurse is wonderfully gladly received, only one or two having refused her advice during the whole year, and to our great satisfaction the patients bring their friends to her for care, ten of our cases have directly come to us in this way, and possibly more. Some of those brought to us by their friends were to be Out-patients of the Lying-In Hospital and came to us in the early part of their pregnancy before they were allowed to register at the hospital. Out-patients, owing to lack of facilities, are not at present permitted to register till the seventh month. When they have reached their seventh month we have given them up to the Instructive District Nursing Association which cares for all out-patients during their confinement and afterwards, and also visits them beforehand when the funds of the Association permit. We have given them up to the Association, therefore, that there might be no duplication of work.

We never take cases coming to us for the first time within one month of confinement as we do not think we can help them materially when pregnancy is so far advanced; and we greatly prefer to have the women come under our care as early as possible. One case was brought by a friend in the second month of pregnancy and several were referred to us by the hospital in the third month, but on an average we have had the women under our care for only three months, which is perhaps all that can be expected in beginning such a work; we hope in time we shall get our cases earlier.

There have been no deaths during pregnancy, and no very serious illness. This we believe has been owing to the constant supervision of the health and the circumstances of the women. Three among them had such threatening symptoms of eclampsia that they were sent to the hospital, from which, after treatment for a few days, they were discharged well. Thirty-seven others who, though threatened with the same disease, were not ill enough to send to the hospital, were given advice at home. Nine cases yielded immediately to the treatment and the twenty-eight others after prolonged care were also cured. Beside these cases of threatened serious illness, about two hundred other patients were found to need the nurse's help in one way or another, for less grave troubles, and all whose whole term is yet completed passed through their pregnancy successfully. In the year there have been two miscarriages only among about four hundred patients.

The Committee want very much to make the work self supporting, and hope that in time this can be accomplished. They believe first that the work in this way could become capable of indefinite development; second, that every one appreciates much more what they pay for, and third, that there is a very valuable class of people, the most deserving of help in the community, who, although too poor to pay for the best professional advice, will nevertheless, not accept it as a charity, and who could in this way be reached without the loss of their self-respect. The payment for each case will have to be between $2.50 and $3.00. This does not seem a great deal to pay for months of care and would probably allow for some patients who were too poor to pay anything and yet enable the work to be self supporting.

The nurse has visited each patient at least as often as once in ten days whether she needed help or not, and if there was anything wrong she has been to see her as much oftener as necessary. One gratifying thing is that a woman who was our patient during her first pregnancy has come to us again even before registering at the hospital,[1] and many of the mothers at our healthy baby clinic have told me that were they to have another baby, they would be willing to pay for the care of the pregnancy nurse. Before giving up this work to be carried on by others we trust it will have become the custom for the women to pay what they can afford even if the whole sum is too large for their means.

Beside the pregnant women cared for, the nurse has also visited and greatly helped four other women whom she had cared for during their pregnancy. The babies of three of these poor women died before leaving the hospital, so that they never came under our other nurse's care, yet they were themselves not in a good state of health and needed advice, so that it seemed best to have them watched by the nurse, which has been most successfully done. It is satisfactory to be able to report that, incidentally to her other work, the nurse has been able to persuade five mothers to keep their babies with them, where before her visits they had intended to give them up.

The total number of women referred to the Committee by the Lying-In Hospital has been 477, of whom 40 could not be found at the address left at the hospital, and about 25 moved away later without leaving their address. These 65, although they were not helped, nevertheless took the nurse's time. Ten more have moved away during their pregnancy to places too distant to be visited, and in the cases where some further care was called for they have been referred to a suitable agency in the place to which they have moved. Twenty have been cases which have not been suitable for our care and have therefore been referred to other agencies here. We have never, in so far as we know, given up any case once sent to us without seeing that it was receiving the care it needed.

The largest number on our list at any one time has been 74, and the total number of visits paid to patients during the year, 2,518.

In connection with the work, we desire to call attention to the desirability and importance for our future citizens of the prevention of the employment of pregnant women in any hard work either shortly before or after childbirth. There are regulations in England already looking to this object.

Another matter to which the Committee want to call attention most urgently is the importance of licensing and properly inspecting midwives, for they believe that not only is there much unnecessary blindness and many other very serious complications, owing to lack of proper care at birth, but that if midwives were properly educated themselves and taught their duties in the way of educating the mothers, the work which this Committee has been trying to initiate would be enormously advanced.

The other branch of the work which has been carried on by the Committee was, as already stated, with mothers and babies, and for this purpose the Committee employed another nurse. As so much of this work was done with the help of the Infants' Hospital, the Committee accepted Dr. T. M. Rotch's choice of a nurse. Her duties were, as has been seen, primarily with healthy babies, but in return for the help given us by the hospital, the nurse visited, during the year, 89 of the sick babies discharged from the Infants' Hospital or from the Out-patient Department.

The work with well babies, which was by far the greater share, was carried on by means of visits to the babies in their homes, made, like the pregnancy nurse's, at least once in ten days and oftener if necessary, and added to these visits were fortnightly clinics held at the Infants' Hospital through the courtesy of Dr. Rotch and the kindness of Dr. Henry I. Bowditch. Dr. Bowditch was always there himself, which made the work much more valuable, as in this way the babies were followed more carefully than could have been done had there been a variety of doctors. Between 80 and 100 babies were carried through the summer without one case of diarrhea or indigestion. These visits and clinics began on April 1, 1909, and at that time there was no institution, so far as we know, doing exactly this sort of work in Boston. The Committee on Milk and Baby Hygiene began their work of instruction on June 24 of the same year, but the work of the two committees has always been somewhat dissimilar.

The babies cared for by the committee of the Women's Municipal League have been mostly infants referred to it by the Lying-In Hospital as soon as they left that institution (many of the mothers had been already cared for by the pregnancy nurse), or, in the case of out-patients, as soon as the doctors and district nurses gave up visiting them. Thus they were taken care of before anything had had time to go wrong, as our nurse immediately visited them, made friends, gave advice where needed and invited them to "The Healthy Baby Clinic," at which the attendance has been very fair considering how far away most of our mothers and babies lived. Even on the stormiest days we have never been without a patient, for one of our Italian mothers from the North End never failed to bring her baby, rain or shine, and the baby showed the result; he was, therefore, allowed the honor of being the first and the last at our demonstrations held at the 1915 Exhibit. Before beginning the clinics we thought it might be well to offer a prize to the baby who showed the best care, but we found prizes absolutely unnecessary. All the mothers took the greatest interest, not only in their own babies, but in one another's,

[1] Since writing this report, another of our earlier pregnancy cases who was most grateful for the help given her has sent to ask the nurse to visit her again for the same purpose. This case will be the first to be under our care for the full possible time, eight months, and having come back to us because of help received, the case is especially satisfactory.

and were so kind to each other and so sympathetic if something was wrong that anything that could cause rivalry would only have hurt the spirit which pervaded the meetings.

The babies who have been cared for, although not living in quite so wide a radius as our pregnancy cases, have come from the North, South and West ends, South Boston, East Boston, Roxbury and Dorchester, Charlestown and the nearer parts of Cambridge. These are considerable distances to carry a young baby, but one of our mothers did better still, for her husband's work took them for a time to Wakefield, yet she, feeling the benefit of our clinics, even brought the baby in from there. The average attendance was 9 and the greatest number on any one day was 17. The 14 who came to the last clinic before this work was handed over to the Infants' Hospital, at the end of our year of experiment, begged that the hospital might keep it up, saying that they would gladly pay all they could afford, some of them even offering to pay twenty-five cents at each clinic. This sum if contributed by all every fortnight would practically pay all the expenses of the nurse, and although this is too much to expect for a long time to come, yet it is an object greatly to be sought.

The total number of healthy babies referred to us by the Lying-In Hospital was 199, and 6 more were brought in by their friends. As in the case of the pregnant women, several gave wrong addresses at the hospital, others moved away and an occasional one did not want the nurse's visits; all of these cases together amounted to 50, reducing the number actually cared for to 155. One hundred and twenty-nine of these babies were breast fed, and to our great satisfaction in 10 cases where the mother's milk had apparently gone, it was brought completely back again simply by advice as to diet, etc. Thus only 26 babies had to be brought up by hand.

One interesting possible development of the work has been the probability of being able to provide good young mothers as wet nurses for delicate babies. One or two instances have occurred where the mothers had a superabundance of milk and were willing to do this, not so much with a view to the money that could be earned, as from a desire to help another baby to grow strong like their own. With care this might grow into a most useful institution.

The experiment seems to the committee to have proved itself of value. It is too early yet to see how great the permanent good will prove to be, but it seems as if it could not fail to have far reaching results.

The Bureau of Insular Affairs reports that the death-rate among the more than eight thousand government employees in the Philippine Islands for the quarter ended March 31 was 6.9 per 1,000 per year. Of these employees, some 3,700 are Americans, including the officials and employees of the insular, provincial and municipal governments, and the police and fire departments of Manila. — *Med. Record.*

LESIONS OF THE MAJOR TRUNK VISCERA IN EPILEPTICS.

BY A. E. TAFT, M.D.,

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The prevalent idea that epilepsy has its origin, in man at least, in the higher nerve centers has had the effect of withdrawing attention from the remainder of the body. There is, moreover, in the nature of things, little hope that specific and peculiar epileptic changes will be found in such tissues as those of the major viscera of the trunk.

It may well be, however, that characteristic (if not specific) alterations can be discovered in the trunk organs. Such alterations if found would perhaps be effects rather than causes of epilepsy. It will be almost as difficult to prove, in any individual case, that such changes are epileptic effects as to prove that they are the causes of epilepsy.

It is, therefore, not the object of this paper to assert a correlation between the changes found in the trunk viscera and the epilepsy exhibited by the subjects examined. The object is rather to learn what material exists for possible correlations.

The protocols and tissues examined were derived from fifty epileptic subjects autopsied from the Monson State Hospital; the Danvers Insane Hospital, pathological service of Drs. Barrett and Southard; the Worcester Insane Hospital, Drs. T. A. Hoch and F. J. Tower, pathologists; Westboro Insane Hospital, Dr. S. W. Fuller, pathologist, and Taunton Insane Hospital, Dr. H. M. Miller, pathologist.

The statistics are chiefly based on the findings in the heart, lungs, spleen, liver and kidneys, although other organs were frequently available. The technic employed for routine histological examination was, virtually in all cases, fixation in Zenker's fluid and staining of paraffin sections by the eosin and methylene blue method (Mallory and Wright's Pathological Technic). Special methods were employed in particular cases.

Before proceeding to an analysis of the findings, the data from the individual cases will be presented in condensed form:

Case I. No. 893. Male. Admitted June 4, 1904. Birthplace, Ireland. Onset of epilepsy at sixty-two. Assigned cause, alcohol. No heredity. Grand and petit mal attacks. Duration, thirteen years. Has had ordinary diseases of childhood. Physical examination negative except demented appearance, poor teeth and loss of knee jerks. Nov. 20, patient complained of stomach trouble and appeared cachetic. Examination showed enlarged liver. Died Nov. 23, 1905. Age, seventy-five years. Cause of death, cancer of liver.

Microscopical. — Heart: Slight fibrous myocarditis and arteriosclerosis. Spleen: Marked congestion. Thickened arterial walls contain hyaline. Liver: Papillary adenocarcinoma. Kidney: Chronic interstitial nephritis with arteriosclerosis.

Case II. No. 1376. Male. Admitted Oct. 1, 1907.

Birthplace, Massachusetts. Onset at three years. Cause unknown. No known heredity. Attacks mostly grand mal in type, with gastric aura. Duration, eight years. Past history negative, except epilepsy and dementia. Never went to school on account of convulsions. Physical examination, negative. Died Jan. 25, 1909. Age, eleven years. Cause of death: Pulmonary tuberculosis.

Microscopical. — Heart: Negative. (Lung: Not preserved.) Spleen: Congestion. Trabecular tissue increased. Hyaline in arterial walls. Small tubercle. Liver: Vacuolation of cells about central vein. Lymphocytic infiltration of periportal tissue. Kidney: Negative. Adrenal: Negative.

CASE III. No. 586. Male. Admitted April 1, 1902. Birthplace, Massachusetts. Onset of this series of attacks of epilepsy at forty-four years. Assigned cause, alcohol. Heredity, father epileptic. Attacks grand mal in type. Duration, twenty-four years. Past history of children's diseases and typhoid at twenty years. Had convulsions while a boy at school. These stopped and began at forty-four years. Physical examination: Demented, teeth poor, tongue scarred, apex beat displaced to left. Systolic murmur at apex. Otherwise negative. Died March 26, 1909. Age, sixty-eight years. Clinical diagnosis: Chronic interstitial nephritis with edema of lungs.

Microscopical. — Heart: Negative. (Lung: Not preserved.) Spleen: Small hemorrhages into pulp. Trabecular tissue increased. Hyaline in arterial walls. Liver: Congestion and pigmentation about central vein. Kidney: Chronic interstitial nephritis. Arteriosclerosis.

CASE IV. No. 977. Male. Admitted Feb. 1, 1905. Birthplace, Connecticut. Onset of epilepsy at seventy-three years of age. Assigned cause, old age. Attacks began like sunstroke. Duration, six years. Past history, incomplete. Has taken medicine for heart. Habits, good. Physical examination: Appears demented, nutrition poor, teeth bad. Otherwise negative. While in the hospital, patient had frequent severe convulsions followed by exhaustion. Died March 28, 1909. Age, seventy-nine years. Clinical diagnosis: Chronic interstitial nephritis.

Microscopical. — Heart: Advanced fibrous myocarditis. Spleen: Extreme congestion with small hemorrhages into pulp. Trabecular tissue increased. Hyaline in arterial walls. Liver: Negative. Kidney: Chronic interstitial nephritis with marked arteriosclerosis.

CASE V. No. 1300. Male. Admitted April 22, 1907. Birthplace, Massachusetts. Onset of epilepsy at thirty-four years. Assigned cause, injury. No heredity. Grand mal attacks. Duration twenty-two years. Has had diseases of childhood. Physical examination shows patient somewhat demented, teeth poor, arteries sclerotic. Knee jerks exaggerated. Otherwise negative. Epilepsy followed accident in which patient was hit on the head by a plank and received a severe scalp wound. He was unconscious after the blow. April 5 he began to have frequent seizures which continued until his death, April 8, 1909. Age, fifty-six years. Clinical diagnosis: Status epilepticus.

Microscopical. — Heart: Diffuse fibrous myocarditis. Lung: Healed tuberculosis. Chronic bronchitis. Spleen: Marked congestion. Small hemorrhages. Trabecular tissue increased. Arteries sclerosed, with hyaline in walls. Follicles small and inactive. Pancreas: Negative. Liver: Congested. Kidney: Chronic interstitial nephritis. Arteriosclerosis. Many casts. Adrenal: Negative.

CASE VI. No. 706. Male. Admitted Nov. 17, 1902. Birthplace, Massachusetts. Parents born in Ireland. Onset of epilepsy at eight years. Cause unknown. No heredity. Grand mal and petit mal attacks. Duration thirty-one years. Has had diseases of childhood. Habits good. Physical examination shows patient slightly demented, otherwise negative. Died April 10, 1909. Age thirty-nine years. Clinical diagnosis: Diabetes mellitus.

Microscopical. — Heart: Fibrous myocarditis. Lung: Gelatinous bronchopneumonia. Lymph nodes show tubercles. Spleen: Trabecular tissue increased. Hyaline in arterial walls. Pancreas: Negative. Liver: Slight central necrosis. Kidneys and adrenal: Negative.

CASE VII. No. 1399. Female. Admitted Nov. 16, 1907. Birthplace, Massachusetts. Onset of epilepsy at thirteen years. Cause unknown. Heredity, mother epileptic, father alcoholic. Grand and petit mal attacks. Duration eleven years. Has had diseases of childhood, including scarlet fever at seven years of age, after which she was blind for one month. Physical examination negative. Nov. 18, 1908, examination showed lungs affected. Died April 1, 1909. Age, twenty-four years. Clinical diagnosis: Pulmonary tuberculosis.

Microscopical. — Heart: Negative. Lung: Many large caseous tubercles. Lymph nodes show miliary tubercles. Spleen: Passive congestion. Follicles only slightly active. Hyaline in arterial walls. Intestine: Tuberculous ulcers and tubercles extending through muscular coat. Pancreas: Negative. Liver: Large areas of central congestion and necrosis with vacuolation of liver cells. Kidney: Slight increase in interstitial tissue. A few casts.

CASE VIII. No. 174. Male. Admitted July 25, 1898. Birthplace, Massachusetts. Parents born in Ireland. Onset of epilepsy at thirty years. Assigned cause, alcohol. No heredity. Grand and petit mal attacks. Duration twenty-eight years. First convulsion followed a period of heavy drinking. Suffers from indigestion. Heart irregular. Died April 14, 1909. Age, fifty-six years. Clinical diagnosis: Cardiac paralysis.

Microscopical. — Heart: Slight fibrous myocarditis. Lungs: Some induration. A few small fibrous tubercles. Many large cells filled with golden brown pigment. Lymph nodes contain small tubercles. Spleen: Congested. Tuberculous. Follicles large but rather inactive. Hyaline in arterial walls. Pancreas: Many fat vacuoles. Liver: Congestion about central vein. Areas of focal necrosis. Kidneys: Cortex largely replaced by connected tissue. Many large caseous areas throughout. Fatty capsule studded with tubercles. Arteriosclerosis. Adrenal: Negative. Ureters and bladder: Necrosis of mucosa; surface covered by a necrotic exudate. Infiltration of deep layers by leucocytes.

CASE IX. No. 293. Male. Admitted Aug. 30, 1899. Birthplace, Massachusetts. Onset of epilepsy at seventeen years. Assigned cause, heredity. Mother epileptic and maternal aunt insane. Grand and petit mal attacks. Duration thirty-eight years. Habits temperate. Physical examination shows hips ankylosed at nearly right angle to the body. Said to be due to rheumatism and the result of a fall. Died April 30, 1909. Age, fifty-five years. Clinical diagnosis: Cerebral hemorrhage.

Microscopical. — Heart: Negative. Lung: Negative. Spleen: Markedly congested throughout. Follicles small and inactive. Hyaline in arterial walls. Pancreas: Negative. Liver: Central congestion and pigmentation of liver cells. Periportal tissue infiltrated by lymphocytes. Kidney: Marked congestion throughout. A few sclerotic glomeruli and tubules. A few casts. Adrenals: Negative.

Case X. No. 962. Male. Admitted Dec. 3, 1904. Birthplace, Massachusetts. Father born in England. Onset of epilepsy from earliest childhood. Cause unknown. Grand and petit mal attacks. Duration since birth. No heredity. Eruption of teeth at ten months. Convulsions first noticed at this time. Mental weakness first noticed at thirteen years of age. Physical examination shows patient weakminded. Teeth poor and palate high arched. Head square; otherwise negative. March 29, 1907, examination of lungs shows percussion note higher pitched and less duration over apices of both lungs, most marked in right. Auscultation shows broncho-vesicular breathing, a few fine moist râles, and a musical expiratory note. Died May 6, 1909. Age, twenty-six years. Clinical diagnosis: Pulmonary tuberculosis.

Microscopical. — Heart: Multiple acute abscesses of myocardium and endocardium. Partly organized acute fibrinous exudate on epicardium. Venous thrombosis. Masses of staphylococci at center of abscesses. Lungs: Pleura thickened and covered by an acute fibrinous exudate. Some induration. Chronic bronchitis. Edema. Many small abscesses with masses of staphylococci. Infarction. Spleen: Marked congestion throughout. Follicles small. Multiple abscesses, in the centers of some of which are necrotic blood vessels filled with organisms. Many small groups of large, deeply staining lymphoid cells. Intestine: Small abscesses of submucosa. Pancreas: Negative. Liver: Congested. Multiple abscesses irregularly scattered throughout. Many areas of central and focal necrosis. Kidney: Congested, small multiple abscesses. Adrenal: Marked congestion. Small abscess of cortex.

Case XI. No. 406. Male. Admitted Sept. 29, 1900. Birthplace, Massachusetts. Onset of epilepsy during first year of life. Assigned cause, teething. No heredity. Grand mal attacks. Duration twenty-seven years. Physical examination shows patient feebleminded. Teeth poor. Dorsal scoliosis. Otherwise negative. Feb. 26, 1907, examination of lungs shows vocal fremitus increased over upper part of right lung. Signs present over both front and back. Roughened breathing and musical expiratory note. April 1, 1909. Patient sleeping out of doors. Has gradually failed and is very weak. Died May 10, 1909. Age, twenty-eight years. Clinical diagnosis: Pulmonary tuberculosis.

Microscopical. — Heart: Negative. Lung: Many caseous conglomerate tubercles. Lung congested throughout. Spleen: Acute splenitis. Follicles distinct and active, some contain a small amount of hyaline. Pancreas: Negative. Liver: Marked congestion throughout. Pigmentation of liver cells about central vein. Kidney: Marked congestion. Cloudy swelling of tubular epithelium. Adrenals: Negative.

Case XII. No. 743. Female. Admitted April 3, 1903. Birthplace, Canada. Onset of epilepsy at seven years. Assigned cause, fright and injury. Heredity, mother said to have been nervous. Grand mal and petit mal attacks. Duration fourteen years. Has had ordinary diseases of childhood. On physical examination appears dull mentally. Palate high arched. Heart intermittent. History and symptoms of paraplegia. Left scoliosis of lower dorsal and first lumbar vertebræ. Reflexes exaggerated; sensation diminished. Convulsions frequent. Died May 17, 1909. Age, twenty-two years. Clinical diagnosis: Exhaustion following status epilepticus.

Microscopical. — Heart: Negative. Lung: Intense congestion. Many caseous conglomerate tubercles. Spleen: Acute congestion with numerous small hemorrhages. Follicles distinct and slightly active. Some contain a few endothelial cells. Many plasma cells scattered throughout. Liver: Congestion about the central vein with quite extensive areas of necrosis of liver cells, many of which contain one or more fat vacuoles. An occasional endothelial cell is seen in the sinusoids. Pancreas: Negative. Kidney: Acute degeneration of epithelium lining the convoluted tubules, and small scattered hemorrhages. Adrenal: Intense congestion of medulla.

Case XIII. No. 122. Female. Admitted June 14, 1898. Birthplace, Massachusetts. Onset of epilepsy at fourteen years. Assigned cause, scarlet fever. Heredity, maternal grandfather had "fainting spells." Attacks grand mal in type. Duration forty years. Died May 24, 1909. Age, fifty-three years. Clinical diagnosis: Cerebral hemorrhage due to status epilepticus.

Microscopical. — Heart: Negative. Lung: Many tubercles of varying size. The larger ones are caseous. All are surrounded by considerable connective tissue. Spleen: There is a considerable amount of congestion. The trabecular tissue is increased. The follicles are distinct but inactive. A slight amount of hyaline in the arterial walls. Pancreas: Negative. Liver: There is an increase in periportal connective tissue. Some of the central veins are dilated and their walls thickened. The liver cells throughout contain many fine vacuoles. Kidney: There is some thickening of the capsule and slight focal increase in interstitial tissue. The epithelium of the convoluted tubules shows acute degeneration. Slight arteriosclerosis. Adrenal: Negative.

Case XIV. No. 1172. Male. Admitted Dec. 17, 1898, age thirty-four years. Onset at thirty-one years. Assigned cause, injury while blasting, one year earlier. Attacks grand mal in type, increasing in number and severity, varying from five to twelve each month. On Dec. 7 and 8, 1902, a series of convulsions. Died Dec. 8, 1902. Age, thirty-eight years. Clinical diagnosis: Death during convulsion.

Microscopical. — Heart: Negative. Lungs: Many conglomerate tubercles. Edema. Congestion. Liver: Central congestion, cells granular, and contain many vacuoles. Kidney: Marked congestion. Tubular epithelium swollen and granular.

Case XV. No. 918. Male. Admitted Sept. 16, 1904. Birthplace, Massachusetts. Onset of epilepsy at sixty-six years. No cause assigned. Heredity, mother had several attacks of insanity when young. A sister, brother, and uncle insane. Patient had scarlet fever with slight deafness when a child; some time ago fell from a mast striking on head and was unconscious three or four hours. Three years ago was overcome by gasoline. Had dropsy several years ago. A year ago was burned in an attempt to put out a fire, and has not been well since. Has had spells of shaking for two years. During last three weeks has had three severe fits, one accompanied by a slight shock. Physical examination shows general arteriosclerosis. Gait feeble. Reflexes slightly diminished. Otherwise negative. From Oct. 24 to Oct. 28 had over one hundred convulsions. Died Oct. 28, 1904. Age, sixty-eight years. Clinical diagnosis: Status epilepticus and pneumonia.

Microscopical. — Heart: Slight fibrous myocarditis. Lung: Acute lobar pneumonia, acute bronchitis. Spleen: Acute splenitis. Walls of arteries thickened and contain hyaline. Liver: Central congestion and vacuolation of liver cells. Kidney: Cloudy swelling of tubular epithelium. Many hyaline casts. Arteriosclerosis.

Case XVI. No. 949. Male. Age, fifty-six. Birthplace, Massachusetts. Onset of epilepsy soon after birth. No cause assigned. No heredity. History not remarkable. At sixteen years showed capacity of child of six. Physical examination negative. Nov. 29, 1904. Has three to four convulsions each month. Examina-

tion shows moist râles on front and back of right side, and in left apex. Died Jan. 23, 1905. Clinical diagnosis: Miliary tuberculosis.

Microscopical. — Heart: Chronic fibrous myocarditis. Tubercular pericarditis. Lung: Conglomerate tubercles. Tubercular pneumonia. Spleen: Large caseous tubercles. Congestion. Hyaline in arterial walls. Liver: Miliary and conglomerate tubercles scattered irregularly throughout. Central necrosis of liver cells and vacuolation at periphery of lobule. Intestine: Tubercle on peritoneal surface. Kidney: Chronic diffuse nephritis with hyaline casts.

CASE XVII. No. 952. Male. Admitted Oct. 28, 1903. Birthplace, Massachusetts. Onset of epilepsy at twenty-three years. Occurred every six to twelve days. Attacks grand mal in type, usually at night. Heredity: Parents intemperate. Cousin of the patient epileptic. One other child in the family feeble-minded. Mother died with tuberculosis. Habits always good. Physical examination: Showing systolic murmur at apex of heart. Otherwise negative. Feb. 8, 1905. Rigor with temperature, pain in the chest, and râles over both sides. Breathing rapid. Feb. 10, 1905, cyanotic. Died suddenly. Age, fifty-four years. Clinical diagnosis: Double lobar pneumonia.

Microscopical. — Heart: Fibrous myocarditis. Lung: Acute lobar pneumonia. Acute bronchitis. Spleen: Acute splenitis. Thickened arterial walls. Liver: Congested throughout. Diffuse vacuolation of liver cells. Kidney: Chronic diffuse nephritis. Few casts. Arteriosclerosis. Adrenal: Hemorrhage into medulla.

CASE XVIII. No. 1021. Male. Epilepsy congenital. Heredity, mother irritable and nervous. One brother is in many respects like patient. The entire family have some speech defect. Early development slow. No illnesses. Habits good. Attacks increasing in frequency. Physical examination: Gait feeble. Teeth gone, arteries stiff. Few moist râles over back of both lungs. Pulse, increased tension. Reflexes slow. Otherwise negative. Nov. 4, 1907. Patient put in bed. Temperature and respiration increased. Dullness over lower part of lungs in the back and increased respiratory sounds in the chest. Died Nov. 13, 1906. Age, sixty-five years. Clinical diagnosis: Lobar pneumonia.

Microscopical. — Heart: Negative. Lungs: Thickened pleura. Acute lobar pneumonia. Infarction. Edema: Hemorrhage. Spleen: Congested. Follicles active. There are many phagocytic endothelial cells scattered throughout. Hyaline in arterial walls. Liver: Central congestion. Areas of focal necrosis. Some vacuolation of liver cells. Kidney: Chronic diffuse nephritis. Arteriosclerosis. Few casts. Intestine: Hyperplasia of lymphoid tissue (typhoid).

CASE XIX. No. 1023. Female. Admitted May 5, 1905. Birthplace, Massachusetts. Onset of epilepsy at seventy-two years. Assigned cause, senility. Heredity, none known. One brother insane after sixty years of age. Duration, four years. History, negative. Said to be of nervous temperament. At first attack was unconscious some hours. Followed by paresis of tongue, throat and lower extremities. Convulsions frequent, but irregular. Has no memory. Physical examination: Puffiness of ankles and under eyes. Otherwise negative. Nov. 22, 1905. Seizures frequent, especially at night. Has had elevated temperature and stertorous breathing, grown weak. Died Nov. 22, 1905. Age, seventy-six years. Clinical diagnosis: Arteriosclerosis. Epilepsy.

Microscopical.—Heart: Chronic fibrous myocarditis. Lung: Induration. Bronchopneumonia. Acute bronchitis. Marked congestion. Many large cells contain golden brown pigments. Bronchial lymph node contains many small tubercles. Spleen: Marked congestion. Arteriosclerosis. Hyaline in arterial walls, and in some of the follicles. Liver: Central congestion. Cells small. Kidney: Chronic interstitial nephritis. Few casts. Arteriosclerosis.

CASE XX. No. 1071. Male. Admitted April 11, 1906. Onset of epilepsy at about thirty-six years. Assigned cause, sunstroke during the Civil War. Heredity: Mother died at sixty, insane. One sister insane since girlhood. One sister died of paralysis. A nephew is said to be "peculiar." Two children, both have nervous trouble. Attacks of grand mal type. Have increased in frequency, both night and day. History of having taken alcoholics moderately all his life. Had typhoid before the war Examination shows stiffened arteries, otherwise negative. Died June 20, 1907. Age, sixty-six years. Clinical diagnosis: Bronchopneumonia.

Microscopical.—Heart: Fibrous myocarditis. Lungs: Acute lobar pneumonia, acute pleuritis. Spleen: Congested. Hyaline in follicles and in walls of arteries. Arteriosclerosis. Pancreas: Chronic interstitial pancreatitis. Arteriosclerosis. Kidney: Chronic diffuse nephritis. Arteriosclerosis. A few casts.

CASE XXI. No. 1076. Female. Admitted June 22, 1906. Onset of epilepsy at forty years. No known cause. No heredity. Family and personal history good. Habits good. Physical examination: Negative. July 8, 1906, râles over left lower back. Some edema of ankles. Died July 10, 1906. Age, forty-five years. Clinical diagnosis: Pneumonia and epileptic insanity.

Microscopical. — Heart: Negative. Lungs: Acute lobar pneumonia. Liver: Central necrosis and congestion. Portal cirrhosis. Kidney: Negative.

CASE XXII. No. 1104. Male. Admitted Oct. 15, 1901. Onset of epilepsy at five years. Assigned cause, heredity. One brother epileptic. Mother died at thirty years, of consumption; father at seventy years, from cancer: Attacks frequent. Grand mal and petit mal. Personal history not obtained. Physical examination: Unsatisfactory, owing to patient's condition, but was negative as far as made. Oct. 27, 1906, patient found dead in chair, larynx filled with tobacco, probably inspired during a convulsion. Age, forty-five years.

Microscopical.—Heart: Negative. Lungs: Negative. Spleen: Capsule thickened. Trabeculæ prominent. Acute splenitis. Some thickening of arterial walls. Liver: Some central congestion. Cells have a peculiar granular appearance. Some increase in periportal connective tissue. Walls of hepatic arteries slightly thickened. Kidney: Marked congestion throughout. Focal increase of connective tissue representing a few tubules and sclerotic glomeruli.

CASE XXIII. No. 1105. Male. Admitted Feb. 27, 1905. Birthplace, Massachusetts. Onset of epilepsy at seventy years. Assigned cause, senility. No heredity known. Family history not obtained. Patient has never been sick, was hard working, temperate man, but nervous and irritable. Attacks of grand mal type, increasing in frequency. Physical examination: Movements feeble, eyelids edematous; teeth gone; temperature 100° on admission. A few coarse râles on both sides of sternum. Faint systolic murmur at apex of heart. Arteries thickened, otherwise negative. Died Oct. 31, 1906. Age, eighty-five years. Clinical diagnosis: Pneumonia.

Microscopical. — Heart: Advanced diffuse fibrous myocarditis. Lung: Acute lobar pneumonia. Chronic bronchitis. Arteriosclerosis. Spleen: Acute splenitis. Arteriosclerosis. Hyaline in arterial walls. Liver: Slight increase in periportal tissue. Congestion and pigmentation of cells about the central vein. Kidney:

Chronic diffuse nephritis. Many hyaline casts. Arteriosclerosis.

Case XXIV. No. 1124. Male. Admitted Jan. 15, 1906. Birthplace, Maine. Onset at seven years. Assigned cause, infantile hemiplegia. Father died at forty years, cause unknown. Mother died at thirty-eight years, of tuberculosis. No family neurosis or insanity known. Patient well until had whooping cough at seven years. Had attacks from that time until thirty years of age, then no more until forty-five. Habits good. Physical examination: Quite helpless owing to hemiplegia. Left lower extremities smaller than right, temperature 101° on admission. Teeth poor. Otherwise negative. Died Dec. 28, 1906. Age, fifty-two years. Clinical diagnosis: Arteriosclerosis. Epilepsy.

Microscopical. — Heart: Negative. Lung: Acute bronchitis. Slight bronchopneumonia. Edema. Spleen: Marked congestion throughout. Many endothelial cells in pulp contain golden yellow pigment. Arterial walls much thickened and contain large amount of hyaline. Follicles inactive. Liver: Negative. Kidney: Chronic interstitial nephritis. Advanced arteriosclerosis.

Case XXV. 1162. Female. Admitted April 2, 1907. Onset at nine years. No cause known. No heredity. Father and mother living and well. Father a moderate drinker. Patient is the third of ten children. All others well. Had a convulsion at eighteen months, but no more until nine years old. Attacks growing more frequent; grand mal type; mind recently affected. Physical examination; poorly developed and nourished. Teeth poor. Loud, coarse râles all over chest with increased heart sounds, no dullness. Otherwise negative. April 8, 1907, frequent convulsions and did not regain consciousness. Died April 13, 1907. Age, fourteen years. Clinical diagnosis, status epilepticus.

Microscopical. — Heart: No section. Lung: Edema, congestion. Spleen: Marked congestion throughout. Follicles slightly active. Hyaline in arterial walls. Pancreas: Negative. Liver: No section. Kidney: Cloudy swelling of epithelium of convoluted tubules. Few casts. Adrenal: Diffuse vacuolation of cortical cells.

Case XXVI. No. 1166. Female. Admitted April 23, 1907. Onset of epilepsy at forty-five years. Assigned cause, a blow on the head. This injury was questioned as being due to an epileptic seizure. Father dead from unknown cause. Mother died at seventy-five years, from shock. Ten children, all healthy except one sister who is insane. No other heredity or neurosis known. Attacks affect right side. Habits good. Physical examination: Fairly developed and nourished. Teeth gone. Breath sounds harsh over right; harsh blowing murmur at apex of heart. Abdomen negative. Temperature 102.2. Patient practically unconscious. Died April 25, 1907. Age, sixty-one years. Clinical diagnosis: Bronchopneumonia.

Microscopical. — Heart: Negative. Lung: Acute lobar pneumonia. Edema. Spleen: Markedly congested. Follicles small and but slightly active. Arterial walls contain hyaline. Liver: Central congestion. Vacuolation of liver cells at periphery of lobule. Kidney: Capsule thickened. Chronic diffuse nephritis. Many hyaline casts. Some arteriosclerosis.

Case XXVII. No. 1216. Female. Admitted Jan. 20, 1903. Birthplace, Scotland. Onset of epilepsy at thirteen years of age. No known cause. No heredity. With exception of measles always well. Bright in school. Seizures began without warning. Physical examination shows patient fairly developed but poorly nourished. There is a small dull area in the left subclavicular region. Knee jerks slightly diminished. Otherwise negative. Nov. 25, 1907, cellulitis developed on back of right hand; extended up arm to axilla. Cultures show streptococci. Died Dec. 3, 1907. Age, fifty-five years. Clinical diagnosis: Speticemia.

Microscopical. — Heart: Negative. Lung: Pleura thickened. Acute lobar pneumonia. Acute bronchitis. Many diplococci both intra- and extra-cellular. Spleen: Acute congestion. Hyaline in arterial walls and in some follicles. Large numbers of plasma cells scattered throughout. Liver: Marked central congestion with some atrophy and pigmentation of liver cells. Kidney: Chronic diffuse nephritis and slight arteriosclerosis. Adrenal: There are many small groups of lymphoid cells irregularly scattered throughout. Many of the cells contain vacuoles.

Case XXVIII. No. 1217. Female. Admitted Dec. 12, 1906. Onset of epilepsy at thirteen months. No cause known. No heredity. Father a moderate drinker never to intoxication. Attacks grand and petit mal in type. Patient never went to school but was considered bright until nine years of age. Was unable to learn household duties. Is poorly nourished; has hare-lip and is defective in speech and gait. Lateral scoliosis. Pulse weak, heart sounds indistinct but no murmurs. Dec. 4, 5, 1907, has had repeated convulsions, severe and constant, cyanosed, pulse weak and rapid. Died Dec. 6, 1907. Age fifteen years. Clinical diagnosis: Bronchopneumonia.

Microscopical. — Heart: No section. Lung: Pleura thickened. Acute bronchopneumonia. Acute and chronic bronchitis. Spleen: Increase in trabecular tissue. Follicles only slightly active. Some hyaline in arterial walls. Liver: Some increase of connective tissue about larger veins both portal and hepatic. Bile capillaries dilated, especially at center of lobule. Cells small and contain a considerable number of small fat vacuoles. Kidneys: Negative. Adrenal: Negative.

Case XXIX. No. 1227. Female. Admitted June 17, 1904. Onset of epilepsy second day after birth. Mother and father living and well. Father deaf and of low grade of intelligence. No intemperance. Patient has congenital hydrocephalus. Fontanelles closed at fourth year. Never able to go to school. Attacks have increased in frequency. Physical examination: Gait unsteady and halting. Stooping figure. Teeth poor. Pupils unequal, the right being a trifle larger. Heart has harsh blowing murmur at apex transmitted to the axilla. Same sound over aortic area at base. No thrill. Died Jan. 12, 1908. Age, thirty-three years. Clinical diagnosis: Bronochopneumonia.

Microscopical. — Heart: Negative. Lung: Many large caseous tubercles. Bronchopneumonia. Chronic bronchitis. Spleen: Acute splenitis. Trabecular tissue increased. Some hyaline in arterial walls. Follicles only slightly active. Liver: Marked dilatation of capillaries about the central vein with beginning necrosis of liver cells. Kidney: Chronic interstitial nephritis. Some arteriosclerosis.

Case XXX. No. 1285. Male. Admitted March 27, 1906. Onset of epilepsy at five years. Father living and well. Mother living. Has had pulmonary tuberculosis for ten years. Patient strong and well until five years when he had a series of convulsions and was unconscious for several days. Was unable to walk for several months and had to learn to talk again. Has never been bright since attacks began. Habits good. Has been unable to walk for past six years. Physical examination: Lower extremities deformed. Thighs bowed outward and forward. Left over one one inch shorter than right. Left knee thickened. Otherwise negative. Patient described as a low grade idiot with paralyzed limbs. No appreciation of most questions, but whines and cries most of the time.

Patient had a series of severe convulsions lasting over twenty-four hours, after which consciousness was never regained. Died Oct. 28, 1908. Age, eighteen years. Clinical diagnosis: Status epilepticus.

Microscopical. — Heart: Negative. Lung: Pleura thickened; edema. Spleen: Intensely congested. Many small hemorrhages into pulp. Follicles small and inactive. Pancreas: Negative. Liver: Congested throughout. Kidney: Chronic diffuse nephritis. Adrenal: Negative.

CASE XXXI. No. 1304. Male. Admitted Dec. 10, 1908. Birthplace, Germany. Onset of epilepsy at thirty-four years. Assigned cause, alcohol. No heredity. Patient is said to have nervous temperament. History of having fallen from a tree when a boy. Duration of attacks ten years, increasing in frequency; worst convulsions when full moon is shining. Demented, poorly nourished and developed. Examination impossible owing to condition of patient. December, 1908, patient has fallen from the bed several times at night with convulsions. Died Feb. 21, 1909. Age, forty-four years. Clinical diagnosis: Status epilepticus.

Microscopical. — Heart: Negative. Lung: Acute bronochopneumonia. Acute bronchitis. Many intracellular diplococci. Spleen: Much congested. Increase in trabecular tissue. Arterial walls thickened and contain considerable hyaline. Most of the follicles small and only slightly active. Liver: Intense congestion throughout. The liver cells vary in size and many have two nuclei. Pancreas: Negative. Kidney: Chronic diffuse nephritis. Some arteriosclerosis. Adrenal: Negative.

CASE XXXII. No. 110. Female. Onset of epilepsy at thirteen years. Attacks every two months, increasing in frequency. Family history, negative. Has had children's diseases. Never been able to play without shortness of breath. Scarlet fever at five years, with discharge from left ear, which has continued. Admitted to hospital Aug. 10, 1903, with temperature, headache and pain in back. Left side seems weaker than right on trying to walk. Physical examination shows cyanosis, delirium and general hyperesthesia. Ptosis of left lid; slight paresis of left side of face. Tongue protruded straight. Dullness in lower right back with a few fine moist râles. Heart sounds rapid and weak. Pulse scarcely perceptible at wrist. Ankle clonus on left. Died Aug. 11, 1903. Age, seventeen years. Clinical diagnosis: Typhoid fever.

Microscopical. — Heart: Slight chronic endocarditis and chronic focal myocarditis. Lungs: Pleura slightly thickened. Chronic congestion of the lungs. Many endothelial cells contain golden brown pigment. Spleen: Acute splenitis with intense acute congestion. Many phagocytic endothelial cells irregularly scattered throughout. Follicles rather indistinct. Some appear inactive. Pancreas: Negative. Liver: There is considerable central congestion with atrophy and necrosis of the liver cells. The sinusoids contain many phagocytic endothelial cells and groups of polymorphonuclear leucocytes. Kidney: Acute parenchymatous degeneration. Adrenal: Negative.

CASE XXXIII. No. 5167. Worcester. Female. Admitted July 21, 1900. Birthplace, Massachusetts. Onset of epilepsy at eleven months. Between age of seven and fifteen years had no attacks. Duration, fifty-five years. History of father being intemperate. No direct heredity known. Habits good. Physical examination shows patient poorly developed and nourished; appears demented, with scoliosis. Otherwise negative. June, 1901, patient began running an evening temperature; no cough. Gradually failed and died Aug. 20, 1901. Age, fifty-six years. Cause of death: General miliary tuberculosis.

Microscopical. — Heart: Focal fibrous myocarditis. Lungs: Tuberculous pleuritis. Pulmonary tuberculosis. Spleen: Congestion throughout with small hemorrhages. Caseating tubercules. A few small abscesses. Follicles distinct, inactive. Liver: Miliary tuberculosis. Diffuse vacuolation of liver cells. Central pigmentation. Kidney: Slight diffuse nephritis. A few conglomerate tubercles. Arteriosclerosis.

CASE XXXIV. No. 22170. Worcester. Female. Admitted May 23, 1902. Birthplace, Massachusetts. Father and mother born in Ireland. Onset of epilepsy at thirteen years. Duration, fifteen years. Patient was bitten by a dog a few days before first attack. Family history: Father asthmatic. No direct heredity. Attended school until fifteen years of age. Habits temperate. Attacks increased in frequency. Patient demented. Physical examination: Negative. Died July 11, 1904. Age, twenty-eight years. Cause of death, pulmonary edema.

Microscopical. — Heart: Negative. Lung: Negative. Spleen: Considerable trabecular increase. Follicles distinct. Small hemorrhagic areas. Arteries slightly hyaline. Pancreas: A few small hemorrhages. Liver: Moderate congestion. Thickening of walls of some central veins and distention with blood. Kidney: Congestion throughout. Cloudy swelling. Arteries good.

CASE XXXV. No. 23049. Worcester. Male. Admitted Oct. 26, 1903. Birthplace, Massachusetts. Father and mother born in Sweden. Onset of epilepsy at sixteen years. Duration of epilepsy, nine years. Had pneumonia and scarlet fever in childhood. Family history negative. No heredity known. Memory failed at twelve years. At fourteen had staring spells when patient would "lose himself." Habits temperate. Physical examination, negative. Died June 17, 1904. Age, twenty-five years. Cause of death, status epilepticus and beginning pneumonia.

Microscopical: — Heart: Negative. Lung: Congestion and edema. Beginning pneumonia. Some large cells contain golden brown pigment. Spleen: Increase in trabecular tissue. Intense congestion. Follicles distinct, but inactive. A few small hemorrhages. Pancreas: Negative. Liver: Congestion. Diffuse cell vacuolation. Kidney: Slight diffuse nephritis. Slight arteriosclerosis.

CASE XXXVI. No. 20532. Worcester. Male. Admitted August, 1899. Birthplace, Massachusetts. Onset of epilepsy at thirty-four years. At six years fell from swing hitting head. At twelve years had sunstroke and was out of his head for two days. After that was dull. Family history, negative. Duration, twenty-two years. Habits, good. Physical examination, double inguinal hernia, knee jerks diminished on the right; the left are hardly perceptible. Radial pulse weak. Lungs and abdomen negative. Died July 30, 1905. Age, sixty-five years. Cause of death, epileptic convulsion.

Microscopical. — Heart: Brown pigmentation of muscle cells. Lung: Thickened pleura. Congestion, induration and areas of infiltration with lymphoid cells. Spleen: Slight increase in trabecular tissue. Congestion. Follicles distinct and slightly active. Many eosinophiles. Arteries slightly hyaline. Pancreas: Negative. Liver: Central congestion and pigmentation. Several small hemorrhages. Kidney: Slight diffuse nephritis. Hyaline casts.

CASE XXXVII. No. 21527. Worcester. Female. Admitted April 22, 1901. Father and mother born in Germany. Onset of epilepsy at six months. Duration of epilepsy, seventeen years. Family history, negative. No heredity known. Patient has no education. Habits temperate. Physical examination: Teeth poor, muscu-

lar power impaired on right side with exaggerated reflexes. First heart sounds rough with accentuation of second pulmonic. Otherwise negative. Died June 3, 1901. Age, eighteen years. Cause of death, status epilepticus.

Microscopical. — Heart: Negative. Lung: Congestion and edema. Spleen: Congestion. Follicles distinct and slightly active. Many plasma cells. Arteriosclerosis and hyaline arteries. Liver: Congestion. Some vacuolation of liver cells. Kidney: Negative.

Case XXXVIII. Worcester. No. 23944. Male. Admitted March 4, 1905. Birthplace, Hungary. Onset of epilepsy at thirty-eight years. Duration one year. Mother had been bedridden for seven years. Habits: Alcohol and tobacco to excess. No direct heredity known. Physical examination: Well developed, poorly nourished. Gait unsteady. All phalangeal joints ankylosed in some degree. Slight enlargement of inguinal glands. Knee jerks increased. Otherwise negative. Died March 29, 1905. Age, thirty-nine years. Cause of death, status epilepticus.

Microscopical. — Heart: No section. Lung: Lobar pneumonia. Venous thrombosis. Fibrosis of bronchial lymph nodes. Spleen. Increase in trabecular tissue. Many cells contain brown pigment. Follicles distinct, but inactive. Pancreas: Negative. Liver: Central congestion. Slight increase in periportal tissue. Focal necrosis with infiltration by lymphocytes. Vacuolation of peripheral cells. Kidney: Cloudy swelling.

Case XXXIX. No. 6780. Westboro. Male. Admitted Jan. 13, 1906. Birthplace, New York. Father and mother born in England. Onset at thirty-five years of age. Duration, fourteen years. Family history: Mother died of paralysis at seventy-one years. Father a moderate drinker. Patient had rheumatism at fifteen years. The attacks were called fainting spells and occurred at intervals of four weeks with periods of unconsciousness lasting from a few minutes to one-half hour. There was no aura. Patient did not use alcohol. Physical examination: Teeth poor. Area of heart dullness increased with presystolic murmur at apex. Intermits every fifth beat. Radials hard and slightly beady. Urine negative. Died Nov. 21, 1907. Age, forty-nine years. Cause of death: General anasarca with mitral stenosis.

Microscopical. — Heart: Negative. Aorta: large groups of lymphocytes. Lungs: Congestion; early bronchopneumonia. Spleen: Congestion. Follicles distinct, but rather inactive. Many contain groups of phagocytic endothelial cells filled with nuclear detritus. Many polymorphonuclears are scattered throughout. Pancreas: Negative. Liver: Congestion. Periportal tissue is infiltrated with lymphoid cells. Some are seen in the sinusoids with polymorphonuclears. Kidney: Sclerosis of a few glomeruli and tubules. Arteries good.

Case XL. Westboro. No. 6089. Male. Admitted July 27, 1904. Birthplace, England. Onset of epilepsy at eight years. Duration seventeen years. Family history: Paternal grandmother said to have been hysterical. No direct heredity known. Patient had spinal trouble at three months. Did not walk until three years of age. At fourteen years the convulsions became very severe but with longer intervals. During hospital residence had seizures about one a week. Habits good. Had ravenous appetite. Physical examination: Negative except increased reflexes with clonus, Nov. 5, 1908. Fall from trapeze fractured skull and injured cervical and dorsal cord. Followed by death. Age, twenty-five years.

Microscopical. — Heart: Negative. Lungs: Bronchitis and bronchopneumonia. Spleen: Follicles distinct and active. Arteries slightly hyaline. Liver: Negative. Kidney: Negative. Adrenals: Negative.

Case XLI. No. 1124. Male. Admitted Jan. 1, 1906. Birthplace, Massachusetts. Onset of epilepsy at seven years of age. Duration, twenty-two years. Assigned cause, sunstroke. Predisposing cause, heredity. Attacks grand mal in type. Father intemperate. No history obtainable from the patient. Physical examination: Patient has shuffling gait and appears idiotic. Mentally dull. Physical condition good. Teeth poor. Chest contracted. Paresis of right side. Reflexes on right somewhat increased. April 22, 1909. After examination of patient, diagnosis of pulmonary tuberculosis made. Died July 12, 1909. Age, twenty-nine years.

Microscopical. — Heart: Negative. Lungs: Thickened pleura. Extensive fibrosis. Acute bronchitis and bronchopneumonia. Numerous acute abscesses. Spleen: Follicles large, distinct and active. Large numbers of polymorphonuclear and plasma cells are seen. Pancreas: Negative. Liver: Negative. Kidneys: An occasional glomerulus and tubule sclerosed. Adrenal: Negative. Aorta: Small foci of lymphoid infiltration beneath the intima.

Case XLII. No. 702. Male. Admitted Nov. 8, 1902. Birthplace, Maine. Onset of epilepsy at about forty-seven years of age. Duration, sixteen years. Assigned cause, injury to head from fall. Attacks grand mal in type. Physical examination: Patient appears feeble-minded. Teeth are nearly all gone. Heart hypertrophied. Aortic sound accentuated. Otherwise negative. Patient died July 14, 1909. Age, sixty-three years. Cause of death: Valvular heart lesion with general anasarca.

Microscopical. — Heart: The muscle fibers appear much hypertrophied. Lung: Chronic bronchitis, venous thrombosis and hemorrhagic infarction. Spleen: Intense passive congestion. Diffuse increase in connective tissue of stroma. Hyaline arteries. Follicles distinct and slightly active. Pancreas: Negative. Liver: Central congestion and necrosis. Kidney: Diffuse nephritis, edema, arteriosclerosis. Adrenal: Marked passive congestion.

Case XLIII. No. 1748. Male. Admitted July 7, 1909. Birthplace, Massachusetts. Onset of epilepsy in early childhood. Father and mother said to be peculiar and family called sickly. One brother died with epilepsy. Has had a long residence in town farm. Habits good. Talks with difficulty. Confined to bed for two months prior to death on July 14, 1909. Age, sixty years. Cause of death: Cerebral softening.

Microscopical. — Heart: Moderate chronic fibrous myocarditis. Lung: Congestion and bronchopneumonia. Spleen: Capsule thickened and trabecular tissue increased. Marked congestion with many small hemorrhages. Follicles distinct but inactive. Pancreas: Slight chronic fibrous pancreatitis. Liver: Extensive central necrosis with diffuse vacuolation of many of the remaining liver cells. Kidney: Chronic diffuse nephritis and some arteriosclerosis. Adrenal: The cortical portion only remains and many of the cells are vacuolated. There is some infiltration with lymphocytes.

Case XLIV. No. 180. Female. Admitted July 28, 1898. Birthplace, Massachusetts. Onset of epilepsy at twelve years. Duration seventeen years. Assigned cause of epilepsy, heredity. Had chorea at seven and one-half years. Attacks increased in frequency. Mother had fainting spells and was called " nervous." Patient dull and stupid. Physical examination: Negative on admission. Died Aug. 17, 1909. Age, twenty-nine years. Cause of death: Acute dilatation of stomach.

Microscopical. — Heart: Negative. Aorta: Small atheromatous patches. Lung: Thickened pleura with fibrinous purulent exudate. Many bronchiectatic abscesses. Spleen: Congested. Follicles distinct but inactive. Large numbers of plasma cells are seen. Liver: The sinusoids about the central vein are distended with red blood corpuscles. Kidney: Congestion and edema are present. Adrenal. Negative.

CASE XLV. No. 1753. Male. Admitted July 14, 1909. Birthplace, Massachusetts. Onset of epilepsy at nine months. Duration thirteen years. Attended school until eight years of age. No cause for epilepsy assigned. Paternal grandmother has history of fainting spells and at one time paralysis for three months. No convulsions. Patient's great-grandfather died of tuberculosis. Eruption of patient's teeth at nine months, also whooping cough. Physical examination: Patient dull and feeble-minded. Not well nourished otherwise negative. Attacks grand mal in type. Head affected first and at times slight paralysis followed the attack. No aura. Died Sept. 16, 1909. Age, fourteen years. Cause of death: Bronchopneumonia.

Microscopical. — Heart: Negative. Lungs: Thickened pleura, marked congestion. Acute bronchopneumonia. Many bacteria present (cocci). Spleen: Congestion considerable with small hemorrhages. Acute secondary splenitis. Follicles distinct and active. Phagocytic cells in follicles. Arteries negative. Liver: Some central congestions with beginning cell necrosis. Kidney: Cloudy swelling of epithelieum of the convoluted tubules. Adrenals: Negative. Aorta: Negative.

CASE XLVI. No. 636. Female. Admitted June 5, 1902. Birthplace, Massachusetts. Onset of epilepsy at fifteen years of age. Duration forty-two years. Assigned cause, fracture of skull due to accident. Five to twenty attacks monthly, grand mal in type. Past history and family history negative. Physical examination shows patient demented and insane. Circulation and nutrition poor. Teeth poor. Patellar reflex accelerated. Chest and abdomen negative. Died Sept. 20, 1909. Age, fifty-seven years. Cause of death: Epilepsy.

Microscopical. — Heart: Negative. Lung: Congestion is marked throughout. There are a few healed tubercles about the root of the lung and a beginning bronchopneumonia. Many endothelial cells contain masses of golden brown pigment. Spleen: There is considerable congestion and large number of plasma cells are present. The follicles are distinct and active. The arterial walls are thickened. Liver: The cells show slight diffuse vacuolation. Pancreas: There are many large vacuoles each representing several acini. Kidneys: Chronic diffuse nephritis. Arteries sclerotic. Adrenals: The cells contain minute vacuoles. Aorta: Large atheromatous areas in the intima.

CASE XLVII. No. 973. Female. Admitted Jan. 27, 1905. Birthplace, Canada. Onset of epilepsy at eight years of age. Duration twenty-eight years. Cause unknown. No heredity known. Father died at twenty-nine years of age of asthma, mother and brother living and well. Past history, negative. Attacks seven to eight weekly, grand mal in type. Progressive failure of mental condition. Physical examination: Deaf, somewhat feeble-minded. Face asymmetrical. Teeth poor. Chicken breast. Patellar reflex slightly accentuated. Chest and abdomen negative. Sept. 2, 1909, began to show renal symptoms. Failed rapidly and died Sept. 26, 1909. Age, thirty-six years. Cause of death: Chronic nephritis and acute pericarditis.

Microscopical. — Heart: Acute pericarditis with fibrinous exudate. Lung: Focal pleuritis. There appears to be a slight induration of the alveolar walls throughout. Spleen: The capsule is thickened with an increase in trabecular tissue. Arteries sclerotic and slightly hyaline. Pancreas: Slight chronic pancreatitis. Liver: Central congestion throughout and vacuolation of peripheral cells of lobules just beneath the capsule. Kidneys: Thickened capsule. Advanced chronic diffuse nephritis. Arteriosclerosis. Hyaline casts. Adrenal: Negative. Aorta: Marked atheroma of intima.

CASE XLVIII. No. 1247. Male. Admitted Nov. 6, 1906. Birthplace, Massachusetts. Onset of epilepsy at seven months of age. Duration seventeen years. Cause of epilepsy unknown. Partial right hemiplegia said to have followed convulsion. Family history, mother subject to migraine. Mother's mother, sister and brother died with tuberculosis. Father's mother died of "softening of the brain." A paternal cousin died with convulsions. Patient the youngest of eight children, all others living and well. Patient had violent headaches. Attacks confined mainly to paralyzed (right) side. Attacks followed by dull period, and speech interfered with. At three years patient had night terrors and enuresis. Indigestion during childhood. Learned to talk and walk at two years. Attacks three to four weekly, grand mal in type. Right arm and leg affected first. Cries out that attack is coming on. Physical examination shows patient demented with right hemiplegia, otherwise negative. Muscular development good. Died Oct. 1, 1909. Age eighteen years. Cause of death: Epilepsy.

Microscopical. — Heart: Negative. Lungs: Acute pleuritis (diplococcus). Thickened pleura. General congestion of lung. Multiple abscesses (staphylococcus, streptococcus) (bronchiectatic). Spleen: Congested. Follicles distinct and active. Arteries negative. Pancreas: Negative. Liver: Slight congestion throughout. Some of the central veins are dilated and their walls thickened. Kidneys: Cloudy swelling of tubular epithelium. Arteries negative. Adrenals: Occasional groups of lymphoid cells in the medullary portion. Aorta: Atheromatous patches in the intima.

CASE XLVIX. No. 1098. Male. Admitted Nov. 3, 1905. Birthplace, Rhode Island. Father and mother born in England. Onset at two years of age. Duration nineteen years. Assigned cause of epilepsy, "Premature growth of frontal bone." No heredity known. (Mother's brother and father's aunt died of tuberculosis.) Mother mildly hysterical before patient's birth. Eruption of teeth at fourteen months. Patient is mentally feeble, cannot talk. Head asymmetrical. Teeth poor. Physical examination otherwise negative. Attacks grand mal in type. Died Oct. 9, 1909. Age, twenty years. Cause of death: Status epilepticus.

Microscopical. — Heart: Negative. Lung: Slight congestion and edema, acute bronchitis and bronchopneumonia. Spleen: Congestion throughout. Follicles small and inactive. Secondary acute splenitis. Pancreas: Negative. Liver: Central congestion. Focal necrosis with lymphoid infiltration. Kidney: Slight chronic diffuse nephritis. Aorta: Small atheromatous patches on the intima.

CASE L. No. 1103. Male. Admitted Nov. 17, 1904. Birthplace, New Brunswick. Onset at twelve years of age. Duration eleven years. Assigned cause, excessive use of cigarettes. Heredity. Maternal uncle paralyzed. Mother had indigestion and migraine, one brother had rheumatism, one brother died with lung trouble. Eruption of teeth at nine months of age. Walked at twelve months. First attack when aroused in early morning from sound sleep. This has persisted. No aura. Attacks two to twenty-one monthly, grand mal and petit mal in type. Patient feeble-minded from epileptic attacks. Physical ex-

amination: Negative. Died Oct. 12, 1909. Age, twenty-three. Cause of death: Lobar pneumonia.

Microscopical. — Heart: Negative. Lung: Thickened pleura, acute bronchitis and lobar pneumonia. Excessive fibrin formation and many organisms (diplococcus lanceolatus). Some edema. Spleen: Marked congestion. Follicles distinct and active, some contain hyaline. Pancreas: Negative. Liver: Dilatation of central veins surrounding congestion. Kidneys: Slight chronic interstitial nephritis. Adrenal: Negative. Aorta: Atheromatous patches on the intima.

GENERAL STATISTICS.

1. Sex: Male, 33; female, 17.

2. Age at death: Minimum, 11 years; maximum, 85 years; average, 43 years.

3. Years of hospital residence: Minimum, 2 days; maximum, 10 years 9 months; average, 3 years.

4. Assigned causes: Heredity, 2 (4%) cases mother epileptic, 1 (2%) case father epileptic, 7 (14%) cases father alcoholic, 4 (8%) cases insanity in some branch of family, 15 (30%) cases of nervous and mental symptoms in family, 2 (4%) cases asthma in paternal parent, 2 (4%) cases tuberculous maternal parent.

Other causes: 9 (18%) cases of injury to patient, 4 (8%) cases patient alcoholic, 3 (6%) cases at time of teething, 3 (6%) cases assigned to senility, 3 (6%) cases assigned to scarlet fever, 2 (4%) cases assigned to sunstroke, 1 (2%) excessive use of cigarettes, 1 (2%) congential hydrocephalus, 1 (2%) premature growth of frontal bone.

5. Age at onset: By decades, from 1 to 10 years, 23 cases (46%); 10 to 20 years, 10 cases (20%); 20 to 30 years, 1 case (2%); 30 to 40 years, 8 cases (16%); 40 to 50 years, 3 cases (6%); 50 to 60 years, 0 cases; 60 to 70 years, 2 cases (4%); 70 to 80 years, 3 cases (6%).

In periods of five years: from 1 to 5 years, 13 cases (26%); 5 to 10 years, 10 cases (20%); 10 to 15 years, 6 cases (12%); 15 to 20 years, 4 cases (8%); 20 to 25 years, 1 case (2%); 25 to 30 years, 0 cases; 30 to 35 years, 5 cases (10%); 35 to 40 years, 3 cases (6%); 40 to 45 years, 1 case (2%); 45 to 50 years, 2 cases (4%); 50 to 55 years, 0 cases; 55 to 60 years, 0 cases; 60 to 65 years, 1 case (2%); 65 to 70 years, 1 case (2%); 70 to 75 years, 3 cases (6%).

In periods of seven years: from 1 to 8 years, 19 cases (38%); 8 to 15 years, 10 cases (20%); 15 to 22 years, 4 cases (8%); 22 to 29 years, 1 case (2%); 29 to 36 years, 6 cases (12%); 36 to 43 years, 3 cases (6%); 43 to 50 years, 2 cases (4%); 50 to 57 years, 0 cases; 57 to 64 years, 1 case (2%); 64 to 71 years, 2 cases (4%); 71 to 78 years, 2 cases (4%).

6. Duration of epilepsy: Longest period, 65 years; shortest period, 1 year; average duration, 22.74 years.

7. Lesions of trunk organs: Heart: 32 (64%) cases negative, 18 (36%) cases show lesions, 13 (26%) cases chronic fibrous myocarditis, 1 (2%) case multiple abscesses with pericarditis, 1 (2%) case endocarditis, 1 (2%) case brown atrophy, 1 (2%) case hypertrophy of muscle cells, 1 (2%) case acute fibrous pericarditis. (With one exception the subject was over 50 years of age.) Lung: 7 (14%) cases negative, 43 (86%) cases show lesions, 9 (18%) cases active tuberculosis, 5 (10%) cases healed tuberculosis or tuberculosis lymphnodes, 21 (42%) cases acute pneumonia, 10 (20%) cases edema, 4 (8%) cases bronchiectatic abscess, 4 (8%) cases chronic bronchitis, chronic pleuritis, infarct and slight induration. Spleen: 2 (4%) cases negative, 48 (96%) cases show lesions, 3 (6%) cases tuberculosis, 62 (31%) cases hyaline arteries, 12 (24%) cases arteriosclerosis, 16 (32%) cases increase of trabecular tissue, 21 (42%) cases follicles inactive or only slight activity, 34 (68%) cases varying degrees of congestion, 9 (18%) cases small hemorrhages, 8 (16%) cases secondary acute splenitis, usually with acute pneumonia, 5 (10%) cases hyaline follicles, 4 (8%) cases phagocytic cells in follicles. Pancreas: 43 (86%) cases negative, 7 (14%) cases show lesions, 2 (4%) cases fat vacuolation, 3 (6%) cases chronic fibrous pancreatitis, 1 (2%) cases interstitial hemorrhage, 1 (2%) case lymphoid infiltration. Liver: 4 (8%) cases negative, 46 (92%) cases show lesions, 1 (2%) case carcinoma, 20 (40%) cases fat vacuolation, 12 (24%) cases central necrosis, 4 (8%) cases focal necrosis, 26 (52%) cases central congestion, 10 (20%) cases diffuse congestion, 5 (10%) cases increase in periportal tissue, 4 (8%) cases lymphoid infiltration of periportal tissue, 1 (2%) case multiple abscesses, 1 (2%) case conglomerate tubercles. Kidney: 8 (16%) cases negative, 42 (84%) cases show lesions, 10 (20%) cases chronic interstitial nephritis, 17 (34%) cases chronic diffuse nephritis, 31 (62%) cases arteriosclerosis, 13 (26%) cases acute parencyhmatous nephritis, 1 (2%) case multiple abscesses, 1 (2%) case tuberculosis.

SUTURE OF THE FAUCIAL PILLARS FOR HEMORRHAGE FOLLOWING TONSILLECTOMY.

R. H. GILPATRICK, M.D., BOSTON.

THE possibility of serious bleeding and even of fatalities from this cause, following removal of tonsils, must always be borne in mind even where there is no previous history of hemorrhagic tendencies. Three cases of this sort which have come under my observation have convinced me that firm and complete approximation of the faucial pillars by suture is the most efficient means of controlling the bleeding. In the first two cases the technical difficulties of this procedure were so great that I was led to adopt a method of securing the suture without knots.



The difficulty of the operation is due to the small space in which the work must be done, failure to obtain a view of the lowest portion of the pillars, where the suture must begin if it is to be efficient, and tying of knots. Suture of the pillars

is so radical a procedure as to be advisable only in cases of continuance of bleeding after the application of the usual means of control. In such cases I have found it a life-saving measure. The method of securing the suture with perforated shot was tried in my last case and proved itself so efficient and easy that it seemed worth while to describe it. Not having had opportunity to look through the literature I make no claim of originality, but never having heard of its previous use in such circumstances I offer it for what it may be worth.

The operation usually has to be done without anesthesia, and the condition of the patient is often such that none is needed. The choice of position in which the patient is best put rests on the individual operator and the circumstances. I have used the Rose position with satisfaction. Good light is of course necessary. In the Rose position the patient's head is but little elevated above the chest, which point is worth considering



in a nearly exsanguinated patient. At the same time, less blood and mucus are likely to be inhaled. The jaws must be opened to their full extent, and the tongue kept on the floor of the mouth. This is best done with the Whitehead self-retaining gag with attached tongue-depressor. A small, round-pointed, fishhook-shaped needle is threaded with black linen or silk. The thread should be about eighteen inches in length. A long-shanked Mayo needle holder has proved adaptable. When the suture is ready to be placed, the pharynx is quickly wiped out and an ordinary right-angled metal tongue-depressor introduced so that its tip presses against the base of the tongue just at the lowest point of the faucial pillars and away from the side being operated upon. This gives a view of the point at which the first bite of the needle should be made. The point of the needle is carried behind the lowest portion of the posterior pillar and is introduced forward through both pillars, taking enough tissue to insure its not tearing out. This step in the operation is shown in Fig. I. The needle is pulled through, leaving the tail of the suture sufficiently long to reach beyond the incisors where it is twisted with the main portion of the suture between the thumb and forefinger. A perforated shot is now slipped over the needle and tail of the suture and the shot grasped in the jaws of the needle holder. One hand holds the twisted suture taut while the other, grasping the needle holder, forces the shot against the point of suture of the pillars and crushes it upon the thread. The tail of the suture is now forced between two convenient teeth and the suture continued as a running, over and over, to the other end of the pillars. The bites should be about a quarter of an inch apart and should include sufficient tissue to prevent tearing out.

The last step in the operation is shown in Fig. 2. The tail of the suture has been left long, the suture drawn tight, and the head and tail of the suture twisted together as before. Another perforated shot is slipped over the needle, grasped in the holder, forced against the point of suture of the pillars and crushed. If the ends of the suture are left permanently long and secured to teeth, it will do away with the possibility of the shot dropping into the larynx in case the suture should break or tear out.

The advantages of this method, as I have found them, are, ease of application, short time required and security with which the pillars are approximated and bleeding controlled. As soon as the suture is passed through the pillars the second tongue-depressor may be removed out of the way, for the placing of the shot does not require that the tongue be held away. The suture furnishes a guide along which the shot is pushed until it reaches the pillars.

Reports of Societies.

THE AMERICAN NEUROLOGICAL ASSOCIATION.

THIRTY-SIXTH ANNUAL MEETING,
MAY 2, 3 AND 4, 1910.

TUESDAY MORNING SESSION.

(Continued from No. 2, p. 64.)

A CASE OF FRACTURE OF THE BODIES OF THE FOURTH, FIFTH AND SIXTH CERVICAL VERTEBRÆ WITH INJURY OF THE SPINAL CORD.

DR. W. H. SWAN, of Colorado Springs; DR. CHARLES A. POWERS, DR. HOWELL T. PERSHING, Denver: A man, aged seventy, fell from a stumbling horse, striking on his forehead. There was immediate motor and sensory paralysis below the neck, with evacuation of bladder and bowel, without loss of consciousness. Extreme shock, followed for some months by improvement, without restoration of ability to stand, sit alone or turn in bed. Daily catheterization was done with no ill effects. Eczema, which was present, rapidly disappeared on the anesthetic skin up to a sharp line of demarcation, then slowly cleared above. There was greater mental activity and happier mental state during about eighteen months than before injury, probably

due to relief from unpleasant sensations. Death took place twenty-eight and one-half months after injury, from uremia. Operation was considered and rejected on account of patient's age and the improbability that a remediable lesion would be found. Fixation of head was deemed unadvisable. The dried preparation of the cervical spine of this patient shows no lesion of the arches or articular processes, but a moderate crushing of three bodies, which could not have been remedied by operation. Localization diagnosis was based on retention of power in deltoids and biceps, with paralysis of both triceps muscles which indicated a lesion of the seventh cervical segment. Faradic tests indicated almost complete escape of anterior gray horns and anterior roots. Autopsy showed the bodies of the fourth, fifth and, to a lesser extent, the sixth cervical vertebræ to have been fractured by a crushing force, but the fragments united in normal position. The arches and articular processes showed no injury. Preliminary histological examination shows the usual ascending and descending degeneration.

DISCUSSION.

Dr. Harold N. Moyer, of Chicago: This case follows the general rule that the fifth cervical is the most frequent seat of these cervical fractures. So far as operation is concerned, this case rather favors operation. The value of operation in these cases is unquestioned. The distinguishing features for the neurologist is to understand if there is extrinsic pressure. The hematomyelia is not, of course, to be operated upon. I do not wish to be understood as saying that this old man of seventy ought to have been operated on. I am speaking of the broad general principle of operation. I believe it to be a sound rule to fix the cervical vertebræ where you have a fracture if you don't operate. At least in all the cases I have seen I have recommended fixation.

Dr. Pershing, closing: When it comes to a question of operation in a case of this kind, you have to consider the individual patient, but you have also to consider the advantage of accomplishing anything when you do your operation. In this case, of course, we could not have reached the seat of fracture in the bodies and done anything with them. The risk from the operation *per se* is very great and, of course, with this particular man, would have been very much greater. There were many things aside from his age which made it necessary to be very cautious about operation. The question of fixation was discussed very carefully and very earnestly and it was decided in the negative, mainly on account of the absence of rigidity and pain; the disposition of the patient after being warned was to keep his head still on the pillow. Also because of his temperament it would have been very difficult to have made him submit to fixation.

DISTURBANCE OF SENSATION IN A CASE OF SYRINGOMYELIA.

Dr. Hugh T. Patrick, of Chicago: I would like to show a case in which the hypophysis has been removed. The patient illustrates the occasional usefulness of the neurologist and the esteem in which he is held in some quarters. Last June I made the diagnosis of tumor of the hypophysis in the man which I present. Dr. A. E. Halsted, of Chicago, was called on to operate and he had the nerve to operate and removed the hypophysis successfully. The man made a beautiful recovery and his vision, which had almost disappeared, has returned in a very large measure. He had been able to see only very faintly, that is, the face of an individual looked like a blurred white something, and now he is able to read a newspaper. I am sorry I cannot give the details of the clever surgical work in this case.

Dr. David D. Wolfstein, Cincinnati: What were he symptoms in this case?

Dr. Patrick: The man had blurred disks, not choked disks, and had the typical hemianopsia. The x-rays showed an enlarged sella turcica; some slight mental hebetude, but not a great deal.

Dr. A. E. Halsted, of Chicago: In operating on the patient I followed the usual preparation. The anesthetic was started with ether. A high tracheotomy was done and a Trendelenburg balloon canula inserted. Chloroform was now used for the anesthetic. The nasal cavities were packed with adrenalin gauze and the pharynx tamponed. The upper lip was raised and an incision made in its mucous membrane about five sixths of an inch from the muco-cutaneous junction, and parallel to the alveolar process. The soft tissues were freed and the nose gradually drawn up with retractors. The septum was divided with bone forceps and displaced upwards and laterally. The lower turbinates, the vomer and the perpendicular plate of the ethmoid were removed. At a previous operation, at the Illinois Charitable Eye and Ear Infirmary, the middle turbinates had been removed by Dr. Norval H. Pierce. An opening was then made through the anterior wall of the sphenoidal sinus and a blue-colored pulsating mass seen. The membrane covering the tumor protruding into the opening into the sphenoid was incised. The tumor was then curetted out with a dull curette. The whole cavity, now the shape of a cylinder, 1 inch in diameter and 5 inches long, was thoroughly flushed with normal salt solution and subsequently packed with iodoform gauze. The septum was sutured back, and the mucous membrane of the mouth replaced and sutured, and the tracheotomy tube removed. During the first forty-eight hours the patient's temperature varied from 100 to 102 rectally, and the pulse from 100 to 120. His condition was fair, his mind clear and he was free from pain. At the end of forty-eight hours the packing was removed and replaced immediately by the senior house surgeon. Following the repacking of the cavity the temperature rapidly rose until it reached 105, with a pulse of 160. The patient became somnolent and could only be aroused with difficulty. This condition lasted for twenty-four hours. Upon removing the gauze pack and irrigating the cavity, the temperature fell rapidly until, at the beginning of the fourth day, his temperature reached normal, and from that time on no untoward symptoms developed. The patient left the hospital at the end of five weeks, free from pain, and with marked improvement in the vision. The right eye was 4-200 before operation, and at the end of the second week after operation it was 6-15; left eye was 5-200 before operation and 6-22 after the operation. He continued to improve, resuming his occupation as driver of an express wagon on the first of December, and since that time has enjoyed good health.

Dr. James J. Putnam, Boston: In the case of a young man, with a temporal hemianopsia and an almost complete loss of sight, the x-rays showed a large sella turcica. A diagnosis of tumor of the hypophysis was made. Operation was done and a cyst containing 1 1-2 oz. of fluid was found and the patient made a complete recovery. The eyesight has been restored almost to normal, although considerable atrophy of the optic nerve has taken place.

MYOSITIS FIBROSA FOLLOWING NERVOUS BREAKDOWN.

Dr. John K. Mitchell, of Philadelphia: A nervous breakdown from overwork was followed by an attack

of fever of unknown origin, with great prostration. Four months later a stiffness in the extensors of one thigh was noticed. A like stiffness and hardness successively appeared in muscles of other parts. This increased in degree until the patient was almost crippled. A portion of muscle excised during life exhibited widespread fibrous degeneration, the muscle fibers being in some places replaced by fibrous tissue, in others pushed aside by it. In cross-section radiating striæ, apparently of fibrous tissue, are seen. The patient improved under treatment.

WEDNESDAY MORNING SESSION.

DR. M. PRINCE, the President, called the meeting to order at 10 A. M.

FRIEDREICH'S ATAXIA.

DR. WILLIAM G. SPILLER, of Philadelphia: The symptoms of this disease have been known many years, but the pathology has been very imperfectly studied. In the case which I report, in addition to the usual findings in the spinal cord, the peripheral nerves were greatly degenerated; recent degeneration detectable by the Marchi method was seen in some of the muscle fibers, and the cerebellar nuclei showed alteration of the nerve cells. Many naked axis cylinders were detected by the Bielschowsky stain in the columns of Goll, which by the Weigert hematoxylin stain appeared almost completely degenerated. Friedreich's ataxia is not a degeneration confined to the spinal cord of cerebellum, but is the result of implication of the entire central and peripheral nervous systems.

DR. SIDNEY I. SCHWAB, St. Louis: What was the mental status of this case? Was there any suggestion of any syphilitic etiology?

DR. E. W. TAYLOR, Boston: In one case which I studied there was a strikingly beautiful degeneration of the cerebellar tract and of Gower's tract, which I took to be part of the widespread degeneration throughout the nervous system. I would ask whether Dr. Spiller was able to trace this degeneration of Gower's tract into the cerebellum, and whether anything has been done towards tracing Gower's tract and the cerebellar tract towards their terminations.

DR. B. SACHS, New York: The attempt to explain hereditary family diseases in connection with the modern laws of heredity will have to be made some day and, even though our first steps may be very infantile, we should make a beginning. The distinction between Friedreich's ataxia and amaurotic family idiocy is interesting. That is one point that might be taken up for the starting point of consideration of family diseases. In hereditary ataxia we evidently have an involvement chiefly of tracts of peripheral structures, as Dr. Spiller has so well shown, and no doubt there is some cellular involvement as well, while amaurotic family idiocy is a purely cellular disease. Some years ago these cases were spoken of as cases of arrested development. The biologists and sociologists are not satisfied with that, particularly if the symptoms come on later in life after normal birth, and so on. These family diseases would not occur if there were not some vital defect in the germ plasm. That vital defect makes the organism less resistant to extraneous influences or to influences within the body than it would be if this vital defect in the germ plasm did not exist. In former days I was absolutely opposed to the idea that any family disease could be due to any toxic or infectious agent. I do not believe that any family disease can be due to an extraneous toxic or infectious agent, but an infectious agent that is formed within the body itself is conceivable, particularly if you allow that the injury done to the germ plasm in the first place makes the various structures of the body less resistant to poisons formed within the body itself. That is the one step forward that we are able to take in the matter of explaining some of the family diseases. What its application will be to Friedreich's ataxia I do not know, but would like to insist that we go one step further than such careful anatomical, histological work as that reported this morning and endeavor to bring the various family diseases in line about so much which is being written, in which all of us are so much interested.

DR. SPILLER, closing: The Wassermann reaction was not taken, but there were no clinical manifestations of syphilis. The pathology shows no round-cell infiltration such as is characteristic of the nervous system. In reply to Dr. Taylor's question, Gower's tract was not degenerated, although in many cases of Friedreich's ataxia it has been. Cellular changes are not usually found in Friedreich's ataxia, according to report. The nucleus dentatus in this case showed decided cellular changes. There were also some changes in the cortex.

PERSONAL EXPERIENCE WITH FREUD'S ANALYTIC METHOD.

DR. JAMES J. PUTNAM, Boston: The purpose of this paper is twofold: First, to indicate the character of the author's own successes and failures in the application of Freud's method of psycho-analysis; next, to indicate the respects in which that method seems to me of importance and the points of view from which it should be studied.

In so far as Freud has shown us a valuable means of studying the processes which go on unconsciously within our minds, and the respects in which they lead to traits of character and temperament, it is difficult to see how any one can fail to recognize the importance of his work. Most of the criticisms have come from persons who have failed to verify his conclusions. That, however, is a different matter, although in the author's opinion, based upon his own observations, the more carefully and thoroughly the method is applied, the more accurately the conclusions derived from it will be found to coincide with those laid down by Freud and others who have followed in his footsteps. The only personal observations which the reader would present as conclusive are those made on about six cases studied during the past year. A brief summary is given of certain of these cases with a view of indicating the difficulties which attend the application of the method, whether to the dream life or to the waking life, as well as the character and degree of success obtained in treatment. Incidentally, comparison is made between this and other methods with reference to their relative value. It is obvious that the talents and interests of neurologists are not all of the same sort, and for those to whom the study of the mind in health and in disease appears the most important portion of the physician's work, the contributions of this relatively new field are certain to seem of marvelous promise and of immense practical importance.

DISCUSSION.

DR. GEORGE L. WALTON, Boston: I wish that Dante could open this discussion and let us know whether, when he credited Desire with being the root of all things good and evil, he had in mind unconscious memory pictures, as of dreams, to which branch of the subject I will confine myself in this discussion. Without venturing to offer a complete explanation of the dream, I feel justified in assuming that it consists of a series of concepts previously entertained but newly assembled, succeeding each other, sometimes with lightning-like rapidity. One important difference

between these memory pictures and those of the waking life is the inability of the dreamer to measure time and space; but the main distinction lies, perhaps, in the absence of goal ideas and of the power of control which enable us in our waking hours to guide our thoughts more or less successfully in definite channels.

The associations by which these pictures are assembled will vary with the individual and be tinged by his emotional tone, but to read into them, however ingeniously, the fulfillment of desires is to strain a point and to substitute a preconceived notion for the study of facts. I find it hard seriously to discuss Freud's illustrative case of a child of tender years who sleeps in a very large bed and dreams he is in a tight place. This dream Freud explains as the fulfillment of the child's wish to be large, a wish so abundantly fulfilled that he thinks himself so large that even this bed is too small for him. To credit mere memory pictures, distorted at that, with being symbols is unduly to glorify the dream state—I should perhaps rather say unduly to debase it when the symbols are of the character which permeates the works of this author. At the risk of seeming prejudiced, I find myself disinclined further to follow the leader whose book on dreams contains that of a young woman who thinks she holds in her hand a branch of a tree, which is assumed to symbolize subjects from which her thoughts should rather be diverted, and in which it appears that breaking off such a limb presents an equally objectionable suggestion. The reproduction of a dream in detail, and its analysis, is not only baffling and valueless, in my opinion, for medical practice, but may be harmful. Sholtze says that children should not be encouraged to relate their dreams, for their already fantastic imaginations will thereby be the more led away from the real things of life. Similarly, in the treatment of the psychoneurotic, the desideratum is concentration upon the external and the real. As to the comparison between getting up and doing something and analyzing the dream, it seems to me that an ounce of Muldoon is worth a pound of Freud.

Dr. Edward B. Angell, Rochester: I agree with Dr. Walton. These patients need ruthless treatment. I recall a patient sent to me whom I required to sit up and every time the doubts came upon her to say out loud, "What a damn fool I am!" Two treatments of that sort served to relieve the whole chain.

Dr. B. Sachs, New York: I desire to be absolutely impartial in this matter, not only out of respect for the reader of the paper, but because personally I have been acquainted with Freud for twenty-five years, ever since we sat in Meynert's clinic. I would agree with anything of Freud's with special delight if I could feel that his teachings are absolutely sound. There are several practical reasons why they do not appeal to me: The first counts least, that is, the length of time the examination takes, and the smallness of the result. For instance, it took six weeks for my assistant to get the history of masturbation, which I must confess I knew existed when I looked at the boy. That is an enormous waste of time. The most serious objection to the method is that it has had a distinct sexual taint given it. Whether all the channels lead up to that special function or not I do not know, but the sexual taint is most marked. It may be of great interest to the neurologist to find out that some sexual misconception or some disagreeable sexual thought had existed in that person in early years, but, while it may be of great interest to the physician, and while it may not do a woman of forty any harm to have her psychic analysis made as carefully as Dr. Putnam has performed it, it is my firm conviction that we do no good by taking a young woman of fourteen to twenty and pushing her thought back on that one sexual mistake, not a conscious sexual mistake, that was made early in life. I cannot see that the therapeutic results have been any better, nor have they been arrived at any quicker than by the older methods.

Dr. Charles L. Dana, of New York: I would welcome any new method that would help us in studying this serious class of cases, especially a method that Dr. Putnam had taken so seriously and found some real good in. My practical experience has been not only of failure, but often of disaster with Freud's method. Taking the case of a well-educated and delicate-minded man or woman and making them go through the details of early experiences has sometimes just stirred up a mass of old memories has thrown them into almost delirium at times. It has often at times been most unfortunate and I have practically stopped giving any such treatment in cases of at least the more educated, more intelligent type of patient that comes to me. In dispensary practice perhaps we can find rather more scope for the method. In the minor cases of this class of psychoneuroses I find that by ordinary methods, treatment, education and modern resources of therapeutics they get well. I always tell psychasthenic cases that they will get well, and they generally do. It must be remembered that a certain number of cases run a course — they get well whether you do anything or not in one or two years. There is another group of cases, more serious, which date back to early life; these are serious cases I have not been able to do much with. If this method will successfully help them, it will be of value, but I do not see exactly how the philosophy of the method could explain or help a condition which is essentially constitutional. Instead of the Freud method, the quickest way of getting at the inside of these cases is to do what we practically all try to do and often succeed. I take cases of this kind, put them in a private hospital and give them an intelligent nurse; I go to see them often, and send masseurs whom I know to be intelligent women or men to give them treatment and by every process that I know of I become acquainted with their story. In two or three weeks one learns about these patients; he knows their past history, and I do not believe you can get as much by the Freud method as by our present method. I think we have much better methods than that of Freud.

Dr. L. F. Barker, of Baltimore: It has been my good or bad fortune to see a good many of these patients in the last few years. Any method which helps us to understand the nature of these cases and treat them successfully should be welcome. I am very glad indeed that so fine a man as Dr. Putnam should undertake this study,—the practical testing of Freud's method. It seems to me that the method should be tested by a man in whom we have absolute confidence, whose ethical nature is such that we could have no doubt of the motives of the study. I think the method should be carefully tested. It has excited world-wide interest, and some of the better psychologists have become very enthusiastic about it. It is too early to say how much good will come of it, but certainly a large amount of new knowledge concerning the psychology of these patients, the psychology of life generally, is being derived from these studies. I think we should separate the method of psycho-analysis from the purely sexual idea. In my application of psycho-analysis it has been very helpful, especially in extending the anamnesis. As to psychasthenic cases, my experience with them is that they are hereditarily badly endowed people. They start badly.

Most of them come from generations of neurotic people. I have in mind some cases under my care where for three generations this condition existed. This may come at any time of life, though most of them have attacks early in life.

DR. CHARLES K. MILLS, of Philadelphia: What has been said by Dr. Dana and Dr. Barker so well expresses my own views in regard to the matter that there is little left to be said. We owe a debt to Dr. Putnam for the manner in which he has approached and attempted to develop this subject. However, I am not in accord with Dr. Putnam's views. The reports so far have not been altogether satisfactory. The cures do not seem to be in greater number or better than those obtained by the old methods.

DR. HUGH T. PATRICK, of Chicago: Dr. Putnam's method does not differ so very much from the ordinary methods of psycho-analysis. It seems to me that psycho-analysis, or whatever leads us to get back to the definite original cause of any phenomenon in the abnormal patient, or the beginning of what has been the series of abnormal phenomena, is a help. What I believe to be distinctly injurious is to encourage the patient to probe himself when he is by himself, without control and without the leading intelligence of his physician, into his past life, because we all know that patients are unable to observe facts without conclusions, to observe phenomena without interpretation, and it is particularly these neurotic, poorly balanced, hypersensitive people who are constantly drawing wrong conclusions. This is distinctly dangerous, and it is that particular part of the Freud method with which I am at variance.

DR. A. R. ALLEN, Philadelphia: Dr. Dana has said that most of these cases will get well if let alone. No doubt one sees cases that have been the rounds, having been treated by neurologists in a routine way, and well treated, too, and he tries himself to treat them and fails utterly until he uses the Freud probe.

DR. AUGUSTUS A. ESHNER, of Philadelphia: It should be borne in mind that these patients are already unduly subjective and introspective, and that care should be taken not to make them more so as a result of a certain form of interrogation. Herein appears to reside a danger entitled to serious consideration.

DR. HAROLD N. MOYER, Chicago: I am a disciple of Putnam rather than of Freud. Any one who undertakes to practice Freud's analysis upon his patients on their first visit to the office will soon have no patients. That is obvious. The older methods are to be adhered to for a certain time. As to the psycho-analysis of impotence, the physician who neglects to look for some prostatic trouble or stricture will probably fail. This discussion brought out so far that the old methods are efficient, as a rule, but there is a certain residuum of cases not relieved by ordinary methods and for whom is left this psycho-analysis; it is a distinct, adequate, efficient method of getting at a few cases that we had not succeeded with before until it was offered to us.

DR. PHILIP COOMBS KNAPP, Boston: On the first appearance of Freud's work I began to try Freud's method. There is one radical defect in Freud's general position which has not been touched upon. We see almost every day cases of nervous disturbance of one sort or another due clearly and confessedly to some pronounced emotional disturbance. The cases improve as the emotional disturbance is put into the background and forgotten. It does not seem always to be a reasonable method of treatment in those cases which are due to a forgotten emotional disturbance to drag that once more into the field and get the patient to dwell upon it. It seems to me this is the primary unreasonableness of the views of Freud. There is a tendency to consider the date derived from the psycho-analytic methods as being absolutely accurate, but I have not always found them so.

(To be continued.)

Book Reviews.

Prescription Writing and Formulary. By JOHN M. SWAN, M.D., Associate Professor of Clinical Medicine in the Medico-Chirurgical College of Philadelphia, etc. W. B. Saunders Company. 1910.

This small volume of 185 pages contains 1,043 prescriptions, preceded by information and facts regarding the construction of prescriptions and the method of writing them, with chapters also on the United States Pharmacopeia, weights and measures, doses and incompatibility. A compendium of this sort, while useful, is nevertheless of limited value as a guide to treatment. Treatment of diseases like poliomyelitis, for example, by indifferent drugs can in no way represent the progress of medical practice. The same is naturally true of many other conditions.

The Elements of the Science of Nutrition. By GRAHAM LUSK, Ph.D., Sc.D., F.R.S. (Edin.). Second edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1909.

Nutrition and Dietetics. A Manual for Students of Medicine, for Trained Nurses and for Dietitians in Hospitals and Other Institutions. By WINFIELD S. HALL, Ph.D., M.D. New York and London: D. Appleton & Co. 1910.

These two volumes are complementary. The former, a second edition of Lusk's well-known work, aims to review, in fairly technical and scientific manner, the experimental data on which rests our knowledge of nutrition in health and in disease. The latter, a new publication, undertakes to present in more practical, didactic form, for medical students, nurses and general practitioners, the details and methods of application of this knowledge to the actual, specific problems of dietetics. Each is admirable in its particular field. Lusk's new edition brings up to date a textbook of standard value and convenient reference, especially for investigators in the physiology and pathology of metabolism. Hall's book, presenting as it does the result of the author's experience in teaching nutrition and dietetics, should meet the definite need of a less technical manual on these subjects. Both volumes are well arranged and adequately illustrated.

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THE PREVENTION OF OPHTHALMIA NEONATORUM.

The prevention of *ophthalmia neonatorum* has for years been a commonplace of medical knowledge. Since 1905, this disease has been reportable to our local boards of health, and it has been the duty of these boards to take immediate measures for every reported case in order that blindness might not ensue. Yet among 5,949 babies, or almost half the births recorded in five Massachusetts cities in 1909, 42% were attended by physicians who never use a prophylactic for ophthalmia neonatorum. Though these physicians have far larger practises than their more cautious confrères, their cases of ophthalmia neonatorum are disproportionately many, and the results are serious. Their omission of a well-known and harmless preventive is responsible for disease among many of their patients, and for blindness among a few.

The situation is serious. Child after child is still going blind from ophthalmia neonatorum; a nursery and a kindergarten must be maintained for their care, a school provided for their special education, and the people taxed for their industrial assistance through years of darkness; all this for no necessary cause. The responsibility, moreover, does not rest alone on those more careless physicians who never employ a preventive. Among the 5,949 babies already mentioned, only 17% were attended at birth by that honorable minority carrying out preventive treatment in every case. The remaining 41% were attended by physicians who use a prophylactic only as their judgment dictates. Unfortunately, their judgment is fallible, and the children pay the penalty.

It is true, of course, that physicians in excellent standing differ as to the advisability of routine prophylactic treatment for this disease. But where such men differ, should not the safer practise prevail? One case suggests the answer. The father, supposing that he had not infected his wife, assured the attending physician that there was no possibility of danger to the eyes of the baby about to be born. The young man had the best of reputations. The physician accepted his assurance; omitted the 1% nitrate of silver solution which he otherwise would have used, and soon found himself with so virulent a case of ophthalmia neonatorum on his hands that even good hospital treatment failed to save the eyes. As the physician in question remarked, "That one case proved to me that I should use the solution in every case, with the possible exception of my own family." It is useless to say that the father was responsible. He was. But what of it? For the child's sake, and for the state's, it was the physician's duty to forestall the chance of blindness.

Such, at any rate, is coming to be the view of the authorities most familiar with the facts. In a moderately worded but significant official letter to all registered physicians in the commonwealth, Dr. M. W. Richardson, Secretary of the State Board of Health, says, "The possibility of any baby becoming infected at the time of confinement should be constantly borne in mind, and *it is desirable to carry out a routine preventive treatment in every case.*" The italics are Dr. Richardson's. The board, moreover, is no less emphatic in deeds than in these words. In conformity with a law passed at the last session of the legislature, it is preparing to distribute to all registered physicians a 1% solution of nitrate of silver in a special Stearns dropper of protective colored glass. This convenient container, which is practically a small bottle with a rubber bottom and a dropper-shaped neck, holds enough of the solution for use at a number of births; and an extra supply can be got at all local antitoxin stations. Every physician practising obstetrics should, therefore, keep one of the droppers in his bag, for use at every confinement. The solution, of standard strength and contained in glass of a protective color, can be relied on even after considerable lapses of time. This alone will be a relief to many physicians. The fact, too, that it is supplied by the state, and its use officially recommended, should silence the objections sometimes successfully urged by frightened and ignorant parents. For the future, such objections

should not avail with reputable physicians, and it is to be hoped that they will not only use these droppers at every confinement which they attend, but supply them also to nurses and others, so that all persons attending confinements may be reminded of the need for preventive treatment.

Prevention, however, is unfortunately not the one thing needful. If the present constant sequence of neglected cases, baby after baby needlessly blind, is no longer to disgrace this state, ophthalmia neonatorum must be reported according to law. Until it was made reportable to the State Board of Health, most physicians did not know that this disease should be reported to the local boards. Outside of Boston, therefore, the law was a dead letter until the State Board, about a year ago, called it to the attention of physicians throughout the commonwealth. Even since then, the law has received scant respect. The reason is not far to seek. Physicians unfamiliar with the wording of the law have supposed that only gonorrheal ophthalmia should be reported. And so, where the diagnosis was uncertain, they have either failed to report, or have delayed till they secured a positive bacteriological test. Or again, though reasonably sure of their diagnosis, they have failed to report, for fear of marking their patients with the stigma of gonorrhea. For these reasons, and from gross carelessness, physicians have reported but few of their cases. In seven Massachusetts cities, for example, an incomplete canvass shows more than three times as many cases in 1909 as were reported.

Such laxity would hamper the most active board of health and has doubtless discouraged others in the discharge of their duty to secure adequate treatment for those secondary cases which may occur despite the physician's best efforts, as well as for cases following neglect of preventive measures. The pitiful results, in eyes disfigured and in lives cut off from the light, are already too disgracefully familiar. Words on this subject are wasted that do not show the way to removing our disgrace. The way is sufficiently plain. Let physicians, first, themselves obey the law; then let them see to it that boards of health do likewise. Let physicians report, as the law requires, every case where an infant's eyes "become swollen and red, and show an unnatural discharge." Then let them insist that, in their own practise, as in others, the board of health shall follow each case up, demanding and enforcing adequate treatment. By reporting every case, regardless of diagnosis, physicians will destroy the superstition which associates ophthalmia neonatorum exclusively with gonorrhea; they will thus remove the gonorrheal stigma from reporting; they will make reporting prompt as well as complete; and, for the first time, make it possible for boards of health to take quick and efficient action. Only by these means can the physicians, who are responsible, remove this commonwealth's disgrace — its toleration of our blinding of the innocents.

ADVISABILITY OF ANTITYPHOID INOCULATION.

THE annual recurrence of the vacation season will doubtless be marked by the usual increased incidence of typhoid fever in the United States, especially among those people who leave the relative security of the cities and expose themselves, at home and abroad, to repeated opportunities of infection from various and unguarded sources of water-supply. The question arises whether the likelihood of such infection might not be miminized by more extensive use of antityphoid inoculation.

At the time of the Boer War in South Africa, initial experiments were made in the British Army with injections of sterilized cultures of typhoid bacilli in the hope of producing an artificial immunity to the disease; and, in point of fact, the soldiers in regiments thus treated showed a considerably lower percentage of typhoid incidence than did other and uninoculated troops under similar conditions in the field. Since that time the development of Wright's opsonic theory and improvement of the technic of bacteriotherapy have done much to explain the nature of the process involved and to facilitate its intelligent application. The series of publications by Leishman and Harrison in the *Journal of the Royal Army Medical Corps* in 1907 sum up the work of the British Commission on this subject to the present date.

The idea of preventive inoculation against typhoid was late in introduction into America. In August, 1909, in a communication to the *American Journal of Public Hygiene*, Dr. L. H. Spooner, of Boston, called attention to the relatively high incidence of typhoid among nurses and others particularly exposed to infection from handling patients with the disease, even under the observation of due precautions and with the best facilities for disposing of infectious material. In the issue of this JOURNAL for Jan. 13, 1910 (Vol. CLXII, p. 37), Dr. Spooner further published

the results of several series of antityphoid inoculations of nurses, house-officers and ward-tenders which he had conducted at the Massachusetts General Hospital and at the Chelsea Naval Hospital. This piece of research, originally suggested by Dr. Mark W. Richardson, secretary of the Massachusetts State Board of Health, went far towards demonstrating that such inoculation does establish a considerable degree of immunity; for not only did all those inoculated develop a fairly active and persistent Widal reaction, but in the six months which elapsed between the beginning of the experiment and the publication of the article, not one of them contracted typhoid fever, though all continued to be exceptionally exposed as before. A similar series of experimental inoculations has also been conducted during the past year by medical officers in the United States Army.

Of course the proof of any theory is its successful application. The duration and degree of protection afforded by this procedure, and the possibility of its perfection so as to give complete security, remain to be determined. Meantime, it seems to offer a sufficient amount of immunity, attainable with relatively little and transitory discomfort, and with absolute safety, to be worth while for any one liable to special exposure. It may be found that repeated inoculations will maintain or establish permanent immunity. At any rate, it seems wise and advisable for all whose regular work or whose recreation during the summer season may expose them to unusual risk of typhoid infection to avail themselves of this means of protection, even if only partial, against a disease which, in its possible complications and sequelæ, is one of the most to be dreaded in the whole category of bacterial infections.

THE CITY AND ITS CONSUMPTIVES.

Two aspects of tuberculosis have recently been engaging the public's attention. One is the prevention of recrudescence; the other is the detection of early cases, and their relation to public charities.

It is often said, and with truth, that many persons in whom the progress of the disease has been arrested return to their former unhygienic life only to suffer from a renewed activity of their tuberculosis.

For people of ample means, who can command air, light and food, the remedy for this is easy. But for the far greater number, those of limited means, who have to earn their living in the city, there has been in the past little encouragement. For such, the Home in Mattapan, near Boston, should be a godsend. There one may have an airy bedroom, good bathing facilities and proper food at a cost of six dollars a week.

For the detection of early cases, the chairman of the board of trustees of the Boston Consumptives' Hospital Department suggests that the city set a good example by having all its employees undergo physical examination. In the open letter in which he makes this suggestion, he describes the Elberfeld system for handling consumptives. This system, named after the Prussian city in which it originated, provides for the division of the city into sections, each of about three hundred persons. Fourteen such sections comprise one district. Over each section is an almoner, who gives to applicants not only financial aid, but practical assistance by the loaning of tools and by finding employment; over each district is an overseer, and over all is a central committee of four councillors, four citizens and the mayor.

Such an institution might do for the city at large what the Social Service is doing for the patients of certain hospitals. After the need for purely medical assistance is past, the patients are watched, aided and encouraged to regain complete health, instead of dragging along for months in a semi-invalid condition.

MEDICAL NOTES.

An Unusual Medical Situation. — At a Portland, Ore., hospital, two women according to the report have recently been operated upon by their sister, while a fourth sister acted as nurse.

A Model City. — At Corey, Ala., the United States Steel Corporation is building a city for the workers in its new plant. All the problems of modern municipal development have been considered — sanitation, transportation and ornamentation.

Infant Mortality in Cleveland. — Statistics recently published show that for the past three years (1907–09) the infant mortality in Cleveland, Ohio, has been approximately 25% of the total deaths in that city. During the same period, about two thirds of the infant deaths were due to diseases of the digestive system. These figures indicate nothing "new

or never told before," but serve to reiterate and emphasize the truth that alimentation is the most serious problem of infancy, and that the improvement of methods of infant feeding is the surest and most important agent in the reduction of infant mortality.

ILLEGITIMATE USE OF OPIUM AND COCAINE IN THE UNITED STATES. — According to the reported statements made by Dr. Hamilton Wright, United States member of the International Opium Conference, before the recent annual convention of the Pennsylvania State Pharmaceutical Association, 400,000 pounds of opium and 150,000 ounces of cocaine were imported last year into this country, and 75% of the opium and 90% of the cocaine were used by drug habitués. It is estimated that 168,000 pounds of opium were used for smoking — 68,000 by native Americans, 100,000 by the Chinese, of whom there are 150,000 in the United States. Nearly 50% of all criminals and over 21% of prostitutes are said to be addicted to some drug habit. These figures, if correct, need no comment. Dr. Wright further estimates that 2¼% of all physicians and 1.32% of all nurses in this country have the morphine or cocaine habit.

INTERNATIONAL CONGRESS OF OBSTETRICS AND GYNECOLOGY. — The fifth International Congress of Obstetrics and Gynecology, which occurs at St. Petersburg, Russia, in September, will be held at the Imperial Institute of Midwifery and Gynecology, No. 3 University Line, Vasilievsky Ostroff. A feature of the occasion is an exhibition which is to be held in connection with the congress and to which the Committee of Organization is inviting exhibits from all parts of the world. Following are some of the things which will be displayed at this exhibition: Surgical instruments, modern and ancient; objects pertaining to the equipment of laboratories, operating and lying-in rooms, etc.; objects relating to the nursing of newborn infants; plans of obstetrical clinics and gynecological sections of hospitals; objects for the study of midwifery and gynecology; portraits of medical men who have distinguished themselves in the history of midwifery and gynecology; books on gynecology and midwifery; pharmaceutical preparations, etc. Exhibits should be delivered at their destination not later than Sept. 1, addressed as follows: "For the Exhibition in Connection with the Fifth International Congress of Obstetrics and Gynecology, No. 3 University Line, Vasilievsky Ostroff, St. Petersburg."

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, July 13, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 17, typhoid fever 7, measles 84, smallpox 0, tuberculosis 93.

The death-rate of the reported deaths for the week ending July 13, 1910, was 20.20.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, July 16, 1910, was 221, against 163 the corresponding week of last year, showing an increase of 58 deaths and making the death-rate for the week 18.30. Of this number 115 were males and 106 were females; 217 were white and 4 colored; 143 were born in the United States, 75 in foreign countries and 3 unknown; 51 were of American parentage, 144 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 38 cases and 3 deaths; scarlatina, 20 cases and 0 deaths; typhoid fever, 11 cases and 1 death; measles, 55 cases and 2 deaths; tuberculosis, 105 cases and 21 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 17, whooping cough 1, heart disease 24, bronchitis 1. There were 12 deaths from violent causes. The number of children who died under one year was 48; the number under five years, 67. The number of persons who died over sixty years of age was 54. The deaths in public institutions were 95.

Cerebrospinal meningitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 17 cases and 3 deaths. Scarlet fever, 2 cases.

Deducting deaths of non-residents, the total is 191 and the death-rate is then 15.81.

TESTING ICE CREAM CONES. — The health commissioners of Boston have investigated the ice cream cones, popular in certain parts of the city, with reference to the presence of poisonous substances, but, it is stated, with negative results.

AWARD OF THE WARREN TRIENNIAL PRIZE. — The Warren Triennial Prize for 1910, of $500, has been awarded to Dr. George H. Whipple, Johns Hopkins Hospital, Baltimore, Md., for an essay entitled "The Pathogenesis of Icterus."

MORE MILK TROUBLE. — The publication by the Boston & Maine Railroad of new freight rates for milk transportation, by making the city

contractors pay higher rates, seems likely to deprive Massachusetts farmers of several cents a can. The farmers are sending to Governor Draper a petition to set aside the Saunders milk bill, which they hold to be responsible for the new rates.

NEW YORK.

A CENTENARIAN. — On July 4, Josiah Zeitlein, of Brooklyn, N. Y., celebrated the supposed one hundred and sixth anniversary of his birth. He is said to have been born in 1804, at Lodz, Poland. He came to the United States in 1886. It is said that his health is excellent and that he intends soon to take up the study of the English language, which he has never yet learned.

MORTALITY STATISTICS. — The weekly reports of the Health Department show that during the month of June the mortality in the city represented an annual death-rate of 15.43, as against 16.11 in May and 15.20 in June, 1909. In most diseases there was a falling off in fatality. The weekly average of deaths from measles declined from 21.5 in May to 20.25 in June; the weekly average from scarlet fever, from 23.75 to 18.5; from whooping cough, from 8 to 5.75; from diphtheria and croup, from 42 to 35.25; from influenza, from 6 to 3; from epidemic cerebrospinal meningitis, from 7.75 to 5.75; from pulmonary tuberculosis, from 175 to 154.25; from pneumonia, from 111.75 to 67.5; from bronchopneumonia, from 95 to 73; from cancer, from 73.75 to 70.25; from apoplexy and softening of the brain, from 23.75 to 17.25; from organic heart diseases, from 127.25 to 126.75; from cirrhosis of the liver, from 22.25 to 20.75; from Bright's disease and acute nephritis, from 108.25 to 106.75; and from puerperal diseases, including septicemia, from 14.75 to 13.75. Among the few diseases in which there was an augmented fatality were the following: The weekly average of deaths from typhoid fever increased from 8.25 to 9.5; from acute bronchitis, from 14 to 16.25; from appendicitis and typhlitis, from 11 to 14; from diarrheal diseases, from 61.25 to 131; and from diarrheals under five years of age, from 55.25 to 122. It is rather discouraging to find that, notwithstanding the increased systematic efforts to control the mortality from summer diarrhea of infants, the number of deaths from this cause is considerably larger than at the same season last year. Thus, in the last two weeks of June, 1909, the deaths from diarrheal diseases in children under five years of age were respectively 86 and 120, while in the corresponding weeks this year they were 136 and 186. The existing meteorological conditions, no doubt, had something to do with this result. During the month one death from smallpox was reported. The corrected death-rate, excluding non-residents and infants under one week old, was 14.50.

Current Literature.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JULY 9, 1910.

1. *ABBE, R. *Radium's Contribution to Surgery.*
2. *KNOWLES, F. C. *Purpura Caused by the Ingestion of the Iodides.*
3. FRICK, W. *Dermatitis Exfoliativa.*
4. CROCKETT, S. S. *The Nervous Unfit.*
5. STEVENSON, M. D. *Prescribing of Lenses for Close Work.*
6. PHILLIPS, W. C. *Educational Work in Reducing Infant Mortality.*
7. ZENTMAYER, W. *The Present Status of the Etiology of Squint.*
8. WOLEY, H. P. *The Normal Variation of the Systolic Blood Pressure.*
9. HULEN, V. H. *The Advancement Operation in Squint.*
10. MURRAY, A. M. *A New Cartilage Knife for Use in the Submucous Resection of the Nasal Septum.*
11. STROWDY, L. A. *Preliminary Report of Work on Clot Culture.*
12. BRANDT, F. H. *A New Combination Mouth Gag and Tongue Depressor.*
13. ALLEN, J. M. *Thread Worms in the Appendix: Report of Two Additional Cases.*
14. BETTMAN, A. G. *A Simple and Inexpensive Device to Prevent the Contamination of Sterile Solutions.*
15. BROWN, O. H. *Excessively High Temperature in a Case of Incipient Pulmonary Tuberculosis.*
16. HALL, J. M. *Prolonged Use of Epinephrin in Asthma.*

1. The chief points in Abbe's very interesting review of Tyrar's experience with the use of radium in surgical diseases are as follows: Radium is comprised of variously active rays, — *alpha*, *beta* and *gamma* rays. The *alpha* rays have no therapeutic value and are cut off by the use of a lead screen. *Beta* rays are the most potent. *Gamma* rays penetrate most swiftly and deeply, but carry no electricity. The theory is that the rays not only penetrate the diseased structures, but also give off something of themselves which remains to act on the tissues long after the initial application. They inhibit growth or devitalize tissue proportionately to their time exposure. The success of treatment depends largely on the nicety of the time exposure. Germs are markedly altered in virulence by exposure to the rays, becoming less virulent. What has been accomplished in epitheliomas of all grades, ulcerated or not, when situated on the skin, is that a healing and disappearance of the growth promptly follows a correct dosage. So far, cancer of the lip and of all mucous surfaces has resisted this treatment. No cases of lip cancer have been cured. Non-malignant papillomata of the tongue have been cured in four cases. Retrograde changes have occurred in the tumors of the mouth, but have not lasted long. Cancers of other regions have suffered some retardation, but nothing more. Selective action has been witnessed in round-cell and giant-cell sarcoma, and several cures have resulted.

2. Knowles summarizes as follows: Purpuric eruptions caused by ingestion of the iodides may be divided into two groups: (1) That with extensive petechial and hemorrhagic bullous cases, which occur in organic diseases of the kidneys or heart or with lowered general condition, or in idiosyncracy for the drug. (2) That with localized distribution, especially on the lower extremities in perfectly healthy individuals. In the bullous type the face and extremities are particularly involved. Mild symptoms of iodism are present in a few cases. Severe reaction may occur and even edema of the glottis. Hemorrhages occur from the mucous membranes. The various salts of iodin

are all capable of causing a purpuric eruption. The pathologic changes of the skin were noted in the immediate vicinity of the blood vessels and in the walls of the vessels themselves. Iodin is rapidly absorbed by all mucous and serous surfaces and rapidly eliminated, chiefly by the kidneys. The leucocytes play a distinct rôle in the absorption of the drug. Hemorrhagic cases of extensive distribution of the bullous type are often fatal. Non-bullous types rarely terminate fatally. [E. H. R.

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

JUNE, 1910.

1. *MORSE, J. L., AND TALBOT, F. B. *The Treatment of Intestinal Indigestion in Children on the Basis of the Examination of the Stools and Caloric Values.*
2. *KAUFMANN, J. *The Treatment of Hemorrhage from Gastric Ulcer.*
3. *WELCH, J. E. *Normal Human Blood Serum as a Curative Agent in Hemophilia Neonatorum.*
4. *PEMBERTON, R. *The Metabolism of Myasthenia Gravis with a Suggestion Regarding Treatment.*
5. *SPILLER, W. G. *The Treatment of Spasticity and Athetosis by Resection of the Posterior Spinal Roots.*
6. *EWING, J. *The Pathogenesis of the Toxemia of Pregnancy.*
7. *TILESTON, W., AND GRIFFIN, W. A. *Chronic Family Jaundice.*
8. MONTGOMERY, C. M. *A Study of Murmurs in Pulmonary Tuberculosis.*
9. FOOTE, E. M. *Two Cases of Solitary False Neuroma, Probably Non-Malignant.*

1. Morse and Talbot call attention to the general lack of attention to caloric needs in the feeding of children and to the usefulness of examination of the stools in determining what classes of foods are being ingested in excess of the powers of digestion and assimilation. The caloric and protein needs of children are not exactly known, but, according to the best evidence at our command, the normal requirements per twenty-four hours are approximately as follows: At four years, 70 calories and 3.5 gm. of proteid per kgm. of body weight; at eight years, 3.0 gm. proteid and 60 calories per kgm.; at twelve years, 50 calories and 2.5 gm. proteid per kgm. By reference to a table of food values of the ordinary articles in children's diet the feeding is easily regulated according to these figures. In cases of improper feeding and of disordered digestion, evidence of abnormality is furnished by examination of the stools, of which three chief types are mentioned: (1) *Fatty stools*, gray or white in color, dry, clay-like or creamy, acid in reaction and of rancid odor; (2) *carbohydrate stools*, brown or yellow, and, on hasty examination, often apparently normal, but of acid reaction and sour odor; (3) *catarrhal stools*, showing an excess of mucus, often associated with protein putrefaction and foul odor. Simple microscopical examinations further demonstrate the presence of fat, of starch or of mucus in excess. Five illustrative cases are reported where correction of the diet according to the theoretical requirements of the child, further modified by the findings in the stools, led to improvement.

2. Kaufmann maintains that the danger from hemorrhage in gastric ulcer is commonly overrated, the evidence of combined statistics leading him to estimate it as not more than 3%. The bleeding tends to spontaneous arrest, by falling blood-pressure and thrombosis. Stimulation and infusion are to be avoided since they tend only to prolong the hemorrhage. When the bleeding has ceased, recurrence is best avoided by complete rest, with morphine, ice-bag to the epigastrium and temporary cessation of all feeding, contrary to Lenhartz's recent advice, although too prolonged starvation is also to be avoided. If bleeding continues, the old-fashioned styptics are not advised. Even the adrenalin treatment, recently advocated, is not favored. Chief reliance is placed upon the use of bismuth, and of lavage.

3. Welch reports striking results in the treatment of hemophilia neonatorum. Of 18 cases of this disease preceding his series in the same hospital, treated by various methods, 17 died. Of his 12 cases, all were cured. Acting on the supposition that the chief factors which have produced the beneficial effects of transfusion are in the serum, he gave subcutaneous injections of normal human serum, usually 10 ccm., two or more times a day. Blood was aspirated from a vein of the donor into a sterile flask, allowed to coagulate in a slanting position, and the serum collected on separation.

4. Pemberton reports results of a study of metabolism in a case of myasthenia gravis. The most notable findings were an increased elimination of calcium and a diminished creatinin output. The loss of calcium is of special interest on account of the known connection of calcium with muscular metabolism. Calcium lactate was given therapeutically in this case and its use was followed by improvement.

5. Spiller discusses the treatment by resection of posterior nerve roots in cases where spasticity predominates over paralysis, particularly in cases with athetosis. This treatment he first proposed in 1905. The first case in which this procedure was executed was published by Foerster in 1908. Since then 17 cases have been reported by four authors, with one death. Spiller mentions 2 cases operated upon by Frazier on his recommendation, one reported in detail elsewhere.

6. Ewing writes exhaustively upon the various theories and questions regarding the toxemia of pregnancy. He supports the view that the simple and pernicious vomiting, the liver changes from the hemorrhagic hepatitis of eclampsia to acute yellow atrophy, the renal and the nervous manifestations, are all results of essentially the same disorder of metabolism. He believes that the ordinary vomiting of pregnancy is but an early stage of disturbance which may end in fatal hyperemesis, malignant jaundice or acute yellow atrophy or eclampsia. He believes that the disturbance is autotoxic, and guardedly suggests that the intoxication may be at least in part of intestinal origin. He does not accept the theory of placental or fetal source of intoxication. In early diagnosis, he regards increase of ammonia and of rest-nitrogen in the urine as of importance. In prophylaxis and early treatment he advises dietetic measures to overcome acidosis and indicanuria, reduction of proteins, and the intelligent use of thyroid extract.

7. Tileston and Griffin discuss the condition of chronic family jaundice first accurately described by Minkowski in 1900, and hitherto not reported in this country. It is to be inferred, however, that the condition is far from rare, since these authors have been able in a short space of time to investigate four families, in each of which from three to seven members were affected. The disorder is characterized by the occurrence in several members of a family, often of several generations, of a permanent jaundice, dating from birth or from adolescence, without interference with the growth, longevity or comfort of the patient. The icterus is usually not intense and is not accompanied by clay stools. The urine contains urobilin, but no bile. Enlargement of the spleen is almost a constant feature; the liver is usually not enlarged. Autopsies show no obstruction of bile ducts; the jaundice is probably due to an abnormal susceptibility to hemolysis of the red blood corpuscles, with resulting excess of free hemoglobin, out of which bile pigment is made. Thirteen cases are reported in detail, occurring in four families; autopsies are reported in two instances. [F. W. P.]

THE ARCHIVES OF INTERNAL MEDICINE.

MAY, 1910.

1. *HOLT, L. E. *The Bacteriology of Acute Infections of the Respiratory Tract in Children, with Especial Reference to Influenza.*
2. *ROSE, W. C. *A Modified Method for the Clinical Estimation of Pepsin.*
3. *PEMBERTON, R., AND SWEET, J. E. *Further Studies on the Influence of the Ductless Glands in the Pancreas.*
4. *ROBINSON, G. C. *The Blood-Pressure in Epidemic Cerebrospinal Meningitis.*
5. HOOKER, D. R. *Postular or Orthostatic Albuminuria: A Critical Summary of the Literature.*
6. *CECIL, R. L. *Paratyphoid Cholecystitis.*
7. *LEMANN, I. I., AND VAN WART, R. M. *A Case of Infantilism with Absence of Thyroid, and Tumor of Pituitary.*
8. MERCER, W. H., AND BARACH, J. H. *A Case of Trichinosis with Recovery of Parasite from the Blood and Muscle.*

1. Holt's article contains an account of work he has been doing on the relation of Pfeiffer's bacillus to acute infections of the respiratory tract in children. The report is preliminary to further work along the same line. He believes that the term "influenza" should be limited to an inflammation or infection excited by Pfeiffer's bacillus; that this bacillus is of great importance in all infections of the lower respiratory tract, expecially in cold weather, but that it has very much less to do with acute nasopharyngeal catarrhs and their complications, otitis, adenitis, etc. It may cause severe general symptoms, with few or no local symptoms, even of the respiratory tract; but general blood infection with this organism is very rare. While in most patients the influenza infection causes acute symptoms only, recurrences are exceedingly common, and in some patients the attacks are prolonged, persisting for months. The B. influenzæ may be harbored in the secretions of apparently healthy persons for a considerable period, certainly for several weeks; whether such persons may spread the disease is not certain. If properly made, cultures are of great value for diagnosis, but the bronchial secretions should be secured.

2. Rose recommends a method for the clinical estimation of pepsin. He uses, instead of a solution of ricin, as is used in the Jacoby-Solms method, a solution of globulin obtained from the ordinary garden pea. He gives explicit directions as to the preparation of this globulin solution. He also modifies the older method by making all digestions in a solution of the same acidity (0.2% hydrochloric acid). In this way one determines, not the digestive power of the gastric fluid, but the relative amount of pepsin present. The method has distinct advantages over the ricin method, in that the globulin solution can be depended on to be pure, and the acidity is always constant.

3. The authors report further experimental work along the lines of interglandular correlation. They find that the inhibition of pancreatic activity by adrenalin and pituitary extract is independent of the systemic blood-pressure, as shown by its persistence when the blood-pressure is much below normal, and by other evidence. The inhibition by extracts of pituitary and super-renal bodies also occurs when the pancreas is stimulated by its normal excitant, hydrochloric acid, in the duodenum. In dogs rendered diabetic by extirpation of the pancreas, the mucosa of the duodenum remains abundant, in striking contrast to the emaciation of the other tissues, and acid extracts of the mucosa are as active as, if not more so than, those from normal animals. Their studies on the activity of pancreatic secretion (when excited by secretin) and of the inhibition of pancreatic flow by adrenalin in thyreoparathyroidectomized dogs have indicated no clear departure from the normal in this regard. This is probably also true of dogs the subjects of thyroidectomy alone.

4. In cerebrospinal meningitis the author finds heightened intracranial pressure to be an almost constant phenomenon, and heightened blood-pressure of a moderate degree is not infrequently seen in the early acute stages, when exacerbations of the symptoms occur late in the disease, or when the malady takes on a chronic aspect. The blood-pressure seems to bear some relation to the severity of the disease, being higher when the symptoms are severe, and lower during convalescence. The withdrawal of cerebrospinal fluid by lumbar puncture has no constant effect on blood-pressure, although there is usually a fall of blood-pressure synchronous with this procedure. The series of observations affords no definite evidence that a heightened intracranial tension causes an increased blood-pressure in meningitis.

5. Hooker gives a critical review of the opinions expressed concerning the question of postural or orthostatic albuminuria. He appends a complete bibliography of work on the subject. He favors the view that the causation of this condition is probably to be explained by a vasomotor instability. He notes the relation of this condition to variations in the pulse pressure, the albumin appearing with the lowered pressure and disappearing again when the pulse pressure reached normal. The consensus of opinion seems to be that orthostatic albuminuria is not necessarily directly associated with a permanent impairment of renal function.

6. The article contains the report of a case of cholecystitis where the paratyphoid Bacillus A was proved to be the underlying cause. The author gives a summary of the articles which have appeared on the subject.

7. The authors report a case where the giving of pituitary extract produced marked improvement in a case of infantilism. They give at length their reasons for making the diagnosis of pituitary tumor.

Bulletin of the Johns Hopkins Hospital.

June, 1910.

1. Corson, E. R. *Sir Charles Bell: The Man and His Work.*
2. Walker, G. *A Special Function Discovered in a Glandular Structure Hitherto Supposed to Form a Part of the Prostate Gland in Rats and Guinea Pigs.*
3. Walker, G. *The Nature of the Secretion of the Vesiculæ Seminales and of an Adjacent Glandular Structure in the Rat and Guinea Pig, with Special Reference to the Occurrence of Histone in the Former.*

Surgery, Gynecology and Obstetrics,

June, 1910.

1. *Ely, L. W. *A Study of Joint Tuberculosis. With an Original Theory as to Its Localization, and with a New Plan of Operation Based on the Pathology.*
2. Fell, G. E. *Artificial Respiration. Forced Respiration, with Comments on the Cabinet Methods of Sauerbruch, Meyer and Others; also a New Method in Thoracic Surgery.*
3. Beck, Carl. *Fractures of Pathological Bones (Osteopsathyrosis) and Their Treatment.*
4. Coley, W. B. *The Increase of Cancer.*
5. Kretschner, H. L. *On the Value of the Shadowgraph Ureteric Catheter in Diagnosis of Obscure Lesions of the Urinary Organs.*
6. *Woolsey, G. *Post-Operative Intestinal Obstruction.*

1. Ely, on joint tuberculosis, advances new and interesting theories. He does not agree with Nichols, of Boston, who believes that all joint tuberculosis originates in a bony focus, but holds that there are two places from which it may originate: First, in the red marrow of the bones, and, second, in the synovia. A tuberculous focus spreading in the marrow may find its way directly to the periosteum, and, breaking through this, may form an abscess in the surrounding tissues and so reach the surface without ever involving the joint. But in the majority of cases it goes through to the joint. No serious damage is ever done to the joint cartilage in tuberculous disease except that which is done indirectly by involvement of the bone marrow beneath it. In many cases a smooth cartilage will give no idea of extensive bone disease beneath it. The pathology of the whole process shows nature's effort to abolish function. This teaches what the treatment should be. The disease is cured, not by extensive dissection of diseased bone and soft parts, but merely by securing ankylosis. Some interesting illustrative cases are reported. This is radical treatment, but seems well backed up by the cases.

6. Woolsey deals exhaustively with post-operative intestinal obstruction. Points emphasized are as follows: The majority of cases do not occur within two weeks, as stated by others, but the author found 70% occurred after two weeks. The late cases are all of mechanical origin; the early cases may be mechanical or paralytic. Paralytic obstruction is most often but not invariably due to sepsis. The commonest form of mechanical obstruction depends on a kinking or angulation of a loop of gut due to its adhesion to the parietes or another loop. The small intestine is the part involved in 95% of the cases. The Trendelenburg position may be a cause of obstruction. Paralytic obstruction may be due to sepsis, handling, or disturbance of the nerve supply to the intestine. [E. H. R.]

Deutsche Medizinische Wochenschrift. No. 24.

June 16, 1910.

1. Arnsperger. *Treatment of Hemorrhagic Diathesis.*
2. *Rabinowitsch, L., and Jessen, F. *The Presence of Tubercle Bacilli in the Circulating Blood and the Practical Importance of This Phenomenon.*

3. STERN, C. *Over the So-Called Improvement of the Wassermann Reaction.*
4. OEHLECKER, F. *Pathological Intraperitoneal Rupture of the Urinary Bladder.*
5. LEITZ, A. *A Few More Cases of Heterochroma Iridum.*
6. KUTSCHER, K. H. *Question of Sterility of the Novocain-Suprarenin Tablets.*
7. SCHENK, F. *The Sterilizing Effect of Injections of Cholin.*
8. CANON. *Inflammation of the Appendix Complicated by Phlegmon of the Abdominal Wall Caused by a Morphia Injection.*
9. NEGELMANN, W. *The Gelatin Treatment of Melena Neonatorum.*
10. LEUWER, C. *An Improvement in a Hypodermic Needle.*
11. SCHMIDT, H. E. *The Early Reaction of the Röntgen Ray Used Therapeutically.*
12. BAUER, H. *A New X-Ray Tube, with a Cone for Variable Rays.*

2. The finding of tubercle bacilli in the circulating blood was described in this country by Rosenberger and Liebermeister a few years ago. Following that many pieces of work were done tending to show that the observations of these authors depended on bacilli other than the tubercle bacilli. Jessen and Rabinowitsch now report on 36 cases of different severity of tuberculosis and find tubercle bacilli in the blood of a considerable number of them. Upon studying their cases they find the bacilli present full as frequently in the mild as the severe cases, and, therefore, conclude that their presence in a demonstrable amount in the blood stream is no indication of the severity of the infection. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 25.

JUNE 21, 1910.

1. HEINE, B. *Position To-day of Surgery of the Ear.*
2. SAHLI, H. *Pantopon.*
3. FORSCHBACH, J., AND BITTORF, A. *Influencing the Middle Position of the Lungs in Health.*
4. HAMBURGER, F., AND MONTI. *Tuberculin Immunity.*
5. MAYER, A. *Diagnosis of Very Large Retroplacental Hematomata.*
6. GROBER, J. *The Mode of Infection and Course of Pneumococcus Meningitis.*
7. DEUTSCH, A. *Tuberculosis and Breast-Feeding.*
8. FOCK. *Ability to Nurse an Infant.*
9. MENDE. *The Zahn Method of Finding Scarce Tubercle Bacilli.*
10. FABIAN. *Foreign Bodies in the Intestine as a Cause of Severe Complications in Hernia.*
11. SÜSSMANN, F. *Double Tubal Pregnancy.*
12. KOCH, H. *Instruments and Apparatus for Sero-Diagnostic Studies.*
13. DESSAUER, F. *A New Apparatus for Diathermic Treatment of the Body.*
14. JERUSALEM. *Treatment of Erysipelas with Hot-Air.*

BERLINER KLINISCHE WOCHENSCHRIFT. No. 22.

MAY 30, 1910.

1. CITRON, H. *Detection of the Smallest Traces of Blood, from the Standpoint of Clinical and Forensic Medicine.*
2. ENGELMANN, W. *The Penetration of Radium Emanation through the Skin.*
3. FRUGONI, C. *Clinical Studies Concerning Several Changes in the Respiratory Rhythm.*
4. *SAMTER. *Pneumatic Therapeutics in Chronic Bronchitis.*
5. HELBING, C. *The Treatment of Paralysis of the Upper Extremities.*
6. HOLLÄNDER, E. *Icterus in Perityphlitis.*
7. DAVIDSOHN, G. *Malignant Chorio-Epithelioma of the Fallopian Tube.*
8. MOST. *Collection of Illustrative Cases of Hysteria with Foreign Bodies in the Intestinal Canal.*
9. LOOSE, G. *Modern Use of the X-Ray in the Hands of the Practicing Physician.*

4. Dr. Samter finds the pneumatic cabinet of great value in the treatment of chronic bronchitis, particularly in those cases where there is also a cardiac lesion. He finds that not only the condition in the lungs, but also the condition of the heart, is greatly improved by this treatment. [J. L. H.]

No. 23. JUNE 6, 1910.

PFEIFFER, R. *Biography of Robert Koch.*
1. STICKER, A., AND FALK, E. *Ferment and Radio-Ferment Therapy.*
2. *HIRSCHFELD, F. *Pregnancy and Diabetes.*
3. DONATH, K. *The Action of Hemolysins.*
4. FINKELSTEIN, J. A. *The Latest Bacteriological Method for the Identification of Tubercle Bacilli in Different Pathological Excreta.*
5. FULD, E., AND HIRAGAMA. *The Recognition of Gastric Ferment in Urine and Its Diagnostic Importance.*
6. HOFFMANN, M. *The Chilling of the Inspired Air in Drop-Ether Narcosis. Its Importance and Prevention.*
7. RUNGE, E. *Conservative Treatment in Gynecology.*
8. EICHHOLZ. *Recent Literature Concerning Radium and Radium Therapy.*

2. Hirschfeld quotes from cases of his own and of other observers on the frequency of glycosuria, and also the possible severity of diabetes in pregnancy. Careful observers note about 10% of all pregnancies to be complicated by glycosuria. A great proportion of these go through their pregnancy, labor and puerperium without any serious complications, delivering a normally developed child. In spite of this, the author considers that in no case can one be assured of the prognosis, as the lightest and most favorable case of glycosuria may develop into the severest form of diabetes. He finds that glycosuria is of more significance when it appears in the third or fourth month of the pregnancy. Diabetic coma is rare in even the severer cases. He emphasizes the importance of not attempting to place a boundary line between diabetes and the glycosuria of pregnancy without serious consequences. [J. L. H.]

REVUE DE MÉDÉCINE.

MAY, 1910.

1. *LÉON, BERNARD. *The Nature of Osteomalacia.*
2. DEVIC AND LAVY. *Mediastinal Pleurisies. First Chapter.*
3. JOB AND FROMENT. *Acute Poliomyelitis. Second Chapter.*
4. *BERTIN AND GAYET. *The Wassermann Reaction in Hereditary Syphilis.*
5. JOB AND FROMENT. *Acute Poliomyelitis. Third Chapter.*

1. The nature of this disease has been the cause of great doubt at all times. Chemical disturbances of the gastro-enteric tract have been cited as etiological factors; and the ovaries, the thyroid and the suprarenals have been successively, if not successfully, accused. The production of the disease experimentally by animal inoculation throws a different light upon the subject at the present time. The authors advance the theory that, under certain influences, the marrow, which has been irritated, shows a "reaction." This is evidenced by congestion, which may go on to hemorrhage, and by cellular proliferation. The latter effects the blood elements less than the "osteopoietic" side. The latter reaction gives rise to the cells "ostéoblastigues et myéloplaxies," which participate in the process of decalcification. It is understood thus that the irritation of the marrow gives rise to osteomalacia only because of the participation of these "osteopoietic substances." It is a theory most attractive, but as yet not proven.

4. From the study of a long series of cases the authors conclude that a positive Wassermann reaction is present in all positive cases of syphilis and is absent in those giving no stigmata of the disease; furthermore, that it is never found in cases not infected with syphilis, except in a few instances where the disease is strikingly different, i. e., scarlet fever and leprosy. Inasmuch as the reaction persists much longer than most or even all of the clinical signs, its diagnostic value is easily understood. [L. H. S.]

June, 1910.

1. Solomon and Halbron. *The Reaction of the Islands of Langerhans and the Lymphoid Organs to Experimental Inoculation of Tubercle Bacilli.*
2. Devic and Lavy. *Mediastinal Pleurisies. Second Chapter.*
3. *Job and Froment. *Acute Poliomyelitis. Fourth Chapter.*
4. Devic and Lavy. *Mediastinal Pleurisies. Third Chapter.*

3. In conclusion, the authors affirm the belief in the identity of epidemic poliomyelitis with acute sporadic spinal paralysis. Anatomically and clinically this is essentially true, but the clinching argument would lie in the identity of their etiological factors. Unfortunately this proof cannot be given at the present time, although there is reasonable hope for it in the near future. A most complete bibliography is appended to the last chapter of the series. [L. H. S.]

Correspondence.

AN APPRECIATION OF THE SEA.

On Board S.S. Zeeland, 1 July, 1910,

Lat.: 41° 4′ N. Long.: 47° W.

It might seem that the mid-Atlantic, especially the "roaring forties," were hardly an auspicious or opportune place for medical observation or improvement. Yet in point of fact, a physician can sit upon the deck of a deep-seagoing ship and view the works of creation with as much pleasure and profit as in his own office ashore. For not only does such a ship afford him nearly all the interesting objects of contemplation that he finds on land, but the ocean itself is as rich with appropriate and unfamiliar suggestion

> "As is the ooze and bottom of the sea
> With sunken wrack and sumless treasuries."

First of all, there is the ever-present and pertinent subject of seasickness, or rather, shipsickness, nausea, an ailment so ancient and honorable that it has a genuine Greek name, not a hybrid Latin one in *-itis*. Many speculations, popular and scientific, have been made as to the exact nature and cause of seasickness. It seems to affect chiefly women, "the kind of man called a clergyman," and others of a neuropathologic diathesis. It presents itself under several clinical types. First, there is the purely imaginary type, in which the patient, usually a robust chronic invalid with plenty of money, is perfectly sure in advance that she will be sick, takes to her bunk before the ship sails, has all the delicacies of the saloon brought to her stateroom by a sympathetic stewardess, and reappears, on landing-day, sleek, plump and rosy, with voluble comments on the horrible voyage. In such cases there is no remedy. Second, there is the bilious type, with headache and some nausea, chiefly affecting the soulful, dyspeptic curate, the fat old lady with gallstones, the thin, sallow co-ed, and other victims of chronic constipation. Here the remedy is obvious. A sub-variety under this group is characterized solely by occipital headache and seems probably due to unwonted eyestrain or ocular fatigue from glare, or possibly to the necessity of unaccustomed and continuous cerebellar co-ordination. The remedy in such cases is, of course, rest and suitable protection of the eyes. The third type is that due solely to excess at table, or in the smoking-room, usually affects men, is accompanied by profuse emesis, and proves self-limited unless a future attack is induced by repeated indulgence. In short, seasickness is not a definite disease, but a symptom-complex, more often central than peripheral in origin, and due to the concurrence of various disturbing factors, often operative separately on land, without harm, but capable, when occurring together, of upsetting the gastric equilibrium of persons functionally predisposed to such instability. There are some people who are seasick under all conditions, and some who are never seasick under any conditions. For those who fall in the intermediate class, the chief precautions advisable seem to be discretion in diet, abundance of fresh air and exercise, free cartharsis, and great temperance in the use of alcohol and tobacco, rules of hygiene which might well be made general. It is perhaps needless to add that the writer of the present lines has never yet been seasick.

Apart from such medical observations as the above, and other general diagnostic speculations in which a physician is prone to indulge even when contemplating his fellow-men socially, one is dependent for his direct professional converse and pabulum on the ship's doctor. The surgeon on this boat is a shrewd, genial young Irishman, who has served in the army, too, and avers that there is no money in the profession on land or sea, but that, like the "tramp royal," and, indeed, like all of us for that matter, he "couldn't quit it if he tried." He took us over the ship with him on inspection, showed us the sanitary and culinary accommodations of the steerage, which are excellent, and finally his surgery, — "a poor thing, but mine own," he apologised needlessly, — for the hospital, though small, was admirably equipped, and the instrument case contained almost all the heart could desire. Hopes for a possible appendectomy aboard, however, seem likely to be thwarted, for, as he says, "One is seldom really sick at sea." It is strange how quickly the normal professional reflexes recur; and though one leave shore heartily sick of patients and hospitals, in two days one is hungry for the smell of ether, and gravitates, with the usual clannishness of our kind, to the association of another physician. It is pleasant to walk and talk and smoke with the doctor on the forward deck after dinner, hear his tales of South Africa, learn his opinions of vaccine therapy and medical education, play chess with him, and listen to his comments on people and things in "The States" and elsewhere.

When the doctor is busy, and one is tired of observing one's fellow passengers, or has momentarily exhausted the interest, always keenest on shipboard, afforded by one's own physiology, one can always revert for solace and occupation to the sea, the oldest, most inscrutable of natural objects, the primal origin and home of all forms of life. Aside from its literary, romantic and esthetic connotations, and its actual, ever-varying beauties of form and color, the ocean is a reservoir of limitless suggestion to speculation in the sciences. As one stands at the prow, watching the ruck of clouds above, or the white scud at the parting of the waters beneath, the sun and the passing ships by day, the white sea-horses that rear their manes of flying foam to race alongside, the clustered brilliancy of the stars and the Milky Way at night, the marvel of man's knowledge and dominance becomes almost miraculous. That the high development and exquisite adaptation of his central nervous system have made possible this dominion over the beasts of the field, and the fowls of the air, and whatsoever passeth through the paths of the sea, seems the biologic conclusion. And one is tempted, from his position at the prow of life, to trace his being through known and unknown forms of animate existence, past his cousins that have remained, — the gull that sweeps and circles overhead, whose problems of aviation man has just begun to solve, the dolphins that dive and dash at the bow, the lazy squid that lolls its jelly-like mass and tentacular arms, the phosphorescent animalcules that make the waters glow alongside at night, — back to the ultimate ooze of the sea from which emerged the primordial animal cell. It makes the still marine cells of one's organism rejoice to be thus brought into closer kinship with the past along this perspective of their pelagic ancestry, and one's epidermis and respiratory epithelium are healed by restoration to the normal saline which pervades even the air at sea. Perhaps such speculations are fantastic. Howbeit, they serve to show that wherever there is life, there is interest and opportunity for the physician, to whom even that which is not human is never alien, for his profession is the application of all knowledge to the problems of human living.

Medicus Peregrinus.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 9, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,290	623	Waltham	5	—
Chicago	581	229	Pittsfield	13	—
Philadelphia	—	—	Brookline	—	—
St. Louis	—	—	Gloucester	3	2
Baltimore	—	—	North Adams	7	5
Cleveland	—	—	Northampton	4	3
Buffalo	—	—	Chicopee	18	10
Pittsburg	—	—	Medford	7	—
Cincinnati	—	—	Beverly	4	—
Milwaukee	—	—	Leominster	4	1
Washington	—	—	Hyde Park	9	3
Providence	—	—	Melrose	2	0
Boston	220	71	Newburyport	3	—
Worcester	48	24	Revere	3	—
Fall River	79	50	Westfield	2	2
Cambridge	26	9	Woburn	7	2
Lowell	49	30	Peabody	—	—
New Bedford	50	36	Marlboro	2	1
Lynn	13	3	Attleboro	4	1
Springfield	27	11	Adams	2	1
Lawrence	35	21	Clinton	3	2
Somerville	18	4	Gardner	3	0
Brockton	15	6	Milford	—	—
Holyoke	19	10	Watertown	2	0
Malden	7	2	Plymouth	—	—
Chelsea	5	2	Southbridge	0	1
Newton	3	1	Weymouth	1	—
Salem	16	6	Framingham	—	—
Haverhill	6	4	Wakefield	—	—
Fitchburg	—	—	Webster	5	2
Everett	4	1	Arlington	3	1
Quincy	3	—	Greenfield	2	—
Taunton	14	5			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JULY 6, 1910.

KERR, J. W., assistant surgeon-general. Granted one month's leave of absence from July 7, 1910.

LONG, J. D., assistant surgeon-general. Directed to proceed to Columbus, Ga., upon special temporary duty. June 27, 1910.

MCINTOSH, W. P., surgeon. Granted four days' leave of absence from July 5, 1910.

NYDEGGER, J. A., surgeon. Granted seven days' leave of absence from July 3, 1910.

GRUBBS, S. B., passed assistant surgeon. Granted four days' leave of absence en route to station.

LUMSDEN, L. L., passed assistant surgeon. Directed to proceed to Norfolk, Va., upon special temporary duty. June 24, 1910.

ANDERSON, JOHN F., passed assistant surgeon. Granted five days' leave of absence from July 5, 1910, under paragraph 189, Service Regulations.

LEAKE, J. P., assistant surgeon. Granted seven days' leave of absence from June 24, 1910, under paragraph 191, Service Regulations.

ALTREE, G. H., acting assistant surgeon. Granted thirty days' extension of leave of absence from May 3, 1910, on account of sickness.

DUFFY, FRANCIS, acting assistant surgeon. Granted four days' leave of absence from July 6, 1910.

HOUGHTON, M. W., acting assistant surgeon. Granted two days' leave of absence from July 2, 1910.

MORGAN, ROY, acting assistant surgeon. Granted seven days' leave of absence in June, 1910, under paragraph 210, Service Regulations.

STEWART, W. J. S., acting assistant surgeon. Granted one month's leave of absence without pay from June 23, 1910.

STORY, HENRY C., acting assistant surgeon. Granted thirty days' leave of absence from July 1, 1910.

WALKER, T. D., acting assistant surgeon. Granted eleven days' leave of absence from June 28, 1910.

WETMORE, W. O., acting assistant surgeon. Granted five days' leave of absence from June 8, 1910, and one day's leave of absence, June 15, 1910, under paragraph 210, Service Regulations.

MACDOWELL, W. F., pharmacist. Granted one day's leave of absence, June 9, 1910, under paragraph 210, Service Regulations.

IRWIN, CHARLES H., pharmacist. Relieved from duty at Chicago, Ill., and directed to proceed to Angel Island Quarantine, Cal., and report to the medical officer in command for duty and assignment to quarters. July 1, 1910.

CASUALTY.

MASON, M. R., pharmacist. Died June 29, 1910.

CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING JULY 16, 1910.

BERRYHILL, T. A., medical inspector. Commissioned medical inspector from March 5, 1910. July 12.

SEAMAN, W., surgeon. Commissioned surgeon from Dec. 13, 1909. July 13.

RICHARDSON, R. R., surgeon. Commissioned surgeon from Jan. 30, 1910. July 13.

DUNN, H. A., surgeon. Commissioned surgeon from Feb. 19, 1910. July 13.

STUART, A., surgeon. Commissioned surgeon from March 5, 1910. July 13.

STEPP, J., surgeon. Commissioned surgeon from March 24, 1910. July 13.

SHORT, W. H., passed assistant surgeon. Commissioned passed assistant surgeon from May 4, 1910. July 13.

PHILIPS, E. W., assistant surgeon. Detached from the "Marietta" and ordered to continue treatment at the Naval Hospital, Portsmouth, N. H. July 13.

IRVINE, W. L., assistant surgeon. Detached from the Naval Training Station, Newport, R. I., and ordered to the "Marietta." July 13.

STRINE, F. S., passed assistant surgeon. Detached from the Naval Hospital, Olongapo, P. I., and en route home. July 14.

BROWN, H. S., passed assistant surgeon. Detached from the Naval Hospital, Canacao, P. I., and ordered to duty at the Naval Hospital, Olongapo, P. I. July 14.

SOCIETY NOTICE.

AMERICAN PUBLIC HEALTH ASSOCIATION.—The American Public Health Association will hold its thirty-eighth annual meeting in Milwaukee, Wis., Sept. 5 to 9 next. Representatives from many of the national organizations working in the interest of the public health have been invited to be present and to discuss methods for the correlation of the work of such organizations, and for co-operation with a view to increasing efficiency and economy. Sanitary engineering will occupy a conspicuous place on the program. This Association is the oldest national sanitary organization in the United States. Its membership extends over the United States, the Dominion of Canada, Mexico and Cuba. Information concerning it can be obtained by addressing Dr. Wm. C. Woodward, Secretary, Washington, D. C.

RECENT DEATH.

DR. LESLIE DODD WARD, of Newark, N. J., died in London on July 13. His family were among the first settlers in Connecticut, and subsequently moved to New Jersey, where they were among the founders of the city of Newark in 1666. He was born in Madison, N. J., on July 1, 1845, and during the Civil War he left the Newark Academy to serve as an officer in the 37th Regiment of New Jersey Volunteers. After the war he studied medicine and was graduated from the College of Physicians and Surgeons, New York, in 1868. He practised with much success in Newark, and for many years was county physician of Essex County. In 1874 he helped to found the Prudential Life Insurance Company, and was appointed its medical director. In 1884 he was elected first vice-president of the company, a position which he still retained at the time of his death. Dr. Ward was well known for his interest in art, his knowledge of which was extensive. He was president of the commission in charge of the erection of the Essex County court house in Newark, which was completed about four years ago at an expense of $2,000,000. The elaborate decorations of both the exterior and interior were chiefly the result of his suggestion and work. He had fine collections of paintings at his home in Newark and his country residence at Brooklake Farms, near Madison, and also a very valuable private library.

BOOKS AND PAMPHLETS RECEIVED.

The Treatment of Tetanus by Chloretone. By Willard H. Hutchins, M.D. Reprint.

The Straw Itch. By Joseph Goldberger. Reprint.

Original Articles.

GYNECOLOGICAL OPERATIONS ON NEURASTHENICS. ADVANTAGES, DISADVANTAGES. SELECTION OF CASES.*

BY EDWARD REYNOLDS, M.D. BOSTON.

At the outset of any paper upon this subject the term "neurasthenia" should be defined in the sense in which it is to be used throughout the the paper, since its mere definition has provoked in the last ten years a large neurological literature of its own, and is still unsettled. The word "neurasthenia" is, in fact, like the word "rheumatism," one which covers so many different states as to have no satisfactory meaning in modern medicine. For our present purposes this loose and popular term may be defined as implying merely a state of low resistance to the depressing influences of the environment, irrespective of the cause to which this low resistance may be due. When the term is used in this sense it follows as a logical necessity that the first point of importance in the management of neurasthenia is the classification in accordance with its cause, and since this must be determined by symptomatology, we may say at the start that success in the treatment of neurasthenia complicated by pelvic lesions depends primarily upon the exactitude of our knowledge of the importance of symptoms.

It is a common statement that gynecological diagnosis is rendered difficult to the mass of practitioners from the fact that facility in the pelvic touch can only be obtained by a large experience and constant practice. I became convinced some years ago that the majority of mistaken diagnoses which I see were so mistaken less from the practitioner's inexpertness of touch than from his having relied too exclusively upon this method of physical examination, and neglected the study of symptomatology, to which he would have turned instinctively in any other than a gynecological case.

Since then I have watched my practice now for a good many years with this point in view. I have certainly noticed that the gentlemen whose cases habitually come to me with a correct diagnosis almost invariably refer to the symptomatology, and often to the symptomatology only, in describing the case, while those whose diagnoses frequently seem to me incorrect usually give me no account of the case other than their physical examination. This is to me a somewhat suggestive observation; moreover, after a good many years' experience with the touch I feel that, for me, diagnosis in gynecological cases rests quite as much upon symptomatology as upon the pelvic examination, or, more exactly, that the latter gives only a diagnosis of physical state which is worthless for therapeutic purposes until it has been interpreted by the accompanying symptomatology. In addition, while I believe that the anatomic condition must be ascertained by the touch, I believe also that the determination of the treatment which should be adopted depends far more upon the symptomatology than upon the pelvic examination, and that this fact is far too little appreciated.

There is one other point of great importance in this connection to which I must refer. In this branch of medicine, as in all others, we are far too ready to be satisfied with the mere process of giving a name to the patient's condition. We too seldom proceed to the further but much more useful step of attempting to determine why that condition appeared. We forget the fact that, until we have learned the cause of the condition to which we are able to give a name, we have learned little or nothing of what will most readily relieve it.

I believe that the emphasis of these two points, the value of symptomatology and the importance of the search for the ultimate cause, will by itself do more to save us from mistakes of diagnosis and treatment than any other one thing, and, further, that it will enable us to bring to prompt relief many chronic cases which would otherwise linger along under unsatisfactory palliation.

In the differences of opinion which so frequently occur in the management of neurasthenics with chronic surgical affections, the truth probably lies midway between the failure of many surgical specialists to realize the presence and sometimes the dominating importance of neurasthenia in their cases; and, on the other hand, the equally grave failure of many neurologists and general practitioners to realize the presence and at least contributing importance of local lesions in the same cases. In fact, both elements are present in varying degrees of importance in most (but not all) neurasthenias.

Neurasthenics vary all the way between the extreme neurotics, who are always to have exaggerated symptoms from a succession of absolutely trifling local lesions, to the more hopeful class of cases in whom the nervous instability originally only potentially present has been developed by an acquired and curable local lesion.

In the first class of intractable neurotics, local treatment, whether operative or minor, usually only fixes the attention of the patient and increases the evil. If we could insist on the avoidance of operation in these cases we should do away with the disastrous cases which every one has seen, in which an operation has resulted in making a complete nervous wreck of the patient. These operations are disastrous not because the patient was a neurotic, but because she was operated on for a condition which had nothing to do with her neurasthenia. Unnecessary operations usually do physical harm, and when to the nervous fatigue which in a greater or less degree follows all operative work we add the failure of relief from so important an effort, it is no wonder if a previously unstable neurotic is made permanently worse instead of better.

In the second class, in whom the neurasthenia is plainly secondary to the depressing effects of a local lesion, general treatment, if relied upon

* Read before the Norfolk District Medical Society, Nov. 30, 1900.

alone, only gives the local lesion time to develop, to become important, and, perhaps, in the end, to develop the neurasthenia to a degree which may even be self-sustaining after the relief of its original cause; in these cases the cure of the local lesion is not the cure of the neurasthenia, but it is a necessary preliminary to the cure of the neurasthenia by nature under the influence of general hygiene.

Between these two extremes all shades exist, and the practical difficulty in the determination of the treatment appropriate to individual cases in the middle of the series is often so great as to result in the many failures of wisdom which we see. I believe that it is essentially failure to appreciate the radical difference between these two classes which gives rise to the extremes of opinion which are put forth so acrimoniously.

Although the subject is so complicated that in it results must always depend upon the clinical wisdom of the individual practitioner, three general principles have been of the greatest value to me in this most difficult department of the art of practice.[1]

These three principles are

A. Neurasthenias in which local lesions are of importance always involve the presence of persistent local symptoms.

B. Careful, extremely careful, study of the chronological sequence between the general and local symptomatologies is of prime importance in determining the etiology of the neurasthenia.[2]

C. In neurasthenic women with pelvic lesions frequent and long-continued office treatments may relieve the local symptoms or even the lesion, but usually, if not always, increase the neurasthenia to a degree which makes the patient as a whole worse and not better for our care; further, properly selected neurasthenic cases usually do well under reparative operations, but, with the exception of those dependent upon new growths, are usually injured by the radical removals.

The art of application of these principles is difficult, but I think that the principles always apply. Their observation will at all events lead to an avoidance of the disastrous failures of special surgical treatment which are so common among us.

Though the specialist may overestimate the importance of local lesions, yet, as has been said, the general practitioner is far too apt to neglect the localized symptoms of neurasthenics. The general constitutional view comes first, but after the institution of the all-important general treatment, the first step towards forming a final opinion of a neurasthenic case should lie in determining the presence or absence of any localized affection of importance, and the first step in this direction should be a careful inquiry into the symptomatology, but in this connection it should be noted at the outset that more weight should be given to the persistence and unvarying character than to the severity of the local symptoms.

[1] The art as opposed to the science of medicine.

[2] These two principles apply to the entire subject of local treatment in neurasthenia; the third is more peculiarly gynecological.

Neurasthenics often complain actively of symptoms which are essentially imaginary, but when a localized symptom has persisted without essential change for several years it has usually a physical cause, and a logical conjunction of several symptoms of moderate severity is always more significant than the comparatively transient complaints which such patients regard as most important and which they often make much the most prominent in their story. Such patients usually complain loudly of transient symptoms which the practitioner at once perceives to be nonsense, and this is apt to distract his attention from less prominent but persistent symptoms which have real etiological significance.

The symptomatology complained of should, moreover, be estimated with the utmost care in connection with the known effect of the lesions which are found. There is no more common mistake in practice than the association of accidental pelvic abnormalities with symptoms to which they have no relation whatsoever. The physician should make himself familiar with the several symptoms to which each pelvic lesion may give rise, and should be cautious to estimate the importance of the anatomical conditions which he finds only in connection with their power of producing the symptoms which are complained of.

I believe that there is no better habit for the consultant than that which I learned from one of my elders, and have followed for many years, of always writing down a provisional diagnosis from symptomatology before making a physical examination. If, then, the provisional diagnosis from symptomatology coincides with the physical state found by the touch, the diagnosis may ordinarily be considered assured, provided that it explains all of the symptoms; but if the diagnoses from symptomatology and the touch do not agree, or if there are still symptoms which are unexplained by the conditions found, all diagnosis should be reserved till further research brings a more consistent explanation.

This is an all-important rule which is essential to a full comprehension of any case, but which we are too often tempted to pass over, almost invariably to our own and the patient's subsequent injury.

Even when the existence of a local lesion which is causing symptoms has been satisfactorily demonstrated, there remains, in neurasthenic cases, the second equally important step of determining whether the local affection can be fairly charged with either the production or maintenance of the neurasthenia, or with any important share therein. On this point I have usually found the chronological sequence of symptoms to be our best guide.

In the absence of a reasonably close chronological sequence between the general and local symptoms, local treatment should be held at least in abeyance, but when a study of the chronological sequence in which the symptoms have followed each other shows either that the neurasthenic condition appeared originally soon after the appearance of

definite and continued local suffering, or that the neurasthenic symptoms have waxed and waned in concurrence with, or in sequence to, the increases and decreases of local suffering, we may safely conclude that a permanent local cure will give general hygienic care the opportunity of effecting a similarly permanent relief of the neurasthenia to such extent as the original constitution of the patient permits. We cannot expect to make constitutional neurasthenics into highly resistant individuals, but we may expect to restore them to the degree of health that they originally possessed, and that is quite enough to satisfy most of them.

Cases in which general care has given only temporary palliative results during the presence of a curable lesion will be permanently benefited or cured by a continuance of the same care after the relief of the local lesion provided it was causative, not otherwise. Having, then, settled by careful study that the local lesion is causative in a given case, it is imperative that one further question should be equally carefully studied before any treatment is undertaken.

Is the local lesion susceptible of definite cure? If not, the neurasthenia will probably be more or less incurable and can be best palliated by general care alone, for, in gynecological work especially, it must never be forgotten that prolonged minor teatment is, in the long run, bad for neurasthenics.

If the local lesion is curable it should be treated by operative rather than minor, and by reparative rather than radical, methods. Modern surgery interferes surprisingly little with the vital processes, and from the standpoint of mortality and mere surgical convalescence, neurasthenics endure aseptic operation entirely satisfactorily. The all-important question with them especially is not the mere surgical recovery, but the remote effect, and that depends in my experience entirely upon the selection of cases and the adaptation of the form of operation chosen to the symptoms involved.

The radical removal of the pelvic organs is, in my experience, of benefit to neurasthenic symptoms only in women who are past the menopause and in whom nature's effort to remove the organs has been arrested by the presence of lesions which prevent their physiological decrease in size. Here radical removals sometimes do good; in other cases they are usually productive only of harm.

In young women our effort should be to remove the disease without injuring the organs, and the extent to which this is now possible is too little appreciated by many of those who are not directly concerned with gynecological operating.

When a local lesion is the exciting cause of a neurasthenia, and can be set entirely right by a reparative operation, the final results are among the most gratifying with which we ever meet, but even in these cases we must never forget that the operative treatment of the local lesion by itself rarely dissipates neurasthenia of any considerable degree. It merely alters the condition by the removal of the cause, so that the absolutely essential, general treatment proper to neurasthenia is likely to become curative where it was formerly palliative. Satisfactory as are the results of a complete and final cure of a causative local lesion as the starting point in the treatment of a neurasthenia, it must, then, be remembered that such success means, not only that the local lesion was really causative, but also that it was susceptible of cure by operation.

Since neither the time at our disposal nor the patience of an audience permits the recital of long lists of cases, I propose to conclude by mere outline reports of a few illustrative cases selected as such from among my records, and as any man whose experience along this line has been at all extensive will find it easy to produce many successful cases, I wish to devote mine mainly to illustration of the points which should be avoided.

A. An operation which fails to effect a final cure usually precipitates an increase of the neurasthenia.

Private Records No. 2201. Sent to me by Dr. A. L. Mason in 1904. Thirty-one years old. Married six months. She had enjoyed exceptional health all her life, without catamenial pain or the avoidance of the most active exercise during her periods. During the congestion incident to recently married life she was subject to excessive fatigue during two successive periods. To summarize the case, from that day to this she has never had a thoroughly painless period. During the succeeding ten months she suffered exceeding catamenial pain, with marked hysteria at these times and steadily increasing neurasthenia. A conservative abdominal operation resulted in the resection of the tubes, both of which were completely occluded; the resection of a large persistent corpus luteum (the so-called solid luteal tumor) from the left ovary and the puncture of numerous follicular cysts therein; right ovary normal. This operation was followed at first by considerable relief of the dysmenorrhea and corresponding general improvement. During the next four years, however, the history was that of variable but on the whole increasing and at times very severe dysmenorrhea, the nervous symptoms varying up and down with the pain, and in the end resulting in marked neurasthenia. In January, 1908, she was operated upon for the second time. The left ovary was found to have been the seat of persistent inflammation, was practically destroyed and surrounded by adhesions. The removal of this ovary, the other being still normal, was followed by almost complete disappearance of the catamenial pain, and a rapid return to good health, though not to quite the exceptional condition which had been hers before she had any trouble.

Though this ovary appeared to be normal, with the exception of a large cyst, it was evidently the seat of an inflammatory process which was beyond the reach of a conservative operation.

Neither the catamenial disturbance, nor the neurasthenia, was benefited by the incomplete operation which was done, but both were promptly relieved by the second operation, which removed all the affected tissue.[3]

B. Prolonged minor treatment often has the worst of effects upon neurasthenics with complicating pelvic ailments, and even an operation may make the nervous condition worse if done in the presence of severe and increasing nervous disturbance.

Private Records 2446. Twenty-nine years old. First came to me in June, 1905, during the prolonged illness of a physician who had been giving her office treatments per vaginam three times a week for about four months, during which time she had been growing steadily more and more nervous. Her uterus lay in left lateral version owing to an inflammatory mass about the left ovary. She was complaining of severe backache, discomfort in the left lower quadrant, and moderate catamenial pain, but her nervous distress and self-centered mental condition were out of all proportion to her other symptoms A moderate-sized pessary for elevation of the cervix gave some relief to the local symptoms, all office treatment was discontinued and the patient was sent into the country under good hygienic conditions for several months, but without benefit. She was if anything in worse nervous condition than before. Her mental condition was extremely distressing. She had become absolutely convinced that her only prospect of health lay in a cure of her local ailments, for which reason, after the complete failure of general treatment, and with her mento-nervous condition growing rapidly worse, I opened her abdomen, broke up numerous adhesions, shortened the utero-ovarian ligaments and suspended the uterus. All local symptoms were relieved, and for a time the nervous condition improved, but after the immediate psychic effect of the operation had disappeared the nervous symptoms became steadily worse, and for a time her mental depression was alarming.

At the time when this patient came to me she had not only been made to devote the greater part of her time for several months to the care of her rather slight pelvic ailments, but as the result of constant and reiterated suggestion had reached a psychic state which almost amounted to a fixed idea. Under these circumstances I thought, and still think, that the operation was imperative; indeed, that it was so is proved by the fact that it did away once and for all with the approach to a fixed idea; i. e., it entirely dissipated the patient's dangerous concentration of mind on her pelvic organs, but the fact remains that the patient's previous bad treatment placed me in a false position for which the patient had to pay the penalty. I have no question that the performance of an operation in the face of an increasing neurosis was the cause of the very distressing psychic condition, amounting almost to melancholia, into which she passed within a few months. It was recovered from in the end, and she is to-day in as good a condition as her native lack of strength is ever likely to permit, but the case illustrates well both the evil effects of prolonged minor treatment and the evil effects of operation under unpromising psychic conditions.

C. We should never forget the importance of subsequent general care and should be guided in our prognosis by our estimate of the possibility of obtaining good and prolonged anti-neurasthenic treatment after operation, under the circumstances of the individual patient's life.

Private Records No. 2745. Sent to me in May, 1907, by Dr. J. H. Knowles, of Gloucester. Thirty years old. Married twelve years. Two children. Neurotic family history. On the whole, good personal health until after marriage and childbirth. Dysmenorrhea, sacral backache, weakness and soreness in lower abdomen, increasingly severe since birth of first child. Now in typical emotional neurasthenia. Provisional diagnosis, accidents of childbirth, not inflammatory. On examination, perineum and cervix lacerated, uterus retroflexed, right appendages probably adherent. Recommended operation. The cervix and perineum were repaired, and the abdomen opened. Conservative of both ovaries, uterus suspended, doubtful appendix removed. The convalescence was satisfactory, the anatomical results were very good, and the patient returned to her home in promising condition. Four months afterwards the anatomical results were equally good, and all pelvic symptoms had been relieved, but to use her own words, she was "nervously no better." On cross examination I learned for the first time that her home life was very fatiguing, living as she did at the head of a household which contained not only her own children, but several of her husband's female relatives. The situation as she described it was enough to prolong any neurasthenia and was at bottom irremediable, but she was lectured on the importance of reserving a portion of every day for exercise out-of-doors and seclusion in her own room, and her physician was urged to enforce these precautions. Under careful observance of this régime she rapidly improved. Six months later she became pregnant again, and when she reported for observation, some months after labor, she declared herself, and appeared, in excellent health. She had escaped with insignificant lacerations and no loss of support. The ovaries were non-palpable.

This case illustrates my failure, and hers, to realize at first that though her pelvic ailments were undoubtedly contributory to her neurasthenia, and maintaining it, if not indeed its original cause, nevertheless prolonged general after-care was quite as important as the due performance of the necessary local repairs. With this added success was fully attained.

D. Neurasthenia of pelvic origin may in some pronounced neurotics become so severe as to persist after the removal of the exciting cause.

Private Records No. 2815. Sent to me by Dr.

[3] It should be noted that from a physiological standpoint the removal of one ovary is not a radical operation.

C. A. Atwood in October, 1907. Thirty-one years old. Five years married. Two children. Coxalgic backache since fall in sitting position when pregnant four years ago; sacral, since puerperium three and a half years ago. For ten years chronic right-sided pain, increased by walking. Family history profoundly tubercular. Was originally a strong girl who trained as a nurse, losing only two days off duty during training, but has been in continued poor health ever since a prolonged suppuration about an ulcerated tooth soon afterwards. Once had a large discharge of pus per anum after a sharp attack of abdominal pain. On cross examination, right-sided pain since this time. Much intestinal indigestion. Profoundly neurasthenic. Is now an inmate of a rest-cure establishment where many months of treatment have failed to do good. Provisional diagnosis uncertain except probably persistence of chronic trouble about an old appendicitis. On examination perineum and cervix lacerated, uterus very low, both ovaries enlarged to about double size, neurasthenia out of proportion to local symptoms, and evidently largely independent of them except that malnutrition and indigestion may be dependent upon with right-sided abdominal condition. After some hesitation operation was advised. The perineum and cervix were repaired. The abdomen was opened. The uterus and ovaries were at the bottom of Douglas' fossa; the ovaries much enlarged, mainly by edema; both ovaries were scarified and cysts punctured, and the uterus was suspended. On turning to the appendix it was found to be the seat of old inflammation lying between the cecum and an adherent coil of small gut, with the canal of which latter it communicated by an old perforation. The appendix was severed from the cecum and separated from the small intestine, the resultant hole in the latter was repaired and the abdomen closed. The patient made an excellent surgical convalescence, the only complication being persistent vomiting, which stopped abruptly and finally on my pretending to be angry with her and giving her a very stern reproof. She went home with every prospect of improvement and for a few months improved steadily, being able to live at home and care for her children and keep her house, but although her home surroundings were satisfactory and her life easy, her vigor was not up even to these demands, she gradually relapsed and has been pretty constantly under the care of a physician ever since. The operation relieved her rather minor local symptoms, but did not materially improve her neurasthenia.

While we are human we shall make mistakes and have our failures no matter how carefully we may study our cases, yet with such study and under the guidance of sound general principles in the selection of individuals these cases will average well.

Private Records No. 2873. Sent to me by Dr. Chandler, of Medford, in January, 1908. Forty years old. Married. No children. Dysmenorrhea always, dyspareunia since marriage. Indigestion with intestinal gas and "sense of goneness" three years. Occasional, not very severe, neuralgia in left sacro-sciatic region, along the distribution of the left sciatic nerve, and over the inner surface of the left thigh, always increased by walking and standing, but almost constant before and during catamenia. Frequent frontal headache. Curetted without relief nine years ago. Pains and aches in all portions of the body. Does not seem in very bad condition, but is very self centered and running from one specialist to another. Provisional diagnosis, orthopedic disability. On examination, pelvic organs normal. Told that she should consult an orthopedist, but that her various specialists should most emphatically be under the control of a neurologist, whom she should see frequently and persistently. Referred to Dr. J. J. Putnam with consent of Dr. Chandler, with written opinion to this effect. Orthopedic treatment under Dr. Putnam's direction proved unsuccessful. Rest-cure under Dr. Putnam's immediate care convinced him that the left-sided pain was genuine and probably of long persistence. At his request examination under anesthesia demonstrated the presence of a slightly enlarged, hard, non-tender left Fallopian tube, and a few days later her abdomen was opened. The left tube proved to be straight and patent, but with much thickened and indurated walls. The corresponding ovary slightly enlarged, sclerotic and containing a very large number of small, tense cysts scattered through it like a charge of birdshot. Left ovary and tube removed. Abdomen closed. Normal convalescence. Patient declares that all abnormal sensations in left side have disappeared. On getting up some left-sided sacro-iliac backache, relieved by therapeutic corset. Returned to Dr. Putnam's care. When last heard from, one year after operation, considered herself well.

This case illustrated well the importance of slight but persistent and annoying local symptoms.

Private Records No. 2678. Patient of Dr. Chamberlin, of Concord. Seen January, 1907. Thirty-eight years old. Married eight years. Two children, last four years ago. Both pregnancies interrupted on account of eclampsia. Previous to childbirth, pessary for retroversion six years. Very gouty family history, very subject to sciatica and other "rheumatic" pains, profoundly neurasthenic and constantly under treatment by one specialist or another. Urine examined monthly by the late Dr. E. S. Wood for nearly three years, and reports preserved find granular and hyaline casts uniformly present. Quantity normal under very free use of liquids, but uric acid always high. After three months' observation with general treatment and occasional local examinations or treatment when absolutely unavoidable, patient had sharp attack of tenderness in the right lower quadrant of the abdomen. On examination two days later right tube slightly enlarged and very tender, purulent secretion coming from os. Says she has had several such

attacks in last few years. A week later pain less, but tenderness persistent till relieved in conjunction with gush of fluid from vagina. Diagnosis of chronic, purulent right-sided salpingitis. In view of persistent renal irritation, constant (gouty?) pain in many places and general neurasthenic degeneration of health, advised operation. Abdomen opened. Right ovary cystic, not much enlarged, right tube occluded, empty, but evidently the seat of both recent and old inflammation; tube and ovary removed. One large follicular cyst in the left ovary removed, uterus suspended, slightly congested appendix removed, abdomen closed. Since operation, now nearly two years, this patient has remained hyperesthetic and subject to many apprehensions, as she probably always will be, and has needed pretty constant supervision, but she is greatly improved in health in every way. Her urine has been examined many times by each of two professional urinologists. The first specimen examined a month after operation contained a few hyaline and fine granular casts. Since then no casts have been found. The purulent vaginal leucorrhea rapidly cleared up after the removal of the tube, and after a few local treatments the resultant cloudy secretion became normal. At the end of a year and a half of persistently normal urine the advice was given that pregnancy might be risked if the patient so chose. She has recently had a normal pregnancy and labor.

Here was a case of constitutional neurasthenia complicated by the existence of a chronic focus of suppuration to which under modern ideas of pathology both the gouty phenomena and renal irritation might fairly be at least in part attributed. With the removal of this center the renal irritation cleared up, the gouty disturbances have been greatly decreased and with this, probably the best general hygienic treatment in her case, the neurasthenia has been greatly improved, the patient now regarding herself as a well woman.

Taken as a whole there are few subjects that go deeper into the philosophy of practice than this of the relative importance of local lesions and general condition in individual neurasthenics, and few the principles of which are less carefully thought out by many of the profession. In spite of occasional failures in my experience, no other branch of gynecological practice is in the gross more satisfactory.

NEPHRITIS WITHOUT ALBUMEN.

BY C. A. HOWLAND, M.D.,
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THIS article will endeavor to show that gross and severe lesions of the kidney may exist without albumen being present in the urine, or at least without being discernible by the methods ordinarily used in hospital and office work. It has long been known that such a pathological condition might exist, but its practical import seems to have been recognized by comparatively few. Those who have recognized it have not considered it sufficiently frequent to warrant exhaustive investigation. In medical literature, the absence of albumen in disease of the kidney is a condition that is almost always considered as accompanying chronic interstitial nephritis, and there is an almost universal belief that absence of albumen indicates the absence of nephritis. Acute nephritis without albumen is regarded by many as an anomaly.

Few physicians in private practice go further in their examination of urine than the tests for sugar and albumen, and comparatively few use the microscope intelligently in their examinations. My investigations in this direction lead me to believe that a large number of patients must be wrongly treated, and many fatally neglected, because of the old and general belief that the absence of albumen usually indicates a healthy kidney.

A brief review of the subject as to the views held by the more commonly accepted authorities may be interesting and pertinent. Wood, in "Chemical and Microscopical Diagnosis," states that "traces of albumen are present in every normal urine, but in such small quantities that they escape detection by ordinary clinical test." In relation to chronic diffuse nephritis the same author says: "Albumen may be absent in a well-marked case, and only a few hyaline casts be found to suggest the possibility of a renal lesion, and this condition may exist when the patient is close to an attack of uremia." Musser, in his "Medical Diagnosis," says: "Tube casts usually indicate acute or chronic nephritis, but they are sometimes found in cases of renal calculi, and in icterus, usually without albumen." In no one of my cases were calculi suspected or was icterus present. The same author, under "Chronic Productive Diffuse Nephritis with Exudation," writes: "The albumen is small in amount or may be absent. Examinations extending over a considerable period of time may disclose its presence." Osler, in his "Practice of Medicine," says, in relation to insurance companies: "Naturally, companies lay great stress upon the presence or absence of albumen, but in the most serious and fatal malady with which they have to deal [chronic interstitial nephritis], the albumen is often absent, or transient, even when the disease is well developed." Under the subject of "amyloid disease," he states: "The albumen is usually abundant, but it may be scanty, in rare instances being absent." Ogden, in "Clinical Examination of Urine," says: "The grave condition [chronic interstitial nephritis] may exist with only the slightest possible trace of albumen in the urine." Professor Bradford, in "Allbutt and Rolleston's System of Medicine," Vol. IV, gives the following under "Granular Kidney": "Granular kidney cannot be excluded in any given instance merely on the ground that albumen is absent on a single occasion. Further, in exceptional instances, albumen may be absent from the urine for a considerable period, and cases

have been recorded from time to time in which granular kidney in an advanced stage has been present and in which death has resulted from uremia, and yet the examination of the urine has failed to reveal the presence of albumen." Holt, in his book entitled, "Infancy and Childhood," discussing acute diffuse nephritis, states: "Albumen was frequently absent early in the attack, but was invariably present at a late period. Casts were found in all cases that were examined microscopically." Under "Chronic Nephritis of the Interstitial Type," he writes: "Albumen is often absent, and, when found, the quantity is small." Sahli states: "The more the disease approaches the type of a true contracted kidney, despite the severity of the disease, the smaller is the amount of albumen excreted, and in an extremely chronic case it may even disappear temporarily. The same variability and temporary disappearance may characterize amyloid disease." All of the above authors, with one exception, admit that chronic interstitial nephritis may exist without albumen; and, with one exception, they do not admit that acute nephritis may be present without albumen. They all fail to impress the reader with the absolute necessity of a microscopical examination of all urine.

From April 1 to December, 1909, I examined 550 specimens of urine in the laboratory of the Union Hospital. All urine was centrifuged from three to six minutes in an electric centrifuge giving from 1,000 to 1,800 revolutions to the minute. The sediment was removed by a thoroughly clean small pipette, the finger being held over the end and the point lowered until just over the sediment. The finger was then removed from the outer end sufficiently to allow only a small amount of the sediment to be admitted into the pipette, which was then held there by replacing the finger on the outer end. The sediment was placed on a glass slide and spread out over at least one square inch of surface, the slide being then placed under the microscope and held in position on a moving stage. The sediment was then examined under low power with closed diaphragm, and by means of the moving stage a systematic search of the whole field made. Heller's nitric acid test was used in all cases, with filtered urine, and the result tested before a dark background. As a rule only morning specimens were used. The average amount was from 6 to 8 oz., and the specimens were not over twelve hours old. In many of the cases recorded numerous examinations were made and several methods employed. Cases in the acute stages which showed casts had their urine examined every few days, and in chronic conditions once or twice a week.

The conclusions that most physicians draw from their examination of urine for albumen are based on the test of a few ounces of what is usually a morning specimen, and not from a part of a twenty-four-hour specimen. The majority use only one test, in many cases probably Heller's nitric acid layer test. This would be sufficient if a careful microscopical examination were also made, as my cases show that the presence of nephritis can be determined when the ordinary clinical tests are carefully carried out, even though only a single specimen be examined.

The accompanying table gives the history of the 21 cases which illustrate the presence of ne-

Case No.	Sex	Age.	Date of First Examination.	Date of Last.	No. Ex.	Diagnosis.	Result.	Final Diagnosis or Cause of Death.	Name.	Service.
No. 1	F.	48	March 24, 1909	March 26, 1909	2	Evulsion of scalp.	Death.	Uremia.	Mrs. C.	Dr. S.
No. 2	F.	37	Aug. 9, 1909	Aug. 31, 1909	13	Typhoid suspected.	Recovery.	Acute nephritis.	Mrs. L.	Dr. J.
No. 3	M.	49	Aug. 28, 1909	Dec. 4, 1909	20	Brain tumor.	Death.	Brain tumor.	Mr. S.	Dr. H.
No. 4	M.	28	Sept. 22, 1909	Sept. 23, 1909	2	Appendicitis.	Recovery.	Appendicitis.	Mr. A.	Dr. W.
No. 5	M.	11	Sept. 26, 1909	Oct. 15, 1909	3	Appendicitis.	Recovery.	Appendicitis, diabetes.	Mr. M.	Dr. B.
No. 6	M.	55	Sept. 30, 1909	Oct. 8, 1909	3	Carcinoma of stomach.	Yet living.		Mr. A.	Dr. C.
No. 7	M.	20	Oct. 3, 1909	Oct. 3, 1909	1	Appendicitis.	Left hospital before operation.		Mr. J.	Dr. D.
No. 8	F.	24	Sept. 20, 1909	Oct. 3, 1909	5	Not made.	Improved.	Nephritis.	Miss T.	Dr. L.
No. 9	M.	50	Oct. 5, 1909	Oct. 5, 1909	1	Progressive gangrene of foot.	Discharged.		Mr. R.	Dr. W.
No. 10	F.	40	Oct. 10, 1909	Oct. 10, 1909	1	Hemorrhoids.	Discharged.		Mrs. M.	Dr. W.
No. 11	M.	37	Oct. 15, 1909	Oct. 15, 1909	1	Not made.	Recovery.	Nephritis.		Dr. L.
No. 12	F.	38	Oct. 16, 1909	Oct. 16, 1909	1	Hemorrhoids.	Discharged.		Miss K.	Dr. D.
No. 13	M.	19	Oct. 20, 1909	Oct. 28, 1909	3	Typhoid.			Mr. H.	Dr. D.
No. 14	F.	36	Oct. 20, 1909	Oct. 31, 1909	6				Mrs. H.	Dr. S.
No. 15	M.	3	Oct. 21, 1909	Nov. 20, 1909	8	Nephritis.	Recovery.	Nephritis.	Mr. B.	Dr. H.
No. 16	F.	38	Oct. 22, 1909	Nov. 8, 1909	8		Discharged.		Mrs. A.	Dr. B.
No. 17	M.	20	Nov. 5, 1909	Nov. 7, 1909	2	Appendicitis.	Discharged.	Appendicitis.	Mrs. P.	Dr. S.
No. 18	F.	17	Nov. 6, 1909	Nov. 7, 1909	2	Peritonitis.	Death.	Uremia.	Miss C.	Dr. S.
No. 19	F.	16	Nov. 11, 1909	Nov. 11, 1909	1	Enlarged glands.	Good.		Miss D.	Dr. D.
No. 20	M.	40	Dec. 12, 1909	Dec. 14, 1909	2	Neurasthenia.	Good.		Mr. W.	Dr. J.
No. 21	M.	45	Dec. 14, 1909	Dec. 18, 1909	2	Sprain.	Good.		Mr. F.	Dr. J.

phritis without the presence of albumen. All cases which showed granular in addition to hyaline casts are included, but not those cases which showed one or two hyaline casts only.

Cases 9, 10, 11 and 12 had only one examination made. After analysis of the urine in Case 11, the patient was treated for congestion of the kidney and made a rapid recovery.

Cases 4, 5, 6, 7 and 17 first showed the presence of casts after the administration of an anesthetic, and there were no serious symptoms that could be attributed to the kidneys. They are important solely in their relation to the effects of an anesthetic on the renal tract.

Nos. 6 and 19 were cases of carcinoma of the stomach, and might suggest a faint possibility of some relation existing between the two conditions.

It is well to note that casts without albumen were found in a large proportion of those cases which were suffering from conditions such as appendicitis, typhoid fever, peritonitis, gangrene and evulsion of the scalp. In these cases the toxins incident to these troubles doubtless had a pathological effect on the kidneys without producing albumen.

CASE 1. Mrs. C., forty-three years of age, admitted to the Union Hospital Jan. 6, 1909, with evulsion of the scalp, the laceration extending down to the fifth cervical vertebra, with involvement of the temporal muscle. The urine was not examined at this time. She did well while in the hospital and was transferred to the out-patient department March 1. She re-entered the hospital March 22. Examination of the urine at this time disclosed no albumen, but an enormous number of granular casts and some few hyaline casts. Death occurred from uremia March 31.

CASE 2. Mrs. L., age thirty-nine, housewife, white, married, no children, previous history good, with the exception of indigestion five years before. Admitted to Union Hospital Aug. 9, with a temperature of 102, pulse 132, respiration 32, typhoid fever being suspected. She had been ill for two weeks before entering, the diagnosis being in question. During this time she had frequent headaches and no appetite. The tongue was dry, there was bad taste in mouth, difficult breathing, nausea and constipation. Respiratory apparatus and circulatory apparatus were normal. Urine examination: Odor normal, cloudy, specific gravity 1,030, albumen absent, sugar absent, indican excessive, bile pigments present, no blood; organized sediment — large number of granular casts, both fine and coarse, with many hyaline casts and epithelial cells; unorganized sediment — amorphous urates. Examination of the nervous system negative, diazo-reaction negative, Widal negative. Blood: Absolute leucocyte count, 11,000; differential count of 200 gave small mononuclear 18%, large mononuclear 0%, neutrophiles 80%, eosinophiles 0%, basophiles 2%. Examinations of the urine were continued from Aug. 10 to Aug. 31; it gradually became free from casts, and on the final examination was in all respects normal. Patient was discharged well.

CASE 15. Master B., age three, white, previous history good, family history fair. Previously had an attack of ileocolitis due to bacillus coli communis infection, from which recovery had apparently taken place. Two weeks later the physician was called because the mother noticed swelling of the eyes, feet and abdomen, with pallor. Examination showed the heart to be normal, temperature 101.1, pulse 116, abdomen somewhat distended by gas and containing a little fluid, and edema about the eyes. Examination of the urine showed it to be free from albumen, though numerous hyaline casts and a few large waxy granular casts were present. The patient improved under treatment and at present is doing fairly well.

CASE 18. Miss C., age seventeen, white, unmarried, previous health good, no occupation. Family history: A sister had uremia and convulsions. Was admitted to the Union Hospital Nov. 5, with acute perforating appendicitis. Temperature, pulse and respiration were typical of peritonitis. Respiratory and circulatory apparatus were normal. Neither the urine nor blood was examined before the operation because of the emergency character of the operation. The abdomen was found to contain pus. The patient was much better the following morning, at which time an examination of the urine showed no albumen, but numerous hyaline casts and a considerable number of fine granular casts. Six hours later she became worse, and a catheterized specimen of the urine showed blood casts and a very large number of fine and coarse granular casts. Death occurred four hours later with all the symptoms of uremic poisoning.

The four cases just given are not to be diagnosed as cases of chronic interstitial nephritis, but are cases of acute destructive processes of the kidney. They show conclusively that albumen may be absent in acute nephritis and that the condition cannot be diagnosed without microscopical examination. Case 2 must be regarded as an instance of acute nephritis without other accompanying diseases. There was an initial high temperature of 103.5, gradually going down to normal, then a secondary rise to 102, reaching normal about the fourth day, with a pulse-rate and respiration somewhat corresponding, the pulse ranging between 120 and 130 during the active stage, falling to about 95; the respiration ranging from 25 to 30 when the temperature was high, being about 20 at the time of discharge.

In the routine examination of 550 specimens, nephritis without albumen was found twenty-one times, or 3.8%. Further examinations from reliable sources, using a thorough technic, will probably give large percentages. This large proportion of unsuspected kidney lesions is probably due to the fact that it is the well-nigh universal custom in both hospitals and by physicians in private practice to examine microscopically only those specimens of urine that show the presence of albumen. It is also the case that many specimens examined microscopically are not previously centrifuged. A part of the onus of such incomplete and unsatisfactory examinations may properly be laid to a certain extent upon the great life insurance companies, who, unless a policy be for a large amount, do not require a microscopical examination of the urine. The very fact that they do require it in policies for large amounts shows that they are cognizant of the possibility of the existence of such conditions as I have been describing. Such thorough examination should be required as a routine measure. All of these 21 cases (with the exception of No. 5, in which sugar was found), so far as the urine was concerned, would have

been acceptable to insurance companies without microscopical examination. It is impossible to say whether these cases would have shown casts without albumen had their urine been examined before the illness which necessitated the present examinations. Many would doubtless have done so, especially those of the chronic interstitial type.

CONCLUSIONS.

No examination of the urine can be called thorough unless a microscopical examination is made. This cannot be satisfactorily done unless the urine is centrifuged in a good centrifuge. No physician can be sure that his patient is free from a kidney lesion without such an examination. Acute nephritis may exist without the presence of albumen, and death may occur with all the symptoms of uremia. Careful pathological study of kidney tissue when during life acute nephritis without albumen has been diagnosed may reveal a distinct type of hitherto unrecognized nephritis. The fact that nephritis may accompany other severe diseased conditions does not lessen its importance. The knowledge of its existence will to a great degree influence the treatment and prognosis.

DRUGS IN PRACTICE.*

BY M. VEJUX TYRODE, M.D., BOSTON.

It is with much pleasure that I have accepted your kind invitation to speak to-night on drugs in practice, because although that branch of therapeutics may in the past have occupied the whole field, to the detriment of other divisions, yet during the last twenty or thirty years, or more, therapeutics by drugs from a scientific point of view has received very inadequate attention from many medical schools and from practitioners in general.

Before beginning the subject, I would beg you to allow me to give my definition of a drug, as it seems that there is often great misconception concerning this point.

A drug is any substance other than a foodstuff or a purely mechanical agent which is capable of producing changes in a living organism while in a normal or pathological state. This naturally includes all substances of animal, vegetable or mineral origin which are capable of influencing the metabolism of the whole or of some parts of living beings. Thus vaccines of hydrophobia and smallpox or the antitoxins of diphtheria, cerebrospinal meningitis, streptococcus infection, etc., are true drugs, just as much as iron, cinchona, thyroid extract, bile or pepsin, for they all produce certain definite actions in living organisms.

In spite of the efforts of cranks on psychotherapy, dietetics and physical therapeutics to abolish the use of drugs or belittle their advantage in the treatment of disease, these therapeutic agents have persisted and are still flourishing after the late passing period of therapeutic nihilism. This is very encouraging, because unquestionably great good is being done every day by the proper use of drugs. Few well-trained modern physicians would think of treating malaria without quinine, or diphtheria without the antitoxin. In the same way a doctor called to see a case of extreme cardiac uncompensation would almost be guilty of criminal negligence if he did not attempt to strengthen the force of the heart muscles with a suitable cardiac tonic. No physician who has carefully studied the action of iron preparations in cases of non-pernicious anemias would question the value of these. Likewise the wonderful effect upon myxedema of thyroid extract has struck every one who has ever tried that drug in such cases.

It is unnecessary to defend the rights and accomplishments of drugs in modern therapeutics because the results obtained speak glowingly for themselves. With the great activity which is going on all over the world on the question of specific therapy, and the masterly work done by the French, English and Ehrlich school on the actions of arsenical compounds, aniline dyes, etc., on certain infectious conditions, such as sleeping sickness and other trypanosomatous diseases, there is a promise that drugs even other than vaccines and antitoxins will find a more and more important place in therapeutics. Yet, I do not say this to belittle the other branches of therapy, as dietetics, psychotherapy and physical therapeutics, as I use them all freely in practice myself.

Since a great deal of my special work is on diseases of the stomach and intestines, I find scientific dieting particularly valuable. In neurotic conditions of the gastro-intestinal tract, suggestion is sometimes a most valuable adjuvant. Likewise I feel that I cannot neglect prescribing physical methods, as proper exercise, baths and, in suitable cases, massage and electricity. The greatest of all physical methods of treatment, surgery, must be judiciously advised in its proper indication. Thus it can be replaced by no other measures in certain cases of gastric dilatation with pyloric obstruction, gallstones, chronic appendicitis and scores of other abdominal conditions that can be influenced neither by diet, suggestive treatment, drugs nor by the other mechanical means except surgery.

Yet, in spite of the frequent use which I make of other remedial agents, I would be very unwilling to be deprived of the use of drugs even in my favorite branch of gastro-intestinal diseases, where many enthusiastic dietitians claim that drugs are of but little value.

To give you just a slight idea of some therapeutic effects obtained in my practice, I will mention results reached by a few drugs. In a case of ulcerative colitis to which I was called in consultation and found by sigmoidal examination a number of raw angry-looking ulcers and patient having from twenty to forty stools a day in spite of a very simple cornstarch diet which the doctor had been giving for the past three or four weeks, I ordered a suspension of bismuth and acacia to be injected high into the colon and retained.

* Read before the Cambridge Medical Improvement Society, April 25, 1910.

Within forty eight hours the patient had but three stools a day. The latter gradually acquired a normal consistency and the patient made an uneventful recovery. Another, a case of extreme hyperacidity, 0.35% Hcl, with duodenal ulcer, came to me from New York after having had three weeks of almost continual spasmodic pain and terrible burning in the stomach, expressed by the patient, "everything I take turns to acid." As is my custom in these cases, I gave him repeated doses of the heavy oxide of magnesia in watery suspension, and in twenty-four hours all pain and spasm had disappeared, and with a careful hyperacidity diet he went six months without feeling a symptom, until, during a trip in Germany, he drank beer rather freely and ate sauerkraut and Bismarck herrings and had another attack which was stopped the same way in a few days. Six months later, as he had a much more persistent attack, due to some other indiscretions, I advised operation, which was completely successful. A lady was referred to me by another physician to decide on the question of cancer of the stomach. She was about fifty-five years of age, had lost about 25 lb. in weight during the last six or eight months and there was no hydrochloric acid after an Ewald test breakfast. I gave her dilute hydrochloric acid in increasing doses, the burning and vomiting stopped, she gained in the course of a week 13 lb. and continued thereafter to improve. She was not suffering from cancer, but from an atrophic catarrh of the mucous membrane of the stomach. A young society girl who had been crossed in love by her family had developed complete anorexia, with terrible pains in the stomach, even with the slightest amount of food; also palpitations of the heart, headaches, backaches, fretfulness and sleeplessness. Considering the condition as one of nervous fatigue with irritable symptoms, and the stomach being simply an evidence of the peripheral manifestations due to an over-secretion of hydrochloric acid, she was placed on the treatment by bromides, with the result that in the course of a few days she slept perfectly well, the gastric distress was rapidly passing away and in the course of a few weeks she gained 14 or 15 lb. A case of a young professional woman who had had the most obstinate constipation for a number of years, with pain and pressure in the lower bowel, and who showed the presence of chronic irritation of the colon and sigmoid due to both the retained feces and the abuse of rough diet generally employed in constipation. She was placed upon smooth diet and given liquid petroleum for its soothing effect upon the intestinal mucosa and also to prevent too great inspissation of the stool. Now, nearly a year after the beginning of the treatment, she has no constipation even without the use of the petroleum.

Nowadays, gentlemen, the question is not "Drug or Drugless Therapy?" as that has been solved for the present; but it is how to use suitable drugs properly. The injudicious and indiscriminately large amount of drugs used in the early part of the last century favored the development of therapeutic nihilism.

It was that indifference to all treatment when diagnosis was considered the only worthy object and end result which gave the opportunity for the development of the various quackeries of all characters included in the classes of psychotherapy, physical, dietetic and medicinal therapeutics. Thus, special religious sects sprang up offering suggestive treatment as the cure for all ailments; also certain "pathies" offered mechanical treatment in the form of massage, with such exaggerated claims that organic conditions of the stomach, as ulcer or cancer, and also diabetes, could be cured by rubbing the spine. Other mechanical "therapists" have had the audacity to write to sick individuals or to send drummers representing them stating that they could cure almost any condition if the patient would follow a certain system of exercise, which they would direct by mail, according to the symptoms, without even seeing the patient.

Among the most colossal of therapeutic quackeries have been those falling in the medicinal class. At first such simple combinations as the various sarsaparillas, spring tonics and purgative or little liver pills advertised to the public constituted the beginning of the present-day patent medicine "profession." It was gradually found out by the sharp and crafty business men that unsuspecting physicians could be made an excellent medium for advertisement, as they could be easily persuaded to prescribe those "ethical" preparations only advertised to the profession. Yet these "ethical" preparations were frequently dispensed in the original package, accompanied by voluminous explanatory literature on the symptoms which this medicine would relieve. The doctor fell in admirably with the scheme of the patent medicine manufacturer for various reasons. One is that in many schools, and this applies here in the East, very inadequate instruction in pharmacology and therapeutics is given to the medical students, so that many physicians find it very difficult to write prescriptions. Another is that it is an economy of time to write one name constituting a ready-made prescription. Yet another is that the doctor has been assured by the agents that it is a perfectly ethical thing to do because the famous Doctor So and So is prescribing this medicine. Still another reason is because the doctor, frequently victim of autosuggestion like any other human being, and insufficiently trained to exact observation, thinks that he is getting good results from a certain preparation, whereas he really has not subjected it to an absolutely critical test. Patent preparations, as, for example, digestive mixtures, may act through suggestion, or the improvement may be the result of changes of diet or more air, of exercise or diminution of mental strain. A great argument against specific virtues attached to these digestive tablets, mixtures or essences is that each doctor has one picked out for which he claims absolute results, but in a group of ten physicians taken at random no two swear

by the same patent preparation, and one or two out of these ten get their results, which they claim to be just as marvelous, by official drugs. One objection brought by some physicians against National Formulary preparations instead of patent mixtures representing the same is that the druggist will not make as elegant a compound from the National Formulary formula. The answer is that although a few formulas are not perfect in the National Formulary, yet many of the cases are due to inefficient pharmacists or the use of poor material. This is to my mind a still more forceful argument for doctors not using any ready made up mixtures at all, whether patent or National Formulary, but to prescribe his own, and with a reliable druggist he will meet with no trouble.

Fortunately, the American Medical Association has taken up the subject of patent medicine for investigation. This body has established a Council on Pharmacy and Chemistry to investigate the patent and patented medicines on the market and to discriminate which are out-and-out fraud and which are correctly advertised and might be possessed of some therapeutic value. This work is admirable and it would pay any of you gentlemen who have not done so already to read the publications of that Association, such as the "Physician's Manual of the U. S. Pharmacopea and National Formulary," the "New and Non-Official Remedies the Propaganda for Reform in Proprietary Medicines," the "Great American Fraud," etc. In the "New and Non-Official Remedies" are to be found the new proprietary drugs examined by the Council and passed upon as being truthfully advertised, although this does not imply endorsement by the Association. If a physician wishes to use some of these newer drugs he must pick them out himself according to his knowledge of pharmacology and chemistry.

There is no doubt that this flood of new drugs and combinations has its chief value in increasing the income of the manufacturers rather than advancing the art of therapeutics, for it is not so much a large number of a certain class of medicinal agents which we need, but rather a better understanding of the already known ones. It is true that we must place great hopes in the development of synthetic pharmacology, i. e., the building up of new compounds having certain desirable actions but not possessing certain undesirable ones at the same time. Yet for a few successful synthetics we have thousands of unsuccessful ones on the market which are pushed commercially far beyond their medicinal value and exploited purely for personal gain. For instance, of the hundreds of newer coal tars as antipyretics and analgesics none have really surpassed some of the older compounds. The newer artificial morphine derivatives have not proved themselves as valuable as morphine and codeine. In my own practice, I have tried the new bromide substitutes but have not found them equal to potassium bromide. Chloral still remains the most powerful hypnotic of the fatty acid series and is far superior in activity to any of its substitutes, and frequently not much more dangerous.

Although some good has come from the synthesis of new compounds, and still more good will come in the future occasionally from purely scientific laboratories and at other times from the laboratories of manufacturing chemists, yet it is much safer for the average physician who is not a trained pharmacologist to use drugs the actions of which he is sure of rather than to experiment upon his patients with uncertainties. He would be wiser to wait until newer drugs have been throughly experimented upon by reliable men in unbiased laboratories and hospitals, which procedure may take several years.

What I have said up to the present applies only to new pure chemical compounds, but now let us consider the various mixtures or ready put up prescriptions, as So-and-So's tonic, or syrup of hypophosphite, or malt extract or purgative pills. These can be easily disposed of with but a few words: that a physician who pretends to treat patients should know how to mix drugs in a prescription himself without the suggestions of a patent medicine house, and, furthermore, if he desires any ready made mixtures, which I rarely use myself, he can find all sorts in the United States Pharmacopea and National Formulary.

In these books you will find over a dozen laxative pills which can be easily put up by any reliable druggist and which are equal to any of those on the market under trade names; also syrups of hypophosphites, of hydriodic acid, glycerophosphates, etc.; tonics of all kinds, organic and inorganic salts of iron, innumerable elixirs which act as excellent vehicles and which obviate the use of patented essences of pepsin chiefly employed as a vehicle, since the pepsin in them is rendered inert by alcohol and, in fact, is present in such small quantities that quarts would be necessary to digest a helping of beefsteak. Much better results at lower cost will be obtained by using home-made beef juice, scraped beef, etc., instead of the patented beef-preparations; likewise arrow-root, cornstarch, blanc-mange, barley-water, tapioca and rice will advantageously fill the place of the patented cereals, as the malted milks and infant foods. Instead of the patented fats, as various emulsions of cod-liver oil, and some particular frauds claiming to contain the active principles of cod-liver oil without the disagreable fat, far better results may be reached by the employment of cream, milk and olive oil. If one wishes to use alcoholic preparations, the ordinary good brands of wine, beer, ales and spirits will not only equal but excel any patent wines or malt extracts. The farcical use of uric acid solvents, as patented lithia waters and certain piperazin compounds, can be advantageously substituted by the use of large amounts of ordinary water with simple alkaline salts, as potassium citrate and sodium bicarbonate. In the United States Pharmacopea we have an excellent urinary antiseptic under the name of hexamethylenamine—an unfortunately long name,

but which occurs on the market patented under about ten different names, as urotropine, cystogen, uriform, aminoform, uritone, formin, etc. These various preparations having no advantage over the Pharmacopeal compound, there is certainly no reason for prescribing those much more expensive names of identical chemical composition.

The question may be asked here, What is the objection to using a patent compound or mixture if it acts as well as something in the Pharmacopea? In the first place, a proprietary preparation has no standard except that which the firm is willing to give it and is, therefore, unreliable, being frequently changeable in composition from time to time, or even at the same time from state to state. Another reason is that as physicians we are morally bound to protect our patients' interest and, therefore, should not unnecessarily turn them over into mercenary hands.

Another question arises whether we are justified in specifying in our prescription for well-known chemical compounds the manufacture of certain firms. We have as physicians just as much right to do this as chemists who frequently specify. When we have evidence that a certain firm makes a purer and more active product, we are perfectly justified in specifying even if it is more expensive for the patient. This, however, we should not do unless we have definite evidence of superiority and reliability for making the preference.

I have had considerable concern in the coming revision of the Pharmacopea, being a delegate from The Massachusetts Medical Society, and have observed far greater interest than has ever been evinced before by the medical profession. The former pharmacopeas have not been all that they should be as far as being very practical works for physicians, because they were gotten up almost exclusively by the pharmaceutical profession, from a pharmaceutical viewpoint, as the medical men had relinquished practically all interest in it. The pharmaceutical men had been unjustly accused of having robbed the Pharmacopea from the medical profession. This was an exceedingly unjust accusation. On general occasions when I was invited to address the New England branch of the American Pharmaceutical Association I found the most earnest and eager desire of the pharmacists to interest the medical men in the Pharmacopea in order to make it a very practical book in medicine. From what is being done for the purification and reorganization of the new Pharmacopea, I dare say that it will probably be a masterpiece of its kind and a most practical book for physicians, whence they may draw their safest and most active materia medica. Until the new Pharmacopea and National Formulary appear, I cannot recommend too strongly the Physician's Manual of the Pharmacopea and the National Formulary, published by the American Medical Association, and hope that those of you who have not one already will procure this valuable little book.

THE SPUTUM OF TYPHOID FEVER PATIENTS AS A POSSIBLE SOURCE OF INFECTION.*

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(From the Department of Preventive Medicine and Hygiene, Harvard Medical School.)

AT the suggestion of Dr. Rosenau, and with his kind advice and assistance, I have been able to carry out the following study of the saliva and sputum of 53 cases of typhoid fever.

Thanks are due to Dr. MacCollom, superintendent of the Boston City Hospital; to Dr. Washburn, superintendent of the Massachusetts General Hospital, and to Dr. Lucas, of the Children's Hospital, for kindly placing at my disposal the cases of typhoid occurring at these hospitals during the past winter.

So far as I am aware from a careful examination of the available literature, very little of a definite nature has been published in relation to the infectiousness of the saliva and sputum of typhoid fever patients. In reviewing the literature the impression one gets is that the bacillus typhosus is not frequently to be found in the mouth; that it may be, but usually is not, the cause of pneumonia complicating typhoid fever; and that while thus rarely to be found in the mouth, still, because it may be found there, the saliva and sputum should be treated as a possible source of infection.

No writer except Richardson whom I have consulted makes any definite statement that he has himself done any experimental work upon the subject or quotes the writings of any one who has. To give an idea of what seems to be the opinions most commonly held upon the subject, I will refer briefly to the expressions of a few writers.

Osler and also Field seem to think that the typhoid bacillus is to be found in the mouth more frequently than the majority of writers. In the latest revised edition (1909) of his "Practice of Medicine," Osler says, "They are reported to have been cultivated from the sweat, and they undoubtedly occur with considerable frequency in the sputum (Richardson, Raw and others)"; he further says, "They are also present in the esophagus and on the tongue and tonsils."

The work of Richardson referred to by Osler was published in the BOSTON MEDICAL AND SURGICAL JOURNAL, in 1903, and is as follows, "As to the presence of the typhoid bacillus in the sputum, I was able, in 1897 [*Journal of the Boston Society of Medical Sciences*, Nov. 16, 1897], to isolate this organism on three successive days from the sputum of a case of typhoid fever complicated with pneumonia. In 15 cases with no pulmonary complications the results were negative. Since 1897 the subject has been investigated by a few observers only. Their results show that the typhoid bacillus may be present in the sputum during typhoid fever, especially if there be a coincident bronchitis or pneumonia. The typhoid bacilli are almost invariably associated with other organisms, such as the pneumococcus or the influenza bacillus, and are to be regarded rather as secondary invaders than as the primary cause of

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the complication. The sputum in these cases is generally hemorrhagic and may contain large numbers of bacilli for considerable lengths of time. Seven weeks is the longest period of persistence recorded. The subject needs much further study, but enough is known to show that in the typhoid sputum we have still another excretion which must be carefully disinfected."

Under the heading of the "Distribution of the Typhoid Bacillus in the Body," Field says, "The finding of the typhoid bacillus by Besson in the tonsils of 6 out of 10 cases investigated warrants the belief that they also exist in the mouth." Jordan, in his "Textbook on Bacteriology," says, "Typhoid bacilli have been found occasionally in the sputum, although the majority of cases of pneumonia that occur during the course of typhoid fever are apparently caused by the pneumococcus. There is hence a possibility that typhoid fever may be spread by sputum infection, but it seems rather remote." Whipple states that "in some cases bacilli are found in the mouth and throat; consequently the saliva may contain them. This condition may be infrequent, but it is always liable to occur. There is practically no danger to be feared from the quietly exhaled breath, as bacteria do not readily leave a moist surface; but coughing or sneezing may cause the expulsion of the bacilli into the atmosphere, with consequent danger to persons in the room who may inhale them." Tooth, writing of his observations in the South African War, in "A Civilian War Hospital," 1901, makes the following statement: "In a tentful of men, apparently equally ill, one may almost pick out the enteric cases by the masses of flies that they attract. . . . The moment an enteric patient puts out his tongue, one or more flies settle on it." It might be inferred from this remark of Tooth's that he thought flies could thus become infected. Rosenau, in his work on "Disinfection and Disinfectants," says that "the bacillus of typhoid fever is eliminated from the body in the stools, the urine and sometimes in the sputum." In 1897 J. C. Wilson, writing in the "American System of Practical Medicine," was of the opinion that "by far the largest proportion of the bacilli are without doubt destroyed within the body. The remainder find their way out in the stools, to a slight extent in the urine, very rarely in the vomited or expectorated matters, or the perspiration. They are not eliminated by the expired air. . . . . Croupous pneumonia is, however, in some instances apparently due, not to infection by the diplococcus of pneumonia, but to infection by the bacillus of Eberth. Under these circumstances it usually occurs early in the course of the attack, and has been attributed to localization of the specific process. The difference between the two forms, however, is rather a bacteriological than an anatomical one." In a case of mine in the Jefferson Hospital, Coplin found Eberth's bacillus in the pulmonary exudate. H. W. Hill, of the Minnesota State Board of Health laboratories, says, "All our forms of outbreaks are merely the result of the following, by typhoid infected feces chiefly, but also by typhoid urine and saliva. . . ." To quote again from Jordan's "Bacteriology," "The actual evidence in favor of the invasion of the body through the tonsils and gastric mucosa is by some investigators thought to be quite as strong as the evidence of intestinal penetration." Kolle and Hetsch, in "Die Experimentelle Bakteriologie und die Infectionskrankheitens," say that the typhoid bacillus is rarely to be found in the mouth or sputum. On Dec. 20, 1909, at a meeting of the Medical Association of the Greater City of New York, as a part of a "Symposium on the Throat Symptoms of General Diseases," Dr. Coffin discussed the laryngeal complications of typhoid fever, calling attention to the fact that the larynx is much more frequently involved in some localities than in others, and most often in the severer epidemics. He quoted a paper by Drs. Jackson and Day, of Pittsburg, written some years ago, in which they reported that "of 360 cases that were carefully watched throughout the course of the disease, 227 showed lesions in the larynx." Of these cases, he said that some showed simply a subacute laryngitis, others a laryngitis with an ulceration of the mucous membrane, while in the more severe cases the cartilages and pericartilaginous tissues were involved.

Following Dr. Coffin, Dr. Nathan B. Van Etten said that "the uvula, tonsils and pharynx were often ulcerated, and, in cultures from these ulcers, typhoid bacilli had often been obtained. The frequent finding of the bacilli in the sputum indicated the necessity of the destruction of all mouth secretions as sources of infection." (The quotations above are from the "Society Reports" in the *Medical Record* of March 12, 1910, page 465.) That every victim of typhoid fever must receive his infection through the mouth is an admitted fact; ordinarily this occurs through the introduction of food or drink, the greater part of which passes directly to the stomach, but it is not unreasonable to suppose that small contaminated particles may find lodgment upon the teeth and gums, where, if conditions be right, they should readily multiply. The saliva usually has a weak alkaline reaction which makes it, so far as that point is concerned, suitable for the growth of the typhoid bacillus, and as the result of actual trial I have found that it will readily multiply in it. If, then, the infecting bacilli must first pass through the mouth to reach the blood stream, and if the saliva in the mouth is a suitable medium for its growth, why should the bacillus not be found in the saliva in sufficient numbers to be demonstrated with the proper technic and, of course, be a possible source of danger to others? It was with the idea of determining, if possible, the above question that this work was begun. It was further hoped that, in addition, something might be learned as to its frequency at the different stages of the disease. The work was begun in the autumn, but not completed until the following spring, owing to the scarcity of material. As the list of the tabulated cases which follows will show, material was obtained from cases as early as the

fourth day of illness and as late as the seventieth; specimens were secured from seven cases several days before a positive Widal reaction could be obtained.

The material studied consisted of the expectoration, collected in the ordinary sputum collecting bottles in use by the Boston Board of Health; and, in addition, material was collected on ordinary diphtheria swabs from the tonsils, the surface of the tongue, the gums and any carious teeth that might happen to be present.

These specimens were invariably brought to the laboratory within one hour of the time of collection, diluted with about four parts of normal salt solution and then thoroughly shaken and mixed; it was allowed to stand while the culture medium was being prepared and again shaken before the plates were inoculated.

The medium used was Endo's fuchsin agar, made after the modification recommended by the Hygienic Laboratory at Washington (see Hygienic Laboratory Bulletin, No. 52, October, 1909, Report No. 3, on "The Origin and Prevalence of Typhoid Fever in the District of Columbia," 1908, by M. J. Rosenau, L. L. Lumsden and Joseph H. Kastle), which are as follows: "Make 4% neutral agar as follows: Take 1 liter distilled water, add 5 gm. sodium chloride, 10 gm. Liebig's extract meat, 10 gm. peptone. Dissolve by heating, allow to cool, and place on surface 40 gm. powdered agar.

"When this has settled, place in Arnold sterilizer, covering beaker with paper, and cook for three hours.

"Filter through cotton on a perforated funnel (*Büchnerfilter*) by the aid of a vacuum, or allow to settle while slowly cooling and discard the bottom turbid portion.

"Neutralize to litmus paper with Na_2CO_3 solution. Add 10 ccm. sterile 10% Na_2CO_3 solution.

"It is convenient at this point to put up the medium in 100, 200 and 400 ccm. quantities in flasks, the flasks being large enough to provide room for the other ingredients.

"These can be stored until needed for use; the agar is melted and the other ingredients added in the proper proportion.

"Add 5 ccm. alcoholic fuchsin solution. This is prepared as follows: To 10 gm. fuchsin (not acid fuchsin) add 100 ccm. 96% alcohol, shake, allow to stand twenty hours, and filter the supernatant fluid which is used. It should be filtered each time before using.

"Add 25 ccm. freshly made and sterilized 10% sodium sulphite solution.

"Sterilize for a few minutes in the Arnold and pour plates while the medium is steaming hot.

"The medium after cooling should be nearly colorless to transmitted light and rose or flesh-colored to reflected light.

"The lactose, fuchsin and sodium sulphite solutions must be added to the melted agar just before it is to be used.

"The plates are flown and allowed to stand for twenty minutes (my plates were given one hour) uncovered in the incubator in order to do away with the water of condensation and to obtain a good surface.

"Organisms which split lactose restore the red fuchsin and appear as deep red sharply limited opaque colonies with a greenish surface sheen.

"The typhoid organism produces smaller transparent colonies resembling a small drop of water."

The plates were inoculated with a sterile glass rod which had been bent at a right angle, the short arm being dipped into the thoroughly mixed material in the salt solution and then rubbed firmly and evenly over the surface of the plate and successively over a second and third in order to get the necessary distribution of colonies. The plates were incubated at 37° C. for twenty-four hours, and then subcultures in plain boullion were made from all suspicious-looking colonies. Each tube of plain boullion containing about 4 ccm. was incubated for twenty-four hours, after which a small drop of Parke, Davis & Co. typhoid serum was added, making a dilution of not far from 1 to 400. This serum when tested against a laboratory culture of typhoid which I isolated about one year ago showed marked agglutination in fifteen minutes in dilutions of 1 to 1000, and quite perceptible clumping in less than two hours in dilutions of 1 to 2500. The tubes were examined after one hour and the results recorded, but all were allowed to stand for twenty-four hours and again examined, at which time, if any tube showed what appeared to be a partial agglutination, it was put aside for further study. Whenever material was obtained upon swabs, after the Endo plates had been inoculated, the swabs were used to inoculate lactose boullion fermentation tubes, from which additional Endo plates were made the following day; and all suspicious colonies on these plates were treated in the same manner as above, as it was thought that by this enriching process the bacilli might be discovered in cases where they were only present in small numbers. It was found that only a small number of the organisms occurring in the mouth will grow on Endo's medium and that every one of these has a more or less distinctive appearance in colonies to distinguish it from colonies of typhoid or other members of the typhoid group. In nine of these cases there were bronchial symptoms, but in none was there a case of pneumonia; it was not observed that there was any variation in the varieties grown from these and those without such symptoms. No throat complications, such as described by Drs. Coffin and Van Etten, were noticed in any of this series.

The work was controlled in the following manner. A plate inoculated with a laboratory culture of typhoid bacilli was always made as a check on each batch of medium throughout the work; and during the early part, in order to test out the whole technic, ten specimens of saliva and sputum, two of which ("T" and "X") were known to have been inoculated with two loopfuls of an agar typhoid culture and eight of

Specimens of Saliva and Sputum Examined for Typhoid Bacilli.

Case.	Age.	Sex.	Day of disease.	Swab.	Sputum.	Times examined.	Widal reaction.	Serum reaction.	Remarks.
1	20	F	35	1	1	1	+	—	Bronchial symptoms
2	19	M	38	1	1	1	+	—	Bronchial symptoms
3	22	M	18	1	1	1	+	—	Bronchial symptoms
4	35	F	49	1	1	1	+	—	
5	19	F	46	1	1	1	+	—	*Blood culture
6	25	F	46	1	1	1	+	—	
7	10	M	49	2	2	2	+	—	
8	28	M	14	2	2	2	+	—	Bronchial symptoms
9	18	M	59	2	2	2	+	—	Relapse; bronchial symptoms
10	25	M	28	1	1	1	+	—	Relapse
11	20	M	14	1	1	1	+	—	
12	12	F	9	2	2	2	+	—	
13	10	F	10	1	1	1	+	—	
14	10	M	10	2	0	2	+	—	
15	9	M	10	2	2	2	+	—	
16	32	M	10	1	1	1	+	—	Bronchial symptoms
17	20	F	60	0	1	1	+	—	
18	10	M	9	2	2	2	+	—	
19	21	M	40	1	1	1	+	—	
20	20	F	20	1	1	1	+	—	
21	20	M	28	1	1	1	+	—	
22	25	F	53	1	1	1	+	—	
23	12	F	14	1	1	1	+	—	
24	28	F	28	1	1	1	+	—	
25	25	M	70	1	1	1	+	—	
26	15	F	14	0	1	1	+	—	
27	27	F	70	0	1	1	+	—	
28	20	M	14	2	2	2	+	—	Bronchial symptoms
29	15	F	36	0	1	1	+	—	
30	5	F	50	1	0	1	+	—	
31	6	F	35	1	0	1	+	—	
32	25	M	24	1	0	1	+	—	
33	40	M	35	1	0	1	+	—	
34	6	M	28	1	0	1	+	—	
35	28	M	5	0	2	2	+	—	
36	16	F	4	1	0	1	+	—	
37	9	F	56	1	0	1	+	—	
38	4	M	62	2	0	2	+	—	
39	26	M	16	2	2	2	+	—	
40	48	F	40	0	1	1	+	—	Bronchial symptoms
41	7	F	27	1	0	1	+	—	
42	9	F	28	1	0	1	+	—	
43	20	F	11	2	0	2	+	—	
44	26	F	15	0	1	1	+	—	
45	30	F	6	0	1	1	+	—	
46	19	M	25	0	1	1	+	—	
47	30	M	15	0	1	1	+	—	
48	38	M	30	0	1	1	+	—	
49	26	F	20	1	0	1	+	—	
50	13	F	55	1	0	1	+	—	
51	17	M	35	1	0	1	+	—	Bronchial symptoms
52	18	M	7	1	0	1	+	—	
53	21	F	14	1	0	1	+	—	

The sign + stands for positive in this paper.

which were prepared by other persons and about which nothing was known to the writer. The colonies of each of the "unknowns" were so typical that, in every instance, I was able to pick those containing typhoid bacilli before resorting to the serum agglutination test, which I did later to confirm my opinion. Finding that my technic appeared to be satisfactory, I turned these "control cultures" to a new purpose by making Endo plates from those which were positive, at intervals, in order to ascertain if the bacilli would keep alive in the sputum for any considerable length of time. As the chart shows, all were alive at the end of sixty-one days, but "C" and "G" were not alive at the end of eighty-four days, or at least, if typhoid bacilli were still present, they were not demonstrable with the technic employed. Plates from those two specimens showed colonies resembling the ordinary typhoid colonies somewhat, but inclined to be more opaque, and did not agglutinate. In order to find out if saliva and sputum makes a suitable medium for the growth of typhoid bacilli, I made transplants from specimen "X," when it was twenty-one days old, into fresh saliva and sputum (this became "X transplant"), and sixteen days later I transplanted this into still another fresh specimen of the same material, which became "X transplant No. 2." Thirty-eight days later I inoculated another fresh lot of

CONTROL SPECIMENS OF SALIVA AND SPUTUM, OF KNOWN AND UNKNOWN ORIGIN, EXAMINED FOR TYPHOID BACILLI.

No.	Name.	Age.	Serum reaction.	Remarks.
1	"A" unknown	Fresh	+	Colonies typical
2	"B" unknown	Fresh	—	Colonies not typical
3	"T" known	Fresh	+	Colonies typical
4	"C" unknown	Fresh	+	Colonies typical
5	"D" unknown	Fresh	+	Colonies typical
6	"E" unknown	Fresh	—	Colonies not typical
7	"F" unknown	Fresh	+	Colonies typical
8	"G" unknown	Fresh	+	Colonies typical
9	"H" unknown	Fresh	—	Colonies not typical
10	"C" No. 4	7 days old	+	Colonies typical
11	"D" No. 5	7 days old	+	Colonies typical
12	"F" No. 7	7 days old	+	Colonies typical
13	"G" No. 8	7 days old	+	Colonies typical
14	"X" known	Fresh	+	Colonies typical
15	"C" No. 4	21 days old	+	Colonies typical
16	"D" No. 5	21 days old	+	Colonies typical
17	"F" No. 7	21 days old	+	Colonies typical
18	"C" No. 8	21 days old	+	Colonies typical
19	"X" No. 14	13 days old	+	Colonies typical
20	"X" No. 14	18 days old	+	Colonies typical
21	"X" Transplant	Fresh	+	Colonies typical
22	"G" No. 8	38 days old	+	Colonies typical
23	"X" Transplant	7 days old	+	Colonies typical
24	"D" No. 5	43 days old	+	Colonies typical
25	"X" Transplant	17 days old	+	Colonies typical
26	"X" Transplant No. 2	Fresh	+	Colonies typical
27	"C" No. 4	61 days old	+	Colonies typical
28	"D" No. 5	61 days old	+	Colonies typical
29	"G" No. 8	61 days old	+	Colonies typical
30	"X" No. 14	53 days old	+	Colonies typical
31	"X" Transplant	35 days old	+	Colonies typical
32	"X" Transplant No. 2	18 days old	+	Colonies typical
33	"C" No. 4	84 days old	—	Colonies not typical
34	"D" No. 5	84 days old	+	Colonies typical
35	"F" No. 7	84 days old	+	Colonies typical
36	"G" No. 8	84 days old	—	Colonies not typical
37	"X" No. 14	76 days old	+	Colonies typical
38	"X" Transplant	58 days old	+	Colonies typical
39	"X" Transplant No. 2	48 days old	+	Colonies typical
40	"X" No. 14	113 days old	+	Colonies typical
41	"D" No. 5	125 days old	+	Colonies typical
42	"F" No. 7	125 days old	—	Colonies not typical
43	"X" Transplant	95 days old	—	Colonies not typical
44	"X" Transplant No. 2	85 days old	—	Colonies nearly typical
45	"X" Transplant No. 3	41 days old	—	Colonies nearly typical

material from "X transplant No. 2," which thus became "X transplant No. 3." All of these subcultures were plated out on Endo's medium in the same manner as the specimens obtained from typhoid patients, and each gave a positive reaction when tested with the typhoid serum. Usually after the inoculated specimens were three weeks old, the plates showed very little beside typhoid colonies, the other organisms which were present on the plates made from the freshly inoculated saliva and sputum being apparently less resistant. In transplanting from one specimen to another one loopful of the old was added to about 4 ccm. of the material; these were always left in the laboratory at room temperature.

SUMMARY.

In a study of the saliva and sputum of 53 cases of typhoid fever, several of which showed bronchial symptoms, but none pneumonia or any laryngeal complications, the bacillus was not found by means of the technic employed.

Typhoid bacilli will live for at least one hundred and twenty-five days in the saliva and sputum and can be readily transplanted from one specimen of such material to another and kept growing in it at room temperature for a long time.

CONCULSIONS.

The examination of this limited number of cases shows that, in those uncomplicated by pneumonia or by laryngeal inflammation, the typhoid bacillus is not frequently found in the mouth.

In view of the reported finding of the bacillus in cases complicated by pneumonia and by laryngeal inflammation, it would seem that more work, especially upon cases showing these symptoms, should be done along the lines followed in this series.

While the sputum does not frequently contain the typhoid bacillus, it does so occasionally, and on that account it cannot be ignored as a source of infection.

THE NASAL SEPTUM: IMPORTANT POINTS IN ANATOMY AND SUBMUCOUS RESECTION.

BY OLIVER A. LOTHROP, M.D., BOSTON.

THE adult nasal septum is rarely perfectly straight and free from thickened areas and spurs. When the deflection and spurs are of such proportions as to cause nasal obstruction, resection

is indicated. A deviation or deflection is found only in the quadrangular cartilage and perpendicular plate of the ethmoid. The deflection may be a simple or double curve; it may be angular, resulting from a fractured cartilage. The septum

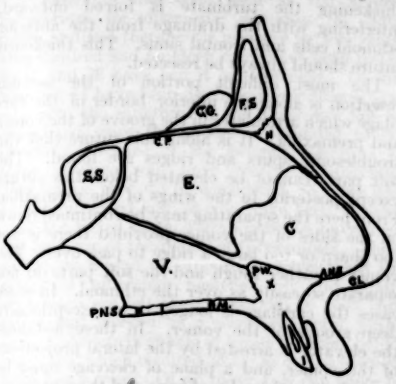


Fig. 1.

Approximate Median Section of Nose.

C.G. Crista Galli.
F.S. Frontal Sinus.
N. Nasal Bone.
C.P. Cribriform Plate of Ethmoid.
S.S. Sphenoidal Sinus.
E. Perpendicular Plate of Ethmoid.
V. Vomer.
C. Quadrangular Cartilage with Prolongation between the Ethmoid and Vomer.
A.N.S. Anterior Nasal Spine.
P.N.S. Posterior Nasal Spine.
P.W. Premaxillary Wing.
I. Portion of Incisor Tooth in Alveolar Process of Premaxilla.
P.M. Palatal Process of Superior Maxilla.
P. Palate Bone.
CL. Columella.



Fig. 2.

Vertical Section of Septum at *X* (Fig. 1) Showing Relation of Cartilage, Premaxilla and Soft Parts.

C. Cartilage with its Perichondrium.
P.M. Premaxillary Crest and Wings Covered by Periosteum. A layer of tissue extends between the cartilage and premaxillary crest and wings.
M.M. Mucous Membrane covering Perichondrium and Periosteum.

may be complexly distorted. Spurs and ridges may form on one or both sides of the septum. They are found at the line of suture formed by the cartilage and perpendicular plate of the ethmoid above, and the premaxilla and vomer below.

A clear understanding of the anatomy of the premaxilla and the vomer, their relations to one another and to the quadrangular cartilage, is most important. The premaxilla is a small, wedge-shaped bone which completes the anterior part of the hard palate and forms that portion of the alveolar process that supports the four upper incisor teeth. On the floor of the nose it presents a median grooved ridge. The anterior point is called the anterior nasal spine. Posteriorly, the borders of the groove expand into leaf-like processes called the premaxillary wings. The distance from the spine to the posterior extremity of these wings is about three quarters of an inch. The dipping down of the floor of the nose makes the posterior part of this ridge relatively higher than the anterior.

The vomer is a thin, quadrangular-shaped bone forming the inferior and posterior part of the septum. The inferior border articulates loosely with the median ridge formed at the junction of the palatal processes of the superior maxilla and the horizontal processes of the palate bones. The posterior border is free and forms the full height of the septum at the posterior choanæ. The superior border articulates with the body of the sphenoid bone. The anterior border is straight and has a groove like the premaxilla. This groove may extend quite deeply between the lateral leaves of the vomer. The anterior angle articulates with the premaxilla and rests within its groove. The naso-palatine artery and nerve lie in a groove along the side of the vomer parallel to the anterior border, and pass through the anterior palatine canal between the premaxilla and the palatal process of the superior maxilla.

The perpendicular plate of the ethmoid forms the superior and posterior parts of the septum, and the lower portion of its posterior border articulates with the groove on the anterior border of the vomer. This bone is very thin except at its anterior border.

The quadrangular cartilage completes the superior and anterior part of the septum. It articulates firmly with the inferior border of the perpendicular plate of tne ethmoid, and its inferior border rests within the groove of the vomer and premaxilla. This cartilage supports the tip of the nose and the bridge below the nasal bones.

A layer of mucous membrane covers both sides of the septum. This is adherent to the underlying perichondrium and periosteum of the septal bones and cartilage. The deepest layer of perichondrium and periosteum is easily separated from the cartilage and bones. It is only slightly adherent at the sutures, except where the cartilage joins the premaxilla. An examination of a large number of anatomical specimens shows that the deepest layer of perichondrium passes around the inferior border of the cartilage, between it and the premaxilla, joining with that of the other side. A thin, inner layer of periosteum is likewise reflected over the premaxillary wings and the groove of the premaxilla. This layer is fused with that of the perichondrium, and both are very adherent to the bone, but not to the border of the cartilage.

Many theories as to the etiology of deflections and spurs have been offered. It is not the purpose of this paper to enumerate or discuss these. In general it may be said that deflections are the result of unequal growth of the cranial bones. The fault may lie within the septum or in the

parts connected with it. The cartilage and perpendicular plate of the ethmoid are bent or distorted. Spurs and ridges are formed by the dislocation of the inferior border of the cartilage from the groove in the vomer and premaxilla. The border may be thickened, thus increasing the size of the spur. Thickening of the border of the cartilage without dislocation may take place, forming a rounded spur or ridge. The relations of the soft parts to the cartilage and premaxilla, as above described, are not altered by dislocation or thickening. Sometimes a strip of cartilage extends back between the ethmoid and vomer along the suture. In such cases a ridge may extend back to the sphenoid. In extreme cases the vomer may be dislocated from the premaxilla. Unequal eruption of the second dentition may tilt the premaxilla to either side, favoring dislocation of the cartilage to the lower side. Trauma is a less frequent cause of deflection of the cartilage. In these cases the deflection is often angular, well anterior and vertical in direction.

An accurate knowledge of the finer points of anatomy of the septum will greatly simplify the technic of submucous resection. In making the primary incision, the fact that the muco-perichondrium can be split into layers is important. None of these layers separate readily, but the deepest layer of perichondrium may be elevated easily from the cartilage; therefore, the incision should be carried to the cartilage before elevation is attempted. Unfortunately, the cartilage is very thin under the center of the primary incision. With the dissection started in the proper plane of cleavage, and with no angular deformity of the septum, a straight, blunt dissector may be pushed up parallel to the bridge of the nose as far as desired, and then the whole shaft swept downward to the anterior border of the vomer. The cartilage may now be divided opposite the initial line of incision and a similar stroke used to separate the soft parts of the other side.

In cases in which there is an angular deflection and an old fracture of the cartilage, a layer of fibrous tissue is found running in between the fragments. In this type it is unsafe to attempt to force the elevating past this scar tissue because there is danger of perforating the mucous membrane. The cartilage may be denuded as far as the line of fracture, and it will be found that the anterior fragment, when incised above and below, can be separated from the posterior fragment. If the fibers over the anterior edge of the posterior fragment be incised or scraped away with a sharp dissector, a fresh line of a cleavage can be started easily.

The septum is thickened at the junction of the cartilage and ethmoid. The union between the cartilage and bone is very solid and does not dislocate. The line of suture is often irregular and, roughly, is at right angles to the line of vision from the vestibule. The perichondrium is slightly adherent at this line, but does not communicate with the other side. The muco-periosteum elevates more easily from the ethmoid, but is thinner. The plate of bone itself may be so thin that the elevator penetrates accidently to the other side. The line of suture between the cartilage and the ethmoid is approximately opposite and parallel with the lower border of the middle turbinate in many cases. In abnormal thickening the turbinate is forced outward, interfering with the drainage from the anterior ethmoid cells and frontal sinus. This thickened suture should always be resected.

The most difficult portion of the septum resection is along the inferior border of the cartilage which articulates in the groove of the vomer and premaxilla. It is along this suture that the troublesome spurs and ridges are found. The soft parts cannot be elevated below this suture except posterior to the wings of the premaxilla. From here the separating may be continued down on the sides of the vomer provided there is not too sharp or too large a ridge to pass over. The vomer is rather rough and the soft parts do not separate so easily as over the ethmoid. In some cases the cartilage is lodged in an exceptionally deep groove of the vomer. In these instances the elevator is arrested by the lateral projections of the vomer, and a plane of cleavage must be started along this edge of bone and the separation continued downward.

Before attempting to separate the soft parts from the premaxilla and spur connected with it, remove the section of cartilage that has been denuded. The inferior border of the cartilage, whether dislocated or thickened, is then easily enucleated from its bed. The primary incision in the cartilage should first be carried down well into the groove in the premaxilla. The tissue which unites the two layers of soft parts and passes between the cartilage and the premaxilla is now exposed. This should be incised parallel with and close to the border of the premaxillary wing on either side, cutting downward against the bone. The severed tissue should be scraped from the bone over the border of the premaxillary wings, when it will be found that the muco-periosteum separates readily from the sides of the premaxillary ridge and wings down to the floor of the nose. The denuded premaxillary wings and ridge can then be removed easily with bone-cutting forceps.

The primary incision should be made preferably on the side having the sharpest spur. This leaves undisturbed the side which offers the best hope of separating the soft parts intact. Another advantage is that the initial incision may be carried down under the spur along the junction of the floor of the nose and the ridge of the premaxilla. Elevation of the muco-periosteum can now be started from below and carried up to the point where the tissue is reflected to the other side. This barrier to further elevation may thenbe cut.

AT the meeting of the State Medical Society in May a resolution was adopted approving of the plan of holding a world's Panama exposition at New Orleans in 1915, and expressing the belief that a proper impetus would be given thereby to matters of sanitation. *Jour. Am. Med. Asso.*

THE USE OF TUBERCULIN AT THE SHARON SANATORIUM.*

BY WALTER A. GRIFFIN, M.D.,
Resident Physician, Sharon, Mass., Sanatorium.

TUBERCULIN has been used at the Sharon Sanatorium for diagnostic purposes for eight years, and as a therapeutic measure for five years. One hundred and nineteen cases have been tested by it, and 36 have had it as treatment. Of this number, 44 have been discharged less than a year ago from the sanatorium, and these will not be considered, since this report is intended to be, in part, a record of the present condition of those patients who have received tuberculin. This leaves, then, to be considered, 83 cases who have been tested and 28 who have been treated.

Of the tested cases, 4 are known to have died, but only one of these died of tuberculosis. There can be no reason to suppose, however, that the giving of tuberculin hastened her end in any way, since she left the sanatorium in good condition and worked as a nurse for eight years. In fact, she was in charge of a case the week before her death, which resulted, as far as can be learned, from hempotysis. Of no other case can there be raised the suspicion of any detriment from the test. The usual procedure has been in each case to give 2 mgm. the first time, followed, in case no reaction occurred, by 5 mgm. and 10 mgm. Eight cases failed to give a reaction with 10 mgm. and were discharged "apparently well." They all showed suspicious signs in the chest, and one in particular had a well-marked area in the base of the right lung where there was dullness, diminished respiration and moist râles. The sputa, which were rather free at times, never contained tubercle bacilli, but always contained pneumococci in abundance. Since discharge she has been working as a domestic for four years. The signs in the chest have persisted without any increase and with no failure of the general health.

Our experience at Sharon would be, in brief, that it is wise and safe to test all cases with signs in the chest who do not present tubercle bacilli in the sputa, using for this test the subcutaneous method. This makes possible the best use of a sanatorium for incipient cases, for it should be, namely, a place where doubtful cases may be sent and tested for tuberculosis. If disease is found, a cure should be begun and the patient should be taught sanatorium methods. Neither does there seem to us any harm in using as high a dose as 10 mgm., since, when this dose is worked up to gradually, it does not cause a severe reaction. And, further, if a less dose were taken as the limit of use, some cases would fail to be detected who might need sanatorium treatment. The following table shows the dose required to establish the diagnosis in the whole 83 cases.

1 milligram,	1 case
2 milligrams,	12 cases
3 "	3 "
4 "	4 "
5 "	35 "
8 milligrams,	1 case
10 "	12 cases
Cutaneous and general,	1 case
Before entrance,	3 cases
10 milligrams, negative,	8 "
7 " "	1 case
5 " "	2 cases
	83 cases

Treatment with tuberculin was begun rather experimentally on 3 cases who were moderately advanced and who had apparently come to a standstill in their improvement under general hygienic conditions. They seemed peculiarly fitted, therefore, to test the value of some treatment in addition to the regular sanatorium régime. The first patient was admitted April 20, 1903. There were well-marked signs all over the left side of the chest and at the top of the right. The sputa contained many tubercle bacilli. With ordinary sanatorium treatment the cough and expectoration ceased and the weight increased 42 lb. She was discharged at the end of eight months with disease arrested. Within a year she was back with renewed cough and expectoration and as bad general condition as at the time of first admission. For five months the physical signs and general condition remained about the same. Bacilli could be demonstrated in the sputa at any time. Finally, since there had been no appreciable change since entrance, Dr. Bowditch decided to try tuberculin, which was given for five months, and under its exhibition the cough and expectoration ceased and the physical signs improved to a marked degree. Since discharge she has had to work at intervals in rather unsanitary surroundings. In spite of this she has kept in good condition, now five years after discharge. The second case had been in the sanatorium three and a half months when tuberculin treatment was started. The weight had improved a little, but all other symptoms had increased. The extent of disease in the chest was greater, the cough was more frequent, the expectoration more copious, the temperature had begun to go up in the afternoon and the voice had become husky, the larynx showing definite inflammatory changes. Treatment was continued for seven and a half months. She was discharged in excellent condition and she now boasts that she feels perfectly well and has not seen a doctor since she went home in December, 1905. The third case first received tuberculin after a stay of six months, and treatment was extended over seven months. Improvement was but slight and the subsequent history has not been good, although the patient is still alive. These first three cases were so encouraging that each year more have been given tuberculin treatment, until at present there are ten having it, or nearly half the capacity of the sanatorium.

In all cases either old tuberculin or bouillon filtrate have been used. These products are probably safer than some of the others and the results in our hands and in the hands of other observers seem as good as with any other tuberculin. Each investigator has large claims for his own methods of manufacture, but no one has as

* Read before the American Climatological Association, May 5, 1910.

Stage (Turban).	Number.		Apparently Cured. (Per Cent.)		Arrested. (Per Cent.)		Improved. (Per Cent.)		Unimproved. (Per Cent.)	
	Tr.	Untr.	Tr.	Untr.	Tr.	Untr.	Tr.	Untr.	Tr.	Untr.
I	11	93	54	61	36	22	9	14	0	1
II	15	32	6	3	60	25	26	63	6	10
III	2	10	0	0	0	0	0	30	100	70

yet found the perfect product nor, in fact, any that gives better apparent results than old tuberculin and bouillon filtrate. With our own cases those who have received old tuberculin have shown no apparent difference to those who have received bouillon filtrate.

Of the 28 cases who haye received the treatment, 6 have died. Two of these were far advanced at the start and were given injections at their own request. Three others who were not favorable cases were given tuberculin on the chance that it might help when all probibility of help by ordinary means seemed futile. The sixth case did well and left the sanatorium in good condition, dying about a year later of a sudden hemoptysis. Two others of the 28 returned to a poor environment, contrary to advice, and are not doing well. Two more have relapsed in spite of care. These last cases may improve in the future, and from what can be learned they are certainly not hopelessly sick. This leaves 18 who are in good condition, — an encouraging record, it seems to us, when it is understood that all but 5 cases were more than incipient, and all but 3 had tubercule bacilli in the sputa. The above table shows the condition and result of treatment of all cases discharged between May 1, 1905, and May 1, 1909.

It might appear from this that more cases could be apparently cured in Stage 1 without tuberculin, but the majority of the 61% untreated in this class were given tuberculin as a test, and such cases usually can be discharged "apparently cured" whatever treatment is instituted. It might be argued that test cases are most suitable for treatment, since they would practically always be able to take treatment without disagreeable effects manifesting themselves, and they would be made as resistant to tuberculosis as possible by any means now at our disposal.

From our experience at Sharon, both Dr. Bowditch and I feel that tuberculin when carefully given is not likely to do any harm and that it frequently is of great benefit, affecting a cure in some cases that would not be expected to do well under ordinary methods of treatment, and, finally, that no cases of frank tuberculosis should be denied the privilege of tuberculin treatment if they desire to have it.

Reports of Societies.

RHODE ISLAND MEDICAL SOCIETY.

On May 17, 1910, the Rhode Island Medical Society elected the following officers for the ensuing year: President, Dr. Augustine A. Mann, Central Falls; First Vice-President, Dr. Frederick T. Rogers, Providence; Second Vice-President, Dr. Alexander B. Briggs, Ashway; Secretary, Dr. Stephen A. Welch, Providence; Treasurer, Dr. Winthrop A. Risk, Providence; Committee of Arrangements, Drs. A. A. Barrows, J. B. Ferguson and F. E. Burdick; Committee on Legislation, Drs. G. T. Swarts, W. F. Gleason, W. L. Munro, the president and secretary *ex-officio;* Committee on the Library, Drs. Day, Hersey, Collins, G. S. Mathews and Partridge; Committee on Publication, Drs. G. D. Hersey, C. M. Godding and G. S. Mathews; Curator, Wm. J. McCaw; Committee on Necrology, Drs. E. E. Pierce, Adrian Mathews and G. T. Spicer; Alternate Delegate to the House of Delegates of the A. M. A. for 1910 and 1911, Dr. Wm. B. Cutts; Auditor for two years, Dr. F. T. Fulton. The president appointed the following committees: On Building, Drs. J. W. Mitchell, R. F. Noyes, F. T. Rogers, F. H. Peckham and J. M. Peters; on Medical Education for three years, Dr. G. T. Swarts.

The treasurer reported that a special fund of $5,000 had been received from the estate of the late Dr. Horace G. Miller, which fund is to be used to maintain the ophthalmological library.

The annual report of the secretary showed that the society numbered 384 members, divided as follows: Resident, 345, non-resident 27 and honorary 12.

For the committee on legislation, Dr. G. T. Swarts introduced the following resolutions, which were unanimously adopted:

Resolved, That the Rhode Island Medical Society endorses the purposes of the Owens Bill now before the U. S. Senate, which provides for a Department of Health and urges upon the Senators and Representatives in Congress from the State of Rhode Island that they bring every influence to bear for its passage.

Resolved, That a copy of this resolution be forwarded to each member of Congress from this state.

At the annual session, held May 31, 1910, announcement was made that two Fellows had died since the last meeting: Drs. George F. J. King on April 12, 1910, of pneumonia, and George H. Kenyon on May 7, 1910, of nephritis.

Additions have been as follows: Dr. John E. Duffy, Natick; Dr. Harry V. Carroll, Newport; Drs. Peter W. Hess and Charles H. Holt, Pawtucket; Drs. Frank M. Adams, Harold G. Calder and Alfred W. Love, Providence, and Dr. James A. King, Woonsocket.

The Caleb Fisk Fund prize of $200 for the best essay on the subject, "The Classification and Treatment of the Diseases Commonly Known as Rheumatism," was awarded to Dr. Frank E. Peckham, of Providence.

In 1911 a prize of $200 is offered for the best essay on the subject of "Vaccine Therapy."

For the year ending May 1, 1911, a Chase-Wiggin Fund prize of $90 is offered for the best essay on the subject, "Tobacco, and its Evil Effects in All Its Forms on Those Who Habitually Use It."

The following is an abstract of the addresses and papers.

THE ANNUAL ADDRESS OF THE PRESIDENT, DR. EUGENE KINGMAN, PROVIDENCE.

There is a universal law of growth and achievement. The man who knows himself, understands his own powers and aptitudes, forms purposes in accord with them and pursues these purposes steadily is the man of success. Thus says Francis Parkman.

So this society must know itself. By a provision of our charter we can hold property, a body politic and corporate. "Men may come and men may go, but [we can] go on forever." In part we have accomplished the purposes for which this society was created. Directly or indirectly we have taken part in the creation and adminstration of health boards, the founding and serving of hospitals, the improvement of food, the restraint of disease and the enactment of wise medical laws.

We have done something to advance the art of medicine by our prizes and publications.

Much attention is paid to-day to the conservation of our national resources, and the greatest resource of all, the national health, until recent times comparatively neglected in the rapid material development of the country, is gradually assuming a place of the first importance in the public mind and conscience. Our society, perhaps the most important factor in the conservation of the health of Rhode Island, and its needs, is my subject to-day. We have two great needs: first, a home; second, money.

For ninety-eight years we have wandered from place to place, hiring whatever hall we could get. We need a place for a library, some thirty thousand books, including several complete and valuable files of medical journals.

We need a large amount of money to further the purposes for which the society was founded. We need a building with its assembly and committee rooms, a salaried librarian and a book delivery system. We should have a complete laboratory and the services of a pathologist day and night.

We should be able to employ eminent counsel to draft just medical laws.

We should be able to pay certain chairmen of our committees to give all their time to the committees. We should have an emergency fund.

Legislators are sometimes slow, and quick relief of impending evil often seems impossible. The amount needed is too large to be raised from members of this society. Physicians, as you well know, with few exceptions, after giving of their time and money to various charities, and paying their living expenses, have too little left to contribute largely to this cause. The endowment must come chiefly from the public and when the community understands that our work is to improve the physician, advance our art and help the people, they will in time respond generously.

Is it too much to foretell, that in two years we shall celebrate our centennial in our own building?

THE TONSILS.

Dr. Harlan P. Abbott, Providence. The tonsillar ring of Walderyer comprises four lymphoid structures, the faucial tonsils, the lymphoid tissue in the naso-pharynx and the lymphoid tissue at the base of the tongue. When enlarged, these structures are named enlarged tonsils, adenoids and lingual tonsils. Like the appendix, the tonsils are thought by some to be vestiges of once useful organs.

The anatomy of all is much the same though the faucial tonsils are more highly developed than the pharyngeal or the lingual. They are masses of lymphoid tissue held together by a stroma of connective tissue. The exposed surfaces are covered by mucous membrane, which in places dips down deep into the body forming lacunæ. Beneath the lacunæ are rows of follicles. The investing fibrous capsule attaches the tonsil to the superior constrictor muscle. The faucial pillars in front and behind and the folds of mucous membrane above and below envelope the tonsil. These folds are important as they often cover up large lacunæ and prevent the escape of débris and bacteria lodged there.

The tonsils act as the first line of defense against bacteria.

When weakened by disease the tonsils are the portals by which bacteria gain entrance, passing the epithelial lining and through the parenchyma to the lymphatics and blood vessels. These paths were pointed out in 1889 by Sir Andrew Clarke, who cited rheumatism as a possible result of such invasion. Since then numerous observers have recognised the tonsils as the entrance door for various diseases, setting up septic joint and endocardial disorders as well as tuberculosis.

Attempts are now being made to show that the tonsils when healthy have the function of taking care of the débris from neighboring organs.

The tonsils are more or less large up to puberty, when usually they subside to insignificant size.

Others are the source of frequent attacks of inflammation and enlargement, obstructing breathing, talking and eating; interfering with the circulation of neighboring organs as the Eustachian tubes and so interfering with the integrity and function of the ears. Chronic enlargement follows repeated inflammatory attacks and various children's diseases.

Hypertrophied tonsils are to be removed when obstructive symptoms are present. Diseased faucial tonsils should be removed *in toto*, capsule and all, unless the case is that of a bleeder.

Adenoids leading to ear disease, slow development and deformities also require removal. These adenoids may recur even when carefully removed.

In conclusion attention may be called to the following points:

1. That the tonsils are frequently the open avenue for local and general infection.
2. That simply because the tonsil is enlarged is not sufficient reason for removing it.
3. That the true function of the tonsil is still *sub judice*.
4. That the tonsil, as a rule, should not be removed when acutely inflamed.
5. That a diseased tonsil should be thoroughly eradicated, including the capsule.
6. That adenoids may return in young subjects even if they have been thoroughly removed.
7. That the operating surgeon should be prepared to control obstinate bleeding, primary or secondary.

THE EYE IN THE DIAGNOSIS OF GENERAL DISEASE.

Dr. Frederick T. Rogers, Providence: In this day when no diagnosis is complete without its laboratory findings, it may not be amiss to call attention to some elements of diagnosis which are not dependent on other than our own powers of observation. The eye is not to be relegated to the oculist; the general practitioner can recognize in it an important aid to diagnosis.

The general expression of the eye may afford us valuable information; the lids give evidence; the action of the muscles is significant.

On the conjunctiva hemorrhage in young people may show diabetes; in the aged, arteriosclerosis. The term

conjunctivitis is a sort of " catch all " for physicians. As a matter of experience there is a simple rule which will determine whether it is the conjunctiva, the iris, the sclera or the cornea which is affected. In conjunctivitis there is a disturbance of secretion without pain or photophobia; in corneal disease there is no increase of secretion but marked photophobia and subsequent pain, while in iritis there is a predominant pain and lacrimation and photophobia, dependent on the severity.

The form of conjunctivitis most infrequently recognized is the phlyctenular. This is frequently associated with disturbance of digestion. In children an improper amount of sweets, tea drinking or irregular eating is the cause. The color of the sclera, as in jaundice, chlorosis and nephritis, is significant. Scleritis accompanies gout, rheumatism, syphilis and intestinal intoxication. Keratitis, phlyctenular and ulcerative, shows struma, parenchymatous, in 75% of the cases of syphilis and the dendritic when associated with supraorbital tenderness, malaria.

Iritis is frequent with syphilis, gonorrhea, diabetes and rheumatism.

Paralysis of the muscles is shown by a squint or diplopia.

Which muscle is affected is shown by noting that it is always on the side where the doubling occurs and belongs to the eye that sees the object that appears most distant.

With knowledge of nerves and anastomoses we may decide extra- and intra-cranial lesions and location of lesions.

Von Graefe states that one third of all ocular palsies are specific.

The pupil has certain normal conditions and reactions, the departures from which are symptoms of disease. The findings of the ophthalmoscope are often indications of organic lesions. The means at our disposal of determining whether headache is or is not ocular in origin should be known to every one. Headache due to the eyes will show an affection of the lids and conjunctivæ secondary to errors of refraction as well as by disturbance of vision. The practitioner should use Snellen's chart and if the patient cannot read the letters at their proper distance may assume that the disease is defective vision.

Retinoscopy should also be known. In a dark room illumination of the eye at a distance of a meter shows a shadow which moves across the pupil. If the shadow moves with the mirror there is hypertrophia; if against it, myopia. If it moves faster in one meridian than in another, there is astigmatism.

Muscular anomolies are indicated simply by a test with red glass.

If one looks at a candle some distance off with a red glass over one eye, paralysis of one external muscle is shown by diplopia.

It there is functional paresis a strong cylindrical glass in front of either eye will throw a red image and a white bar of light.

In glaucoma a disturbance of the tension of the globe is frequently not recognized.

An address on " Graves Disease " was given by DR. JAMES G. MUMFORD, of Boston, and published in full on page 731 of this JOURNAL.

At the close of the session Dr. Augustine A. Mann was introduced as the president for the ensuing year.

The annual dinner followed, at which Dr. William F. Gleason was anniversary chairman. Dr. Timothy Leary of Boston spoke on " Immunity with Special Reference to Vaccine Therapy "; Hon. Edward F. McSweeney of Boston on " The Economic Aspect of the Treatment of Tuberculosis " and Dr. J. Alex Hutchison of Montreal gave an address.

THE AMERICAN NEUROLOGICAL ASSOCIATION.

THIRTY-SIXTH ANNUAL MEETING, MAY 2, 3 AND 4, 1910.

WEDNESDAY MORNING SESSION.

(Concluded from No. 3, p. 102.)

DR. ERNEST JONES, Toronto, Canada: It is too late to attempt to crush out Freud. The movement has already attained such dimensions that it can only be delayed; it cannot be crushed. There is now a large international society with sub-sections devoted to it. There are over two hundred trained workers in Denmark and Russia and Italy. There are four periodicals devoted to the work, besides the mass of literature that has appeared in the general neurological literature, and the movement has attained such dimensions that it has even reached England. It is perfectly easy with such startling principles as Freud formulates to form all sorts of excuses and pretexts which are not based on actual experience, which no one in this room has had excepting Dr. Putnam. Experience with the method is the only primal solution and the only primary criterion for the truth of these matters.

DR. JAMES J. PUTNAM, closing: Dr. Freud is one of the ablest and most intelligent physicians in Europe and one of the most honest and conscientious. His whole attitude towards the question was practically the same as the atittude of the various gentlemen who have spoken to-day. He simply then took up the fact which he had not invented, although his has been called by Dr. Knapp an hypothesis. It was never an hypothesis. It was a generalization upon the facts. They forced themselves upon his notice. He took them up in a thoroughly conscientious way, then dealt with them in an extraordinarily broad and scientific way. He brought them together with a thoroughness which no one can have any conception of. There is a great deal of misunderstanding of this sexual questioning. One does not take a young unmarried girl and begin to talk to her about her sexual relations. It would be very extraordinary if any one should do that. The sexual ideas are the ones the patient himself brings out. That Freud has always contended. If one had to summarize the value of this matter from the therapeutic side, the only word that fits the case is education. Dr. Mills spoke of the cruelty of trying to force patients into reviewing the things of which they are afraid; this would be true without explaining to them the nature of the enemy they had to meet. Of course as regards the length of time to which Dr. Sachs referred, that is not a criticism against the method; those who do not choose to spend the time, need not. We all of us spend vast amounts of time in studying the anatomy of the nervous system, and we are devoting ourselves to this study, to the anatomy of the mind. One is quite as justifiable as the other. Then again, the persons who speak as though the sexual thought were brought out in these patients' minds have failed to recognize that they are suffering from these thoughts, and the purpose is not to dwell on sexual thoughts, but to relieve their minds from sexual thoughts which in another form are active and producing symptoms.

As to the objection to the patient's probing himself, it is injurious to him to probe himself alone, and it is to prevent the patient from doing this that the patient is encouraged to probe himself before the physician; the patient probes himself alone from morning to night otherwise, and it is to make it impossible for him to do this that we use this treatment.

Dementia Precox Symposium.

The following paper by Dr. Smith Ely Jelliffe, New York City, was read by title, "Predementia Precox. The Hereditary and Constitutional Factors of the Dementia Precox Makeup."

THE GENERAL CONCEPTION OF DEMENTIA PRECOX.

Dr. Adolf Meyer, New York: Kraepelin created the picture of dementia precox under a set principle of nosology, with general paralysis as the paradigma: each disease has its specific lesion, and a true clinical entity has its unity of cause, course and outcome, and is necessarily the clinical picture of a unitary and specific lesion. General paralysis is indeed a specific disease-process best characterized by its lesions and by its definite syphilitic origin; but in dementia precox the nature of the lesion is not as decisive. The departure of our recent work consists in the surrender of nosological dogma for greater interest in the dynamic interpretation of the disorders out of the psychobiological material at hand as preferable to a dogmatic assumption of a hypothetical unitary toxic principle. The studies of metabolism and toxic states so far furnish nothing specific or decisive in regard to dementia precox. The neurological and histological data appear rather as incidental to more clearly definable functional data than with a leading rôle. The data of conduct and behavior and of reactive material of the patients have proved much more directly helpful in furnishing constructive material. The etiological constellations are necessarily complex. According to the makeup, the same results may be reached by combinations of marked constitutional peculiarity and slight external cause, and slight over constitutional peculiarities and marked external cause. The essential is the break of compensation of mental (chiefly emotional and volitional) adjustment with more or less deficit, and in most cases with the peculiar attempts at balance and reconstruction which constitute the glaring surface-picture of the clinical description and the special mechanism of the analytical consideration. The main question is, of course, whether the psychobiological estimates make it possible to distinguish differences of individual risks and prognosis, which would be preferable to the wholesale prognostication under an excessively broad "disease entity." Evidence seems to favor the postulate of a departure from the Kraepelinian dogma. Dementia precox is essentially unlike general paralysis and more like the usually inevitable outcome of (1) conflicts of instincts and (2) incapacity for a harmless constructive adjustment.

ON SOME OF THE MENTAL MECHANISMS IN DEMENTIA PRECOX.

Dr. August Hoch, New York: The topic assigned to me in the symposium was the symptomatology of dementia precox from the point of view of the content of the psychosis. In certain paranoic states, such as those described by Rüdin and Gaupp, also in a certain type of psychosis recently analyzed by Birnbaum, the content of the psychoses represents conflicts and reactions to conflicts which the individual, owing to a constitutional defect, was incapable of handling adequately. The clinical picture of dementia precox is much more complicated and often presents apparently a disconnected array of manifestations. When it is possible to analyze these, however, it is found that all the experiences mean something to the patient; that certain Freud mechanisms are at work, and that these apparently disconnected symptoms are connected and related to definite trends. The frequency with which sexual conflicts are found in the history of such patients and the fact that so often sexual trends make up the content of the psychosis point to a lack of sexual adaptation. Our memories are grouped, as it were, in more or less extensive and more or less circumscribed complexes or centers of attraction, in the formation and cohesion of which special interests take an important part. We can conceive of the mind, therefore, as made up essentially of trends of interest. In the course of individual development certain main tendencies of the personality develop which then take the lead, while other tendencies become repressed. These repressed trends exert, nevertheless, a marked influence on the conscious thought and activity, as Freud has shown; but in normal life they do so mainly through the fact that the energy they supply is led into profitable channels. Every trend naturally pushes towards a realization in the direction of its feelings. If this is in harmony with the main tendencies of the personality, this is useful and represents the dynamic force behind our thinking and our pursuits, adapted to the environment and the given situation. If, however, trends which are not in harmony with the main tendencies of the personality, and which are, therefore, under the influence of repression, no longer find an outlet in profitable channels, but assume a more or less independent dominating rôle, it is not to be supposed that the laws which govern normal mental activity should be suspended; on the contrary, we shall expect to find the same principle of the trend pushing towards its realization, while at the same time the other tendencies of the personality assert themselves in repressing influences as well as in adjustment reactions, but, owing to the disturbances of balance between the usurping trend and the main tendencies of the personality, the thinking and acting is then no longer adapted to the actual situation, but appears as something strikingly out of contact with it, and is of a simpler, more crude type. This, in so far as the mental side is concerned, is what seems to take place in the cases of dementia precox which can be analyzed—the overgrowth of certain trends at the expense of the main, adapted interests of the personality.

Wednesday Afternoon Session.

The meeting was called to order at 2.45 P.M. by the President, Dr. Morton Prince, Boston.

A STUDY OF ERRORS IN THE DIAGNOSIS OF MENTAL DISEASE.

Dr. E. E. Southard, Boston: A series of 250 cases of mental disease, with *intra-vitam* diagnoses by several physicians, recorded at the Danvers State Hospital daily clinics, 1904–8, has been subjected to anatomical review for the sake of learning where lie the greatest difficulties in diagnosis. Ten cases (4%) remain both clinically and anatomically obscure. Seven cases (2.8%) had diagnostic doubts settled after the clinic either *intra-vitam* or *post mortem* (1 case each of general paresis, cortical arteriosclerosis, cerebral sclerosis with Graves' disease, streptococcus septicemia, epilepsy, streptococcus meningitis, cerebellar abscess). Sixty-six cases (26%) were doubtful clinically, but the correct diagnosis was obtained by one or more diagnosticians in 49 of the 66 (74% of the doubtful group); 184 cases (74%) were clinically certain, and the clinical diagnoses were confirmed (or not altered) by autopsy in 163 of the 184 (89% of the unanimous groups). The correct diagnosis was obtained by one or more diagnosticians in 49+163=212 cases in 250 (85%). The "correctness" of these diagnoses is subject to some reservation, (1) since within the "organic and senile dementia group" differentiation proved difficult, and (2) since anatomical "consistency" often

signifies absence of characteristic lesions. The acute psychoses have been reviewed, however, bearing in mind modern views. Several alcoholic cases failed to exhibit striking brain lesions. The majority of the real diagnostic difficulties uncovered by this analysis would appear to require more intensive work in the field of clinical pathology. For such work in psychopathic hospitals, this paper is an appeal.

DR. COTTON, Trenton, N. J.: The question of error is one that is very important, and error in diagnosis is one that cannot always be averted; however, at Trenton we find that by presenting the cases twice at staff meetings the errors have been reduced very much. We take up the cases that come to autopsy, correlate them with the clinical diagnosis, and give the results the benefit of the staff. This acts as a stimulus to each man and shows errors both in physical diagnosis and mental diagnosis. The therapeutics could be improved by having a more correct diagnosis. I know of nothing more serviceable to clear up diagnosis than lumbar puncture. If we take it up in organic and functional cases that are at all suspicious, the negative findings in everything except general paralysis make it a very important factor in arriving at correct diagnosis.

ON THE DIFFERENTIATIVES OF DEMENTIA PRECOX AND DEPRESSED STATES BY SO-CALLED BIOLOGICAL BLOOD TESTS.

DR. ELLEN CORSON WHITE and S. D. W. LUDLUM, Philadelphia: While the Wassermann reaction is of greatest value in differentiating syphilis and non-syphilitic diseases of the nervous system, it does not permit of further differentiation in so-called functional nervous diseases. Recently Much published a method by which he believed he could differentiate dementia precox and manic-depressive disease from other disease; the method is based on the inhibiting action of blood serum in cobra hemolysis. His results have not been confirmed by others. We wish briefly to state that we seem to have been able to differentiate between dementia precox on the one hand and melancholia on the other. Our method is based on the determination of the fixation of complement of guinea-pig serum by the serum of the patient. We found in melancholia that the amount of complement absorbed is very much larger than of all other diseases that we have studied, and also much larger than dementia precox, in which disease it is approximately normal. We have tested 67 cases of various mental diseases. Thirty-seven melancholics of manic-depressive type and involutional forms have so far been decisive and characteristic in all cases examined. We also found by carefully standardizing the factors in Much's test that it gave a positive test only in dementia precox. When the standardization was not done, a positive result was often obtained. The syphilitic cases, of course, can be separated by the Wassermann reaction and progress in biological tests is making it possible to discover chemical changes in so-called functional diseases.

THE CLINICAL SIGNIFICANCE OF THE URINE IN "NERVOUSNESS."

DR. EDWARD B. ANGELL, Rochester, N. Y.: I have noted for a number of years in examination of urine of patients afflicted with "nervousness" that in making the Heller nitric acid ring test there is formed at the junction of the urine and acid a pigment ring which varies in color from bright red to dark brown. Of the chemical nature of this ring I am unable to give any account, but believe I am safe in saying that it probably consists of some of the organic nitrogen compounds. It is a reaction entirely different from that given by indican or bile, although these substances may be associated. A similar reaction occurs in cases of ex-ophthalmic goiter and in those taking iodide of potash. That it is associated with excessive nitrogen elimination is shown by the fact that it is almost never present on a non-proteid diet. The patients who show this reaction are those who complain of headache, backache, restlessness, sleeplessness, numbness and a general, depressed feeling, associated with other symptoms generally classed as nervous. If such cases are put on a diet low in nitrogen, lead an open air life and are given salicylates and alkalies to aid elimination, they will be relieved of their symptoms and at the same time this reaction of the urine will disappear. From two weeks to two months are required for a cure. In obstinate cases a year may be required.

DISCUSSION.

DR. EDWARD D. FISHER, New York City: It seems to me that Dr. Angell has given us a rather easy clinical method of diagnosis. If we can find this ring, as he evidently has found it so frequently, a thing that can be done very readily in our offices, it will aid us at least in determining whether our cases are organic or functional. I would endorse very emphatically the point that Dr. Angell brought out, that there is very frequently a physical cause for many mental symptoms. The treatment as he has outlined it is one which I have long carried out in cases of neurasthenia, but we often do it in a wavering way. Now that we have a positive diagnosis of the metabolic changes which are going on, we will be encouraged to be more systematic in our medical treatment of these cases.

RADICULITIS OF CERVICAL AND BRACHIAL PLEXUSES, SECONDARY TO PACHY-MENINGITIS EXTERNA CERVICALIS GUMMATOSA.

DR. F. W. LANGDON, of Cincinnati: A white man of thirty-three, married, healthy children. Occupation, superintending outdoor work, grading, etc. Gradually developed a paralysis of tetraplegic distribution, beginning in left forearm and hand, and extending in the course of fourteen months so as to render useless all four extremities. The upper extremities were flaccid, the lower spastic, with plus knee-jerks and Babinski sign. The paralysis was preceded by sharp pains in left neck and face. Neck movements were almost abolished,—not by paralysis of muscles, but by articular obstruction. Numbness and tingling were extensively distributed over both arms and legs. A smooth, firm, not bony, boss could be felt in the left side of the neck between the third and fourth cervical vertebræ. The patient was unable to walk without constant danger of falling and was unable to grasp a pencil with either hand. Vision was good; pupillary changes slight; ocular movements free, with slight nystagmoid jerking on extreme lateral excursion. Some dysphagia at times. No voice or tongue changes. Sensory changes slight, excepting the initial pain in the left neck and face, which was not prominent after the first month. There was a hand-size area of tactile anesthesia over the left thorax and one twice as large over the right abdomen, where temperature sense was disturbed or confused. Diagnosis was made of an exudate (gumma) situated between cervical dura and periosteum enclosing the nerve roots and compressing the lateral columns of cord; a radiculitis and compression myelitis, secondary to pachymeningitis externa. Under mercury by inunction and supporting measures steady improvement occurred and patient was discharged at his own request in five and one-half months, having gained 25 lb. in flesh, and the use of all ex-

tremities. Three months later he resumed his regular occupation. A year later is able-bodied, can use pick and shovel well whenever necessary and attends to his full duties in every respect.

FURTHER OBSERVATIONS ON THE OCULAR CHANGES IN GENERAL PARESIS AND TABES DORSALIS.

Dr. Edward D. Fisher, New York: In the examination of 50 cases of general paresis both of the tibic and cerebral type, the writer confirms a former statement made in a paper read before the American Medical Association in 1909 that optic atrophy and ocular muscle paralysis are comparatively rare in general paresis as compared to their frequency in tabes; nor again are the muscular paralyses permanent, as a rule. Clinically this would seem to mark out the two diseases as distinct. In the 50 cases, only 2 had optic atrophy, and none any third nerve lesion outside of the Argyll-Robertson pupil. In the cerebral type of general paresis, that is, those cases of exaggerated reflexes, the Argyll-Robertson pupil is often absent in the early stages. Among over 200 cases of general paresis, only one presented a history of tabes extending over a number of years preceding the mental symptoms with the lightning pains, crises and ataxia.

LENTICULAR ZONE AND ANARTHRIA.

Dr. Alfred Gordon, Philadelphia: The anatomo-clinical case which I report shows that Marie's contention in regard to aphasia cannot be entirely confirmed by the pathological findings. The destruction of the lenticulo-caudate nuclei was complete and yet the patient did not present the least indication of anarthria or dysarthria. The speech was clear and distinct. The patient did, however, present a partial word-blindness and partial verbal amnesia, all symptoms of sensory aphasia. The few symptoms of the latter correspond to Marie's ideas. The conclusion to which my observation leads is that, while the so-called lenticular zone of Marie may play a certain rôle in sensory aphasia, its rôle is not considerable. As to its being a center for anarthria, the present case proves that its destruction does not interfere with phonation and articulation of words.

Adjourned 4 P. M.

Book Reviews.

A Textbook of Diseases of the Ear. By Macleod Yearsley, F.R.C.S., Senior Surgeon to Royal Ear Hospital; Medical Inspector to London County Council Deaf Schools; Lecturer on Anatomy and Physiology to the Training College for Teachers of the Deaf, Ealing, etc. Chicago: Chicago Medical Book Company. 1908.

The writer states in his preface that his book has been written upon the lines of his smaller work on "Common Diseases of the Ear," but with considerable additions and extensions. It has been his aim throughout to give as complete an account as possible of the various diseases and injuries to which the organ of hearing is liable, and in as concise a form as is compatible with clearness.

The book contains fifteen chapters. The first deals with anatomy and physiology, and the last with the medico-legal aspects of otology and the bearing of ear diseases on life insurance. The intervening chapters cover in an orderly and systematic manner the whole field of otology.

This is a most satisfactory book. The text is clear and up to date. There is a grateful scholarly air throughout and combined with this there is a crispness and sureness in the many tables and summaries which make them convincing and satisfying. On this account the book should be very useful to the bewildered student of the larger textbooks and to the jaded practitioner.

It is especially pleasant to meet with an author who has the courage of his convictions in dealing with the complicated and antiquated nomenclature of ear diseases. For instance, the writer divides catarrhal diseases of the ear into two forms, namely: Catarrhal inflammation and otosclerosis. Suppurative diseases are as simply and as logically divided, namely: Injuries and acute diseases of the middle ear, and chronic suppuration and its complications. Students of otology who get their first ideas of ear diseases from this book cannot appreciate their good fortune in having this simple and evident classification set before them.

The book is small and well printed. The paragraphing is restful to the eye and the summaries are restful to the brain. The book would be better for a few more illustrations and for the substitution of line engravings for some of the muddled photographs.

The Water Supply, Sewerage and Plumbing of Modern City Buildings. By William Paul Gerard, C.E., Member American Society of Mechanical Engineers. Pp. 491. With 214 text illustrations, 15 tables and 25 diagrams. New York: John Wiley & Sons. 1909.

This new volume by Mr. Gerhard contains in a revised form various articles and lectures on "the water supply of buildings" and on "plumbing" which he prepared for engineering societies and technical journals. It presents the essentials of sanitary and hydraulic work as applied to modern city buildings, discusses and illustrates sanitary fixtures and appliances, explains plumbing methods, deals with the maintenance of pipe systems for water, sewage and gas, and contains a set of rules representing the best modern practise regarding plumbing, water supply and sewerage, chiefly with reference to hospitals and large public institutions. It also deals with plumbing in its relation to preventable disease. One of the various helpful features is the preparation under fifteen main headings of several hundred "reminders" regarding the materials, fixtures, workmanship and general contract conditions which will be found useful in the preparation of plumbing specifications.

The book deals with the subject from a practical standpoint and is designed for the use of architects, building superintendents, sanitary engineers, sanitary inspectors and health officers. It is an important contribution to the literature on the subject. The cuts and illustrations and the tables and diagrams relating to water mains, surface pipes, house sewers and kindred subjects add to its value and attractiveness.

Arthritis Deformans. By R. LLEWELLYN JONES, M.B. London: Wm. Wood & Co. 1910.

This work is an excellent presentation of the more modern views on the nature and treatment of the group of disorders to which the general term "arthritis deformans" can be applied, including, according to the author's classification, under this head two large groups: (1) Rheumatoid arthritis; (2) osteo-arthritis. He admits localized varieties of the latter, such as heberden nodes, spondylitis deformans, and adds a special chapter on arthritis deformans in children, among whom the so-called rheumatoid arthritis (Still's disease) is the more common.

The conclusions of the writer are based on careful reading of recent German, English and American literature and presumably an extended experience as he formerly served as medical officer of the Royal Mineral Water Hospital at Bath.

There is little that is original in the work, which is judicious in view of the fact that the writer has not had a large pathological material at his disposal, nor experimental laboratory investigation on which to base speculation. He has confined himself to a plain statement of current views sensibly presented with the conclusions which seem justified. The book is admirably illustrated.

The Diseases of Infancy and Childhood. Designed for the Use of Students and Practitioners of Medicine. By HENRY KOPLIK, M.D., Attending Physician to the Mount Sinai Hospital; Consulting Physician to the Hospital for Deformities; formerly Attending Physician to the Good Samaritan Dispensary, the St. John's Guild Hospitals, New York; ex-President of the American Pediatric Society; Member of the Association of American Physicians and of the New York Academy of Medicine. Third edition, revised and enlarged. Illustrated with 204 engravings and 39 plates in color and monochrome. Pp. 944. New York and Philadelphia: Lea & Febiger. 1910.

This, the third edition of this admirable and well-known work, has been thoroughly revised, considerably enlarged by the addition of new material and brought fairly well up to date. We note, however, that no reference is made to animal sera or transfusion in the treatment of hemorrhage in the new-born or in purpura, of bacterial vaccines in the treatment of pyelitis, or of the operative treatment of cerebral hemorrhage in the newborn. It is not reasonable, however, to note omissions or to discuss moot points when considering a book as good as this one, which ranks among the best in English on pediatrics. It will well repay careful perusal by both the specialist and the general practitioner.

The Elements of Hygiene for Schools. Compiled by ISABEL MCISAAC, late Superintendent of the Illinois Training School for Nurses. Pp. 172. New York: The Macmillan Company. 1909.

A creditable compilation of materials from textbooks on bacteriology, hygiene and sanitation by some of the ablest authorities for the use of teachers and children in our public schools. The chapters on school hygiene and disinfection are especially commendable.

As to what extent the book is adapted as a textbook for the use of pupils in the different grades there is some question, but as to its value for the use of teachers, superintendents of schools, members of school committees and school physicians, there can be no doubt. The book is illustrated and attractively printed; it deserves wide circulation.

Mendel's Principles of Heredity. By W. BATESON, M.A., F.R.S., V.M.H., Fellow St. John's College; Professor of Biology in the University of Cambridge. Cambridge: University Press. 1909.

The significance of Mendel's theory of heredity is increasing year by year as investigation progresses. The object of the book before us is to give a brief account of Mendel's researches and the results of his method as applied to the general theory of heredity. To accomplish this result Mendel's two important papers are translated, together with a biographical note. In addition to a general statement of the theory, Bateson has added a chapter on the practical applications of the Mendelian principles, which, in his opinion, are far wider than we can as yet perceive in relation to the breeding of plants and animals, and possibly ultimately in the control of the human race. On this basis an admirable book has been written containing an excellent bibliography and exceptionally beautiful illustrations in color. The book is certainly a welcome addition to the large number already existing on the subject of heredity, particularly as placing before a wide circle of readers a clear presentation of a doctrine not altogether simple to the uninitiated. The volume is admirably printed and arranged as is to be expected from the place of its publication.

The Harvey Lectures. Delivered under the auspices of the Harvey Society of New York, 1907–8. By Professors EDWIN O. JORDAN, JAMES EWING, DAVID L. EDSALL, ERNEST H. STARLING, GEORGE CRILE, JOSEPH JASTROW, OTTO FOLIN, ROSS G. HARRISON, E. A. SCHÄFER, ALONZO E. TAYLOR. Philadelphia and London: J. B. Lippincott Company. 1909.

This third volume of the lectures of the Harvey Society presents the work of ten recognized experts in the special subjects of present medical and scientific interest in which they may be regarded as authorities. In such a collection of essays it is almost invidious to select. It seems, however, that the chapters on "Cancer Problems," "Surgical Shock," "On the Trail of the Subconscious," "Embryonic Transplantation and the Development of the Nervous System" and "Artificial Respiration in Man" are likely to prove of the greatest range of appeal. The volume is one which merits thorough and thoughtful reading both by physicians and by the educated laity.

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CHILD SUICIDES.

Many of our readers have noted the recent comments on the case of the lad of fourteen years, at the Lyman School for Boys at Westborough, Mass., who ran away from the institution, was promptly brought back again and placed in a detention-room and was discovered, later, dead, suspended from an iron bar which ran across the window.

The most obvious explanation of the death was suicide, and as this school has always enjoyed the highest reputation for following a liberal and progressive policy in the performance of its difficult task, this explanation will doubtless be held by most fair-minded persons until sufficient reasons are brought forward for a contrary opinion.

As might have been expected, however, the case has been utilized as a door for criticisms, allegations and suspicions on which we have no wish nor right to pass a judgment, but which are being reviewed by a committee of the General Court, from whom a report may shortly be expected. Meantime, the matter has a medical aspect which should not be overlooked. Few persons except the students of such subjects are aware how common suicides among children really are or in response to what trivial-seeming causes they are committed. This is especially true where the child is somewhat neurotic or eccentric, although the eccentricity may not seem to involve any greater lack of balance than would be covered by the term "romantic." This fact, among others, is brought out in an address by Professor Eulenburg, the prominent neurologist of Berlin (published in the *Zeitschrift für Pädagogische Psychologie*, etc., and reviewed briefly in the London *Lancet* for 1907, II, p. 328). It seems that between 1880 and 1903, 1,152 children took their lives in Prussia, and that "in about 10% of the cases no cause could be found. In some cases the motives of the suicide were rather trivial, such as the refusal of the parents to allow certain games or recreations." Every essay on the subject contains similar statements and only adds to the accumulating evidence that our knowledge of the child's mind is eminently incomplete. Thus Guthrie ("Functional Nervous Disorders in Childhood," London, 1907) says (p. 101): "Sometimes mere curiosity to see how it feels may lead to apparent attempts at suicide. A boy of nine was said to have attempted to hang himself, but I found on questioning his parents that, having been warned against the danger of putting his head in a round towel, he promptly did so, swung himself round, and nearly succeeded in strangling himself. . . . In September of the present year, 1906, a schoolboy of Hamburg, aged thirteen years and two months, committed suicide because after the summer holidays he was not moved from his former class into a higher class. He hanged himself from a peg on the wall of his bedroom."

In the course of a hearing before our National Legislature on the bill (H. R. 16733) to establish a laboratory for the study of the criminal, pauper and defective classes, a number of interesting statistics bearing on this subject were presented by the criminologist, Arthur Macdonald, a few of which are as follows: Table 8, compiled from official sources by A. Baer (p. 77 of the report), shows that the number of suicides in Prussia of children even under fifteen years of age increased pretty steadily from 31 in 1869 to 70 in 1898. In 1891 the total number ran up to 81. Similar statistics are reported from other countries. According to the United States census of 1900, the suicides in that year occurred as follows:*

Ages.	Suicides.
5 to 9	1
10 to 14	28
15 to 19	246
20 to 24	531
25 to 29	534
30 to 34	555
35 to 39	594
40 to 44	600
45 to 49	542
50 to 54	490
55 to 59	371
60 to 64	314
65 to 69	253
70 to 74	175

* This table is copied from the revised edition of the Reference Handbook of the Medical Sciences, vol. vii, article "Suicide."

Ages.	Suicides.
75 to 79	117
80 to 84	49
85 to 89	14
90 and over	5

Finally, reference may be made to a careful paper by Gustav Major, Director of the Erziehungsheims "Kinderschutz Berlin-Zehledorf,"[1] which is of especial interest because written from an educational standpoint.

The writer takes his statistics from the paper of Eulenburg above cited. Eulenburg had selected 284 cases for a special study, because reliable facts with regard to them could be obtained from school-directors, teachers, companions, relatives or physicians, etc., of the children, who were pupils in the schools of the higher grade. Of these 284 children, 29 had pronounced insanity and 51 more a feebleness of mental constitution (*Minderwertigkeit*). The next two groups, comprising respectively 67 and 68 children, were either peculiarly unfitted for school life or suffering from special defects of character and temperament, conditions which must frequently obtain among boys committed to a reform school because unmanageable at home. The last group, of 69 cases, is a portion of that which was referred to at the beginning of this paper, where no special cause of suicide could be found. But Major makes the just comment that a good half of these children were doubtless more or less abnormal. "Youth is the happy-go-lucky age of carelessness, of taking nothing seriously, of joyfulness and of excess; it is often, too, a period of emotional depression, but a healthy-minded child does not, after all, grasp at the revolver and the knife."

In his own estimate of causes Major points out how complex the situation is. The school, the home, and not only these, but many influences more that are brought to bear on the growing child as he passes through that marvelous and largely unchronicled period of transition from infancy to manhood must be considered by those who would deal fairly with this unfortunate situation. These influences lead to strong emotions on the one hand, and to repression of emotions, which must then find some new outlet, on the other hand. Child-suicide is painful to contemplate and yet must be contemplated, but the conditions which lie behind it are even more in need of careful study than the suicide itself. The fact is that the life of children is not the Elysium that it has been supposed to be, but a period of intense feelings and repressions, and often of black misapprehensions and emotions. These problems must be peculiarly difficult to meet in the case of a large school where boys are not only wayward, but whose waywardness is of many different sorts; not only unbalanced and excitable, but whose lack of balance appears under a great variety of forms. Each boy's case must be a special study in itself, and a study which has to be made under circumstances of great difficulty.

[1] Zeitschrift für die Erforschung und Behandlung des Jugendlichen Schwachsinns auf Wissenschaftlicher Grundlager, Band II, Heft. 6.

THE TRAINING OF HEALTH OFFICERS.

THE layman apparently takes more interest in preventive medicine than the physician; this, however, is more apparent than real, for the medical profession has never been more altruistic than at present. The medical man is just as keen for useful and fruitful results as the layman, but he sees the difficulties, and, therefore, has more patience with the snail-like progress which the "ounce of prevention" often takes.

One of the factors that has kept preventive medicine from reaping the full harvest in this country is the lack of trained leadership and the lack of trained men to fill the ranks. Perhaps the greatest handicap has come from mixing politics with public health administration. England has been a pioneer in establishing schools for its public health officials and demanding fitness as the first qualification. The health of England is guarded by a corps of sanitarians whose tenure of office is assured through effective civil service. Thus politics and public health have been divorced. The positions are sufficiently numerous, the pay sufficiently large and the tenure of office sufficiently secure to make the service attractive. The public health work of England has, therefore, had the benefit of specially trained men who devote their lives to this special field of science, and the results have been exceedingly satisfactory. Our own conditions contrast strangely. Here politics prevail; the positions are underpaid and the health departments undermanned; tenure of office is uncertain. The health officers in our country are seriously handicapped and as a consequence little impress has been made upon the great sanitary problems, such as typhoid and the other communicable diseases, infant mortality, industrial hygiene, the medical inspection of schools, the pollution of streams, the disposal of wastes and the collection of vital statistics.

The real estate agent, the gynecologist, the

lawyer, the engineer and even the general practitioner may make excellent health officers. Some of the ablest adminstrative officers in our country have been laymen, but the time has come when the sanitary sciences have grown so large and complex that their administration requires the services of a specialist. The lack of trained leadership in the public health affairs of our states and cities is glaringly apparent to those familiar with the conditions.

In order to fill this want Harvard University has taken an advanced step in offering the degree of Doctor of Public Health (D.P.H.). The object of this degree is to train men to fill executive positions in the various branches of the sanitary sciences, or to continue in laboratory research, or to teach the subject. Candidates for the degree are required to take post-graduate work, and the courses are broad and elastic enough to include the training of sanitary architects, sanitary engineers, sanitary chemists, vital statisticians and the other collateral branches as well as to cover the more strictly biologic side of the subject. What may be hoped from a university training is that a candidate may be given a thorough knowledge of the scientific foundations that underlie the subject, and the principles of its practical application. A student who has this knowledge plus the necessary inherent qualifications will have little difficulty in making good when it comes to the actual practise of his profession. If he lacks the inherent qualities necessary for success either through defects of temperament or looseness of moral perception, no training can equip such a man for large and useful achievement.

We feel confident that with the appearance of doctors of public health in the field, preventive medicine in this country will show distinct progress. The growth will be gradual, but in time a high standard of efficiency will be maintained in the public health departments of our states and cities. This, in turn, will result in the prevention of much unnecessary sickness, and the saving of many lives.

MEDICAL BIRTHDAY HONORS IN ENGLAND.

The recently published list of "birthday honors," containing the appointments made by King George V of England on the occasion of the day set apart for the commemoration of the birthday of his late Majesty, Edward VII, includes an exceptionally large number of distinctions conferred on members of the medical profession. The Right Honorable Sir Walter B. Foster, consulting physician to the Birmingham General Hospital, and emeritus professor of medicine at Queen's College, Birmingham, is created a baron of the United Kingdom. This is only the second instance in which a physician has been raised to the peerage in England, the first and only other creation being that of Lord Lister. The birthday list also names Francis Henry Champneys, Esq., M.D., as a baronet of the United Kingdom, and confers knighthood on eight prominent surgeons, among them Mr. John Lentaigne, F.R.C.S., of Dublin, visiting surgeon to the Mater Misericordiae Hospital in that city, consulting surgeon to the Royal Hospital for Incurables at Donnybrook, and surgeon to the household of the Lord Lieutenant of Ireland. In addition to these honors, the list gazettes the appointment of several military surgeons to the orders of the Bath, St. Michael and St. George, the Star of India, and the Indian Empire.

Commenting on this unusual recognition of the medical profession, an article in the London *Medical Press and Circular* regards such a liberal distribution of distinctions as evidence that King George and his government will take an appreciative interest in the progress of medical science, and considers that the presence of a medical peer in the House of Lords will result in the introduction and enactment of various beneficial legislative measures for the safeguarding and advancement of the public health. For the furtherance of the same object, the article also advocates a proposition for the collective maintenance of representative medical members in the House of Commons, where, for financial as well as professional reasons, there are at present but few physicians.

In considering these "birthday honors" from an American point of view, it must be remembered that, in the country in which they are conferred, they are intended and regarded as valuable and genuine distinctions, and, so far as they indicate public recognition of medical service, may be welcomed as a real mark of honor to the profession. Their worth will be the greater if they do afford opportunity for the progress of medical and hygienic reform in England.

ILLEGITIMACY IN FRANCE.

Vital statistics recently published in Paris show that, for a number of years, 11% of the annual births in France have been illegitimate,

and that the mortality of such illegitimate children is double that of legitimate children, partly from infanticide, largely from the conditions to which their infancy is exposed. In view of these facts, a bill has been introduced into the French Senate "abrogating two articles of the Civil Code which refuse to recognize the rights of an illegitimate child to the protection of its father," who is now not held responsible. It is interesting to note that the purport of the proposed bill is not so much to diminish illegitimacy as to reduce the death-rate of illegitimate children by compelling their fathers to provide them with adequate support. In connection with measures to check the declining French birth-rate, upon which we have made recent editorial comment, these considerations have special importance as presenting another aspect of the so-called "race suicide problem" in France, in which medical, ethical, social and economic factors are so intimately and intricately involved.

MEDICAL NOTES.

MEASURES AGAINST THE SPREAD OF BERI-BERI. — The Philippine government has forbidden the use in its institutions of the "polished rice," or rice freed from its outside covering. This covering contains phosphorus, the absence of which from the daily diet causes the disease.

CULLEN VICTORIA JUBILEE PRIZE. — The Cullen Victoria Jubilee Prize has recently been awarded by the Council of the Royal College of Physicians of Edinburgh to Dr. R. W. Philip, physician to the Edinburgh Royal Infirmary, "for his investigations and work in connection with consumption." This prize, which is of the value of £100, is awarded every fourth year for the "most important contribution to practical medicine."

BUBONIC PLAGUE IN TUNIS. — It is reported from Tunis that five cases of bubonic plague have recently occurred in that city, and that four of the patients, three natives and an Italian woman, have died. Examination of the house in which the fatal cases were found resulted in the discovery, under the floor of a verandah, of a large number of dead rats, from which it is believed the infection was derived. The strictest quarantine precautions were instituted to prevent furthur spread of the disease, and no more cases have as yet been reported.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, July 26, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 40, scarlatina 18, typhoid fever 11, measles 29, smallpox 0, tuberculosis 55.

The death-rate of the reported deaths for the week ending July 26, 1910, was 17.14.

BOSTON MORTALITY STATISTICS. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, July 16, 1910, was 221, against 163 the corresponding week of last year, showing an increase of 58 deaths and making the death-rate for the week 18.30. Of this number 115 were males and 106 were females; 217 were white and 4 colored; 143 were born in the United States, 75 in foreign countries and 3 unknown; 51 were of American parentage, 144 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 38 cases and 3 deaths; scarlatina, 20 cases and 0 deaths; typhoid fever, 11 cases and 1 death; measles, 55 cases and 2 deaths; tuberculosis, 105 cases and 21 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 17, whooping cough 1, heart disease 24, bronchitis 1. There were 12 deaths from violent causes. The number of children who died under one year was 48; the number under five years, 67. The number of persons who died over sixty years of age was 54. The deaths in public institutions were 95.

Cerebrospinal meningitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 17 cases and 3 deaths. Scarlet fever, 2 cases.

Deducting deaths of non-residents, the total is 191 and the death-rate is then 15.81.

A CENTENARIAN. — It is stated that Patrick O'Neil has died at Lowell, Mass., at the age of one hundred and two years.

A BOY SUICIDE. — Following close upon the presumed suicide of a boy at the Lyman School, a sixteen-year-old inmate of the Concord Reformatory has recently committed suicide by hanging. The whole subject of suicide among the young is discussed in our editorial columns.

EXTENSION OF BOSTON CITY HOSPITAL. — The trustees of the Boston City Hospital have purchased from Robert Treat Paine land on

Massachusetts and Harrison avenues and Northampton Street. Upon this will be erected, at a cost of about $165,000, a much-needed extension of the contagious department of the hospital.

A Possible New State Hospital. — It is announced that Governor Draper, of Massachusetts, has made nominations for a commission to consider the advisability of establishing a state hospital for cases of nervous disorder of mild degree. Among those nominated for this commission are Dr. William N. Bullard, of Boston, and Dr. B. R. Benner, of Lowell.

Dr. David W. Cheever, Surgeon Emeritus. — At a recent meeting of the trustees of the Boston City Hospital, resolutions were adopted on the long service of Dr. David W. Cheever as surgeon to the hospital. In these resolutions a statement was made of his long and devoted service to the hospital, his skill as a surgeon, his ability as a teacher and his remarkable clearness of diction.

Appointment of Seymour H. Stone. — Mr. Seymour H. Stone has been appointed secretary of the Boston Association for the Relief and Control of Tuberculosis. He succeeds in this office Mr. Alexander M. Wilson who, for many years, has been closely identified with the work against tuberculosis in this city as well as in Chicago. Mr. Wilson now goes to Philadelphia in connection with similar work in that city.

Bequests. — By the will of the late Mrs. Margaret W. Frothingham, of Cambridge, money is left to many charities. Among these the Cambridge Hospital and Cambridge Home for Aged People benefit in the sum of $1,000 each; the Kindergarten for the Blind in Boston and a Home for Aged Women in Charlestown in the sum of $500 each.

NEW YORK.

Death-Rate from Tuberculosis. — Walter F. Wilcox, consulting statistician to the State Health Department, having stated in the March number of the *Monthly Bulletin* that "no influence of the special campaign against tuberculosis can be traced in the figures of 1900 to 1908 inclusive," now reports that the totals for 1909 have been compiled with more cheering results. In the state outside of New York City the deaths from all causes except tuberculosis increased from 55,314 in 1900 to 59,529, an increase of 4,215; but during the same period the deaths from tuberculosis decreased by 22. This difference, Mr. Wilcox thinks, may be ascribed to the campaign against tuberculosis which has been carried on so energetically in the state since 1907. It would take some time, he says, for the campaign to influence the death-rate, and its effect would naturally be cumulative as facilities for the proper care of tuberculosis patients multiplied.

Infant Death-Rate. — The infant death-rate in the city continues unusually high. In the week ending July 9 it was 55% greater than in the corresponding week of last year, and in the week ending July 16, 75% greater. In the first of these weeks the number of deaths reported from diarrheal diseases in children under five years of age was 280, as against 160 in 1909, and in the second, 437, as against 246 in 1909.

Current Literature.

Medical Record.

July 9, 1910.

1. Schurman, J. G. *Progress in Medical Education.*
2. Hunt, E. L. *The Hereditary and Congenital Causes of Exceptional Development.*
3. Van Gieson, I. *The Paradox of the Tubercle Bacillus.*
4. Thomas, W. S. *The Use of Internal Aluminum Splints in the Treatment of Fracture.*
5. Faulkner, R. B. *Tonsil Research.*
6. Kearney, H. W. *Anesthesia in Its Relation to the General Practitioner.*
7. Drueck, C. J. *The Enema. Its Place in the Treatment of Gastro-Intestinal Diseases.*
8. Sallom, M. *Preliminary Report of a Statistical Analysis of Over Forty-Three Thousand Cases of Diphtheria.*
9. Griffith, F. *Case of Congenital Fusion of Toes, with Note on Previous Generations.*

July 16, 1910.

1. Collins, J. *The Psychoneuroses: An Interpretation.*
2. Einhorn, M. *Duodenal Alimentation.*
3. Braun, A. *The Diagnosis of Suppurative Diseases of the Nasal Accessory Sinuses.*
4. Isaacs, A. E. *Drainage and Dressing of Wounds in Minor Surgery.*
5. Beck, E. C. *Fistula-in-Ano; Excision and Suture.*
6. Fedde, N. *A Pith-Ball Manometer.*

New York Medical Journal.

July 9, 1910.

1. Lumsden, L. L. *Determinable and Indeterminable Factors in the Etiology of Typhoid Fever.*
2. Konkle, W. B. *Francois Rabelais, M.D., Reformer and Buffoon.*
3. Knopf, S. A. *State Phthisiophilia and State Phthisiophobia, with a Plea for Justice to the Consumptive.*
4. Ware, M. W. *The Quest and Winning of a Vesical Calculus.*
5. Graef, C., and Wynkoop, R. B. *Vaccine Therapy in Serious Infections of Aural and Nasal Origin.*
6. Gross, M. *Further Communications on My Duodenal Tube.*
7. Porter, M. F. *Conglutinatio Orificii Uteri Externi.*
8. Isaacson, A. *Abusive Use of Forceps in Primipara.*

July 16, 1910.

1. Swain, H. L. *Throat Symptoms in General Diseases.*
2. Syms, P. *Some Surgical Aspects of Gastric Ulcer.*

3. SHUTE, D. K. *Torsion of the Eyeball.*
4. KAHN, I. N. *Report of a Case of Molluscum Fibrosum, Addison's Disease and Pulmonary Tuberculosis.*
5. KOENIG, C. J. *Anesthesia of the External Auditory Canal and of the Membrana Tympani with Ethyl Chloride Spray.*
6. PARRISH, H. *Tuberculosis of the Larynx.*
7. VERBRYCKE, J. R., JR. *The Value of Test Meals.*
8. CHIDECKEL, M. *Twelve Dont's in the Diagnosis and Treatment of Appendicitis.* [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

JULY 16, 1910.

1. SOUTHWORTH, T. S. *The Rôle of Pediatrics in Preventive Medicine.*
2. *BULSON, A. E. *The Noguchi Serum Reaction for Syphilis as an Aid to Diagnosis in Eye Lesions.*
3. *MCCOY, G. W. *The Relation of Animal Experimentation to Our Knowledge of Plague.*
4. GREENWOOD, A. *The Filtering Cicatrix for Chronic Glaucoma, with a Report of Cases in which Operation was Performed by the Method of Lagrange.*
5. *CORLETT, W. T., AND COLE, H. N. *Anomalous Scarlet Fever. A Report of Three Epidemics.*
6. ELLETT, E. C. *Spontaneous Rupture of the Eyeball. A Phenomenon of Glaucoma.*
7. MCDONALD, E. *Lutein Extract in the Treatment of Diseased Menstruation and the Premature Menopause.*
8. MCCREADY, E. B. *The Relation of Stuttering to Amnesia.*
9. *BOWEN, J. T. *The Treatment of Furunculosis.*
10. BABCOCK, W. W. *A Modified Extractor for Removal of Varicose Veins of the Leg.*

2. Bulson believes that the Noguchi reaction is a distinct improvement over that of Wassermann, or any of the other methods, for the reason that it is not so complicated and is probably more accurate and delicate. He also feels that the test is going to prove of inestimable value to the ophthalmologist in diagnosing doubtful cases and giving indications for treatment.

3. McCoy states that by means of animal experimentation the cause of plague has been demonstrated; also the means by which it is conveyed in nature from animal to animal and from lower animals to man, and has showed us how to control outbreaks of the disease.

5. Corlett and Cole report three distinct epidemics of an anomalous scarlatina, of 32 cases, in which the important points of observation were, (1) a lack of or very slight presence of any exanthem; (2) desquamation, absent or occurring only over one small area, such as one buttock; (3) absence of any marked nephritic lesion; and (4) presence of severe angina in nearly every case.

9. Bowen, not minimizing vaccine treatment, suggests the following treatment in obstinate cases of furunculosis: (1) Wash whole body twice a day with warm water and soap; dry. (2) Bathe the whole body with a saturated solution of boracic acid in water; dry without wiping. (3) Dress the individual furuncles with the following:

Boracic acid,	℥i
Precipitated sulphur,	℥i
Carbolized petrolatum,	℥i

This has proved efficient in many cases when vaccines have not. [E. H. R.]

ANNALS OF SURGERY.

JUNE, 1910.

1. *CRILE, G. W. *Note on the Neuropathologic Cytology of Anemia, Infections, Graves' Disease and Surgical Shock.*
2. WILLARD, DE FOREST, AND THOMAS, B. A. *Therapy by Bacterins and Tuberculins in Mixed Suppurative Bone and Joint Disease.*
3. *LEVIN, I. *The Study of the Etiology of Cancer based on Clinical Statistics.*
4. HAMANN, C. A. *On the Simulation of Neoplasms by Inflammatory Processes.*
5. RANSOHOFF, J. *Prognosis and Operative Treatment of Fracture of the Base of the Skull.*
6. *MAYO, C. H. *Diagnosis and Surgical Treatment of Esophageal Diverticula.*
7. *FINNEY, J. M. T. *Resection of the Pancreas.*
8. BREWER, G. E. *Hepaticoduodenal Anastomosis.*
9. MACLAREN, A. *Wandering Spleen.*
10. *BUNTS, F. E. *The Separation of the Colon from Its Mesentery.*
11. ROBERTS, J. B. *Congestion of the Lower Lobe of the Right Lung an Early Symptom in Appendicitis.*
12. *MAYO, W. J. *Removal of the Rectum for Cancer.*
13. PRIMROSE, A. *Choriocarcinoma.*
14. GERSTER, A. G. *On Momberg's Method of Artificial Anemia by Suprapelvic Constriction.*
15. JONAS, A. F. *Old Irreducible Dislocations of the Shoulder-Joint.*
16. MCWILLIAMS, C. A. *Operations upon the Appendix.*

1. The changes in nerve cells in anemia, infections, Graves' disease and surgical shock recall changes in nerve cells in rest and activity found in animals by Hodge, Pugnat and others. In all conditions there is one general law of change — turgescence of the nucleus, loss of limiting membrane of nucleus and cell with consequent distortion and perhaps complete disorganization. The Nissl staining substance is at first increased and later diminished (hyperchromatic and chromatolytic stages). Ether damaged brain cells four times as much as nitrous oxide. If the hyperchromatic stage has passed and the chromatolytic stage has begun, the death of the cell is inevitable despite transfusions in case of hemorrhage, despite enteroenterostomy or resection in case of intestinal gangrene.

3. Levin has analyzed 4,000 cases of cancer (data obtained from twenty-three hospitals and twenty-seven physicians and surgeons), aiming at the primary causes, either constitutional or those of environment, and reported to stimulate similar effort throughout the country. *Sex:* More frequent in female owing to prevalence in uterus and breast, but the percentage of cancer of the mouth and digestive organs is greater in the male, with his greater use of tobacco, alcohol and coarser and more irregular diet. *Age:* The incidence of cancer varies somewhat with its situation; for instance, 48.5% of cancer of the extremities occurred under the age of thirty-four. *Childbearing* seemed to have no direct connection with the causation of cancer. *Occupation* plays important rôle (chimney sweeps, aniline workers, x-ray), but only certain number of workers contract the disease. It is rare among miners. Co-existence of syphilis, tuberculosis or arteriosclerosis was unusual. The latter seems to occur more commonly with cancer of head, face and neck (14.5%). The relation of cancer of the stomach to ulcer, of the gall bladder to stone, of the breast to mastitis and of the penis to balanitis is considered. Hereditary disposition was shown in so small a number that it is doubtful whether it has any influence on the occurrence of cancer. It appears that local trauma or previous disease of the affected organ is of less importance than the increased vulnerability and lessened resistence of the organism caused by strain of modern life.

6. Charles Mayo reports eight cases of esophageal diverticula. For diagnosis he recommends the esophagoscope, the x-ray of the bismuth-acacia-distended sac, and Plummer's method with thread and whalebone and olive-tips. Preliminary gastrostomy is not considered necessary. The use of the swallowed thread as a guide for the stomach tube has been practiced.

7. Finney reports a case of resection of the middle portion of the pancreas for cystadenoma with approximation of remaining portions with mattress sutures of catgut and iodoform drainage. This is the seventeenth reported case of operated primary tumor of the pancreas, and the third in which the gland has been divided and sutured. Epitomies of these cases are given.

10. Bunts, while operating on a huge umbilical hernia in a very obese woman with fatty adherent omentum, accidentally stripped the descending colon of its mesentery for a distance of eight inches. The patient's condition was poor and the cut mesentery was simply sutured to the stripped bowel with interrupted sutures. The patient recovered. This led Bunts to experiment on dogs. In 5 cases the mesentery was separated from the colon for distances of from 3 to 6 inches, and one for a distance of 12 inches. In none was the colic artery proper injured,

and in all the cut mesentery was interruptedly resutured to the bowel. All recovered but the last. In 2 cases the procedure was the same except that the colic artery was ligated. Both died (separation, 4 to 5 and 6 inches). In 3 cases the procedure was the same as at first without resuture of the mesentery to the bowel. All died (separation, 3 to 8 inches). The results are very suggestive.

12. William Mayo reports 120 operations on the rectum for cancer. The mortality during 1908–9 was 9%; prior to that, 16%. Two cases are known to be "alive and well" over nine years after operation, and one over seven years afterward. Inoperable conditions have been due rather to hopeless local extension than to lymphatic metastasis. The mortality is higher in the male, and the percentage of cures smaller, owing to the serious limitation to dissection offered by the bladder, prostate, urethra and vesicles. Sepsis caused the highest percentage of operative mortality. To avoid liquid feces at operation the bowels are cleared out forty-eight hours before operation, as suggested by Hochenegg. Cancers which lie in the lower one and one-fourth inches of the rectum are most satisfactorily dealt with by the Harrison Cripps operation. Cancers of the middle rectum above the levator ani are dealt with by the Quénu-Tuttle operation. In the posterior operations the ventral Trendelenburg position is used, the sacrum is not disturbed, but a parasacral incision is sometimes used. The combined abdominal operation is considered the operation of choice in large majority of cases of cancer of upper rectum and selected cases of cancer of lower rectum. Its mortality in the fleshy male is high. It is not a substitute for the perineal or posterior routes, only a step for more thorough eradication of disease. [T. W. H.]

The Lancet.

June 25, 1910.

1. *Andrews, F. W. *The Croonian Lectures on the Behavior of the Leucocytes in Infection and Immunity. Lecture I.*
2. Jones, R. *Anomalies of the Mind and the Evolution of the Mental Processes.*
3. Faulder, T. J. *The Administration of the Public Health and Education Acts in Relation to the Prevention and Cure of Diseases of the Throat and Nose.* (To be continued.)
4. Sommerville, D. *Some Observations on Gastro-Intestinal Fermentation.*
5. Semple, D. *On the Hypodermic and Intramuscular Inoculation of Bacterial Vaccines as Demonstrated by Experiments with Typhoid Vaccine.*
6. Eve, F. C. *The Utility of the Antilytic Power of Horse Serum.*
7. Grant, J. D. *The Treatment of the Dysphagia of Laryngeal Tuberculosis by Alcohol Injections into the Superior Laryngeal Nerve.*
8. Lucy, R. H. *Double Dermoid Cyst of the Ovaries with Rupture into the Peritoneal Cavity.*
9. Hirsch, C. T. W. *Motoring Notes.*

1. In the first of the Croonian Lectures, Andrews discusses the processes of phagocytosis and immunity in a general way. After a preliminary historical review he dwells briefly on the theories of phagocytosis, the opsonin theory and the aggressin theory. He speaks briefly on immunity and evolution, the development of pathogenic bacteria and improvements in bodily defense and the lines of defense against bacterial invasion. [J. B. H.]

British Medical Journal.

June 25, 1910.

1. Nicoll, W. *Remarks on the Bionomics of Helminths.*
2. *Clarke, J. M. *On Recurrent Motor Paralysis in Migraine, with Report of a Family in which Recurrent Hemiplegia Accompanied the Attacks.*
3. *Raw, N. *On the Value of Serums and Vaccines in the Treatment of Disease.*
4. Eve, F. C. *A Clinical Method of Measuring the Antitryptic Index, Illustrated by Its Response to Vaccines.*
5. Carter, R. *On the Value of Test Meals as a Guide to Infant Feeding.*
6. Tuffier, T., and Chapman, E. S. *Ovarian Grafting and Menstruation.*
7. Ross, R., and Thomson, D. *A Case of Sleeping Sickness Showing Regular Periodical Increase of the Parasites Disclosed.*

2. Clarke reports some interesting cases occurring in one family in which hemiplegia with, as a rule, loss of speech was a constant feature of attacks of migraine. As cases of this kind in which the disturbances accompanying migraine are of the motor rather than of the sensory type are rare, he gives the details of his six cases, with remarks on previously reported cases or observations on this phenomenon. He rules out organic disease as a cause of these headaches by the hereditary history of the disorder, the lapse of time during which attacks had taken place without any signs of organic disease, and the fact that in no instance has the recurrent paralysis become permanent. In most of his patients the attacks began in early childhood and were accompanied by headache, characteristic visual phenomena, vomiting, temporary loss of speech and sensory disorders, and motor disorders — in one, paralysis of all four extremities. Between the attacks there was a complete return to normal.

3. Ram discusses the value of serums and vaccines in the treatment of disease. He briefly speaks of the use of vaccines or serums in puerperal septicemia, malignant endocarditis, acute tonsillitis, tetanus, pneumonia, etc. His remarks in regard to the treatment of tuberculosis, especially in regard to the treatment of tuberculous glands, are of interest. "I feel convinced that the extensive dissection of glands of the neck is wrong in principle and sometimes leads to a general tuberculosis which is fatal." In tuberculous peritonitis he believes that tuberculin has a splendid effect as well as in genito-urinary tuberculous disease. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 25.

June 23, 1910.

1. *Lang. *The Surgical Treatment of Lupus.*
2. *Zuisser. *The Treatment of Lupus by Finsen's Method.*
3. *Wichmann, P. *Treatment of Lupus with Radium.*
4. *Gottschalk, E. *Treatment of Lupus by Other Methods.*
5. Kümmell, H. *How Can We Lower the Mortality in Appendicitis and Prevent Abscess and Peritonitis?*
6. Heinemann. *Perforated Gastric Ulcer.*
7. Milner, R. *Inflammatory Pseudo-Carcinoma of the Appendix.*
8. Widerøe, S. *Preliminary Communication on Size of Heart in Different Diseases.*
9. Graul, G. *Relation of Diabetes Mellitus to Weak Constitutions.*
10. *Gutmann, A. *Eye Symptoms and Diseases of the Frontal Sinus and Cribriform Plate.*
11. Hamme. *Alypin as a Local Anesthetic in Minor Surgery.*

1-4. These papers represent a series written on the different methods of treating lupus. They were presented at a meeting, and a discussion by many different men followed. The discussion is also printed in this number.

10. Gutmann, with a series of cases, describes some of the eye conditions which may result from disease of the frontal sinus. He describes two cases of phlegmon of the orbit, one from a perforating frontal sinus empyema, the other from a mucocele of the frontal sinus followed by empyema. He then gives some cases illustrative of the results of operative procedure which resulted favorably. He also describes some cases showing the eye complications from disease of the cribriform plate and ethmoid cells. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 26.

June 28, 1910.

1. *Hofmeier, M. *Treatment of Placenta Previa.*
2. Rössle, R. *Pathology of the Adrenals.*
3. Werner, R., and Caan, A. *Action of Röntgen-Rays on Tumors.* (To be concluded.)
4. *Thiemich. *Functional Capacity of the Human Mammary Gland.*
5. Gaehtgens, W., and Ramm, W. *The "Thread-Reaction" for the Diagnosis of Typhoid, etc.*
6. Kalb, R. *A New Stain for Spirochæta.*

7. LOELE, W. *Methods of Detecting Oxidizing and Reducing Substances of the Body.*
8. PFLUGHÖFT. *Treatment with Arsacetin.*
9. WELCKE, E. *Operation for Anal Cancer and Artificial Sphincter.*
10. LOOS. *Acquired Deformities of the Jaw.*
11. DOEVENSPECK. *Juvenile Muscular Distrophy following Strain.*
12. STEIN, A. E. *Treatment of Stiffness of the Shoulder.*
13. PLANT, F. *The Wassermann Reaction and the Practising Physician.*

1. The subject of placenta previa is ably discussed in this article from the point of view of the obstetrician, who necessarily does most of his work in the home rather than in the clinic, but the writer adds that if the practice of sending all serious abnormal cases to a hospital can be extended, much good is likely to result.

4. Thiemich's article contains much valuable information on lactation. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 24.

JUNE 13, 1910.

1. PAALZOW. *Historical Sketch Given June 10, 1910, at the Dedication of the Kaiser Wilhelms Akademie.*
2. WAGNER, L. *Clinical Considerations Concerning the Diagnosis of Typhoid Fever.*
3. HUBNER. *The Importance of the Bacteria of the Paratyphoid B Group in the Origin of Human and Animal Diseases.*
4. ECKERT. *Paralyphoid A Infections in Infants.*
5. OTTO, R. *The Question of a Systematic Anti-Diphtheria Campaign.*
6. KOCH, W. *The Pathological Anatomy of the Interruptions in the Rhythm of the Heart.*
7. BERGMANN, W. *The Traumatic Origin of Fat Emboli.*
8. MOMBERG. *Burdi's Cosmetic Treatment of Facial Paralysis.*
9. POCHHAMMER, C. *An Obstacle in the Extirpation of the Larynx, with a Few Observations Concerning the Technic of the Operation.*
10. RUMPEL, O. *Occlusion of the Ureter through Benign Neoplasms in the Bladder.*
11. *KAYSER, F. *The Question of Transplantation of the Human Ovary.*
12. STIER, E. *The Recognition and Military Medical Criticism of the "Psycopathic Constitution."*
13. LÖHE, H. *Contribution to the Recognition of Brain Syphilis in the Second Stage.*
14. NAPP, O. *Contribution on the Behavior of the Retina in Regions of Choroid Tumors.*
15. LANGENHAN. *Diagnosis of Intra-Ocular Tumors by Means of Illumination of the Fundus Oculi.*
16. HOFFMAN, W., AND KUTSCHER, K. H. *On Providing Drinking Water for the Troops in the Field.*
17. SCHMIDT, G. *Power-Wagons in the Service of Army Medical Departments.*
18. KÖHLER, A. *Historical Sketch on the Founding of Berlin University.*
19. POSNER. *Pathological Histology in the Service of the Surgeon.*

11. Dr. Kayser, after reviewing the history of animal experimentation in the transplantation of the ovary, quotes a case of his own. In operating on a woman thirty-two years old for a left tubo-ovarian tumor, he discovered the right adnexa to be wanting. To prevent premature cessation of menstruation, he transplanted two wedge-shaped portions of the ovary, after removal of the tubo-ovarian mass *in toto*, to the right thigh underneath the vastus externus. The patient made a good recovery and has menstruated with almost perfect regularity since the operation. The patient has also been free from any of the symptoms of premature menopause. The ovarian tissue in the right thigh can be felt, but causes the patient no discomfort. [J. L. H.]

ANNALES DE L'INSTITUT PASTEUR.

MAY 25, 1910.

1. *SERGENT, E., AND FOLEY, H. *Researches upon Relapsing Fever and Its Mode of Transmission in an Algerian Epidemic.*
2. AUBERT, P., CANTALOUBE, P., AND THIBAUD, E. *An Epidemic of Malta Fever in the Province of Gard.*
3. MAZÉ, M. P. *Theoretical and Practical Considerations on the Making of Cheese.*
4. VIALA, J. *Antirabic Statistics of the Pasteur Institute for the Year 1909.*

1. Sergent and Foley worked on an epidemic of relapsing fever in Algiers and came to the following conclusions: Their epidemic was marked by a characteristic set of symptoms and was very free from complications. The prognosis for life was excellent. Judging from the symptoms, this epidemic resembled the European relapsing fever more than the African tick fever.

They describe the spirillum which caused this epidemic and found it inoculable from man to monkey, although it could not be kept going from monkey to monkey. Other inoculations into rats and mice only met with slight success. The spirillum from this epidemic showed itself to be different from that of other epidemics by tests *in vitro* with the serum of immunized animals, and so they called it "Spirochaete berbera."

They experimented with different insects, such as lice, mosquitoes, etc., in order to find the method of transmission. They found positive results only with the lice, and feel that the other insects may be excluded. Whether the lice are the direct cause of transmission is as yet uncertain. [C. F., JR.]

Correspondence.

EXAGGERATION OF THE PREVALENCE OF VENEREAL DISEASE.

ATTLEBORO, MASS., July 18, 1910.

Mr. Editor: I am thoroughly in sympathy with the recent movement to educate the people generally, and especially the rising generation, as to the dangers of venereal diseases. I have been impressed, however, with a tendency in most of this agitation to what seemed to me to be gross exaggeration. For instance, circulars were freely distributed in our town last spring containing the statement that 75% of the adult male population had suffered from gonorrhea. In another paper which recently appeared in the medical journals, it was roughly estimated on the authority of certain specialists that 80% of the male population had been thus afflicted. From my own practice and experience I believe these figures are altogether misleading. My own practice brings me in touch with several hundred men each year from different parts of New England. These are invariably questioned as to the possibility of venereal disease in the past, and only a small proportion of them — not to exceed one third — admit having had trouble of this sort. There is no special reason why these patients should wish to conceal the truth, and the question naturally arises how such statistics are gathered. If patients who are co-operating with their physicians for their own interests will not admit the truth to them, to whom would they admit it? It evidently is misleading to take the opinion of specialists who see nothing but this sort of trouble. Naturally they are willing to attribute these diseases to 80% or 90% of the people who apply to them for treatment.

On the other hand, I am impressed that such statements, if true, would be very unwise in connection with this agitation to young people. They must do more harm than good. Any thinking young man will immediately reflect that if three fourths or more of the business men, professional men and other male members of the community with whom he is acquainted had in their youth had such troubles and not only lived through them, but are able to make a success in life, then there can be but little danger in the trouble. Such statements would only reassure the youth and tend to encourage them in recklessness rather than deter them by any fear of the consequences. I believe, therefore, that such statements are not only greatly exaggerated, but that they are exceedingly unwise.

Very truly yours,

C. C. NICOLA, M.D.

LETTER FROM BERLIN.

THE POLYKLINIK. UNUSUAL CASES OF RETENTION. ISRAEL'S KLINIK. PROSTATIC HYPERTOPHY. NEPHRECTOMY. THE WORKING CAPACITY OF THE OPPOSITE KIDNEY.

BERLIN, June 1, 1910.

Mr. Editor: Probably in no city in the world are there so many and so good opportunities to see clinical work in all branches of medicine as there are in Berlin. This is particularly true of urology. The number of good men here who are really experts in this branch of medical science is quite remarkable. I believe this has been brought about by the system of teaching that prevails here. If a man has ability and energy, he endeavors to become a private teacher so that he may gather around him a number of pupils. To do this he establishes a clinic of his own. This is a simple matter. He hires a few rooms, generally in some congested part of Berlin, where there are many poor, puts out his sign, and patients begin to come to him at once. The German population has come to regard the "*polyklinik*," as it is called, an institution, and it is really a very valuable institution. Patients are well treated, opportunities for study are unrivaled, and lastly, the physician who has started the clinic often rises from this humble beginning to a position of eminence in the medical world.

In these clinics one has occasion to see every kind of case — some among them very rare. One day I saw sitting side by side too very rare cases of retention. The first patient was a man fifty-five years old who had, fifteen years previously, sustained a severe fall, injuring his back. Complete retention followed, lasting many months. Since the accident he has never been able to completely empty his bladder. The diagnosis was hemorrhage of the spinal cord. The second patient was also a middle-aged man who twelve years previously had an operation performed for hydrocele and inguinal hernia. Immediately after the operation there was retention, which was thought to be simply postoperative. But he has never since that time been able to urinate without the catheter. There were no stigmata of hysteria. Both patients had severe cystitis and trabeculated bladder.

If one wishes to see operative work he cannot do better than attend Israel's operative clinic. This is in a large general hospital on Auguststrasse, where operations on the urinary organs take place Mondays, Wednesdays and Saturdays. All are cordially welcome. It is a great pleasure to see Israel operate. Probably no one has had greater experience than he has had, nor greater opportunities. At the head of a large hospital, he commands a vast amount of material. His patients come from all over the world and his reputation is very great, and justly so. Of his operative technic too much cannot be said in praise. It is perfect. He makes no mistakes, operates rapidly, surely and with a finish. Israel makes a long oblique incision for nephrectomy, beginning at the erector spinæ angle and extending well forwards and downwards a little inside of the iliac crest; if additional room is needed, in the case of large tumors of the kidney, he makes a cross incision just under the border of the ribs. The peritoneal cavity is not opened. The light from the window shines directly into the wound, the patient being on his side and slightly raised by means of a small hard pillow not more than six to eight inches in diameter, and, as the operator stands somewhat towards the patient's knees facing the patient's head, which is away from the window, he has complete command of the field. This is the best position for nephrectomy I have ever seen. The space given is considerable, and with efficient retraction of the edges of the wound it is possible to see even well under the ribs. Israel clamps his vessels, removes the kidney and ties the stump with one stout ligature. He does not transfix. If there is a thrombus in the vena cava, as sometimes happens in the case of malignant disease of the kidney, Israel does not hesitate to incise the vein, remove the thrombus and sew up the vein again.

One sees but few prostatectomies in Berlin, and I believe the operation is not much in favor. They seem to prefer the palliative treatment for prostatic hypertrophy.

In the matter of determining the working capacity of the "opposite" kidney the Germans excel. With a careful man it is seldom that a patient dies after nephrectomy from insufficient action of the remaining kidney. Their method is thorough and takes but a short time, about three hours being all that is required. The method is as follows: (1) Be sure that the test is performed in the early morning, preferably before eating and drinking, especially the latter — a very dilute urine will cause the test to fail because the sugar secreted in the phloridzin test may be so slight in amount from dilution as to make the tests unsatisfactory. (2) Both ureters are catheterized and an endeavor made to get the total output of urine from each kidney; unless you do this the cryoscopy test is useless. (3) The urine as it flows from the ureters is collected in test tubes of very small bore; this allows of a relatively small amount of urine being used for testing. (4) The following scheme is now followed: (*a*) General appearance of each urine, its odor, color, transparency; (*b*) albumen test on each side; (*c*) sediments; (*d*) phloridzin test, each side; (*e*) indigo carmine test, each side; (*f*) cryscopy, each side; (*g*) total amount of urine passed each side from the insertion of catheters to time of withdrawal.

The phloridzin test is very easily and rapidly performed with the appropriate apparatus. The precaution is to use a perfectly fresh solution and to warm it before injecting. A 1-100 solution is used, and of this 1 ccm. is injected subcutaneously. Sugar ought to appear in the urine from a healthy kidney in about fifteen minutes. The time of injection is noted, and also the time of appearance in the urine from either kidney. This is ascertained by examining repeatedly small amounts of urine collected in the narrow bored test-tubes; the Nylander bismuth test is employed for this purpose. Fifteen minutes from the time sugar has first appeared on either side the sugar percentage may be tested for. To do this, collect all the urine from each side separately from the time the sugar has been detected on one side or the other; using this urine, do the Lohnstein's fermentation test. The Lohnstein apparatus is a curved glass tube, in the bottom of which is a quantity of mercury. On one side is a graduated scale showing percentages; on the other is a cup into which is placed 1 ccm. of the sugar urine plus a small amount of baker's yeast. A glass stopper is now forced into the neck of the cup and a weight put on top of the stopper to prevent the expanding gas from forcing it out. The whole apparatus is now placed in an oven at a temperature of 37.5° Centigrade and allowed to remain there two hours. At the end of this time fermentation will have been completed and the expanding gas will have forced the column of mercury up the tube, and the percentage of sugar may be read off. This is Caspar's method. Israel prefers to leave the apparatus in the oven twelve hours. The indigo carmine test is simple enough. It should always follow the phloridzin test. The rule is to inject the carmine ten minutes after the phloridzin has been injected. The blue color does not interfere with the sugar test. A simple and easy solution is that made with the Brückner, Lampe & Co. (Voelcker Joseph) tablets of indigo carmine, dissolving one tablet in 10 ccm. of warm sterile water. It makes a clean solution which contains no sediment. The time of injection of the carmine is noted, and likewise the time of its first appearance.

The cryscopy test is best performed with the Beekman apparatus. It is necessary to get the total output from each kidney in a given time in order to have the test of any value.

Israel's summary of the whole question of determination of renal efficiency is about as follows: Testing by means of the various tests is not a mathematical problem. It is by taking the information gained in the gross rather than in detail that an opinion is arrived at; most information is gained by a careful chemical, microscopical and bacteriological examination of the separated urines. Cryoscopy comes next in point of importance if you have the total output of each kidney. Phloridzin and indigo carmine come next. Besides all this, you must consider the general condition of the patient, his disease, his mental and physical makeup, his previous habits, and history. It is largely a question of good judgment, and the well-balanced man accustomed to weigh each case on its own merits will be the one who will make fewest mistakes in advising for or against an operation.

G.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 16, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	10	3
Chicago	644	—	Pittsfield	15	5
Philadelphia	—	—	Brookline	6	1
St. Louis	—	—	Gloucester	8	—
Baltimore	—	—	North Adams	3	3
Cleveland	—	—	Northampton	7	2
Buffalo	—	—	Chicopee	22	15
Pittsburg	—	—	Medford	5	1
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster	—	—
Washington	—	—	Hyde Park	3	1
Providence	—	—	Melrose	4	3
Boston	221	67	Newburyport	4	1
Worcester	56	25	Revere	3	2
Fall River	99	38	Westfield	5	1
Cambridge	35	4	Woburn	4	1
Lowell	64	44	Peabody	—	—
New Bedford	59	43	Marlboro	4	2
Lynn	24	9	Attleboro	1	1
Springfield	40	13	Adams	11	7
Lawrence	37	24	Clinton	3	—
Somerville	17	5	Gardner	7	3
Brockton	14	3	Milford	—	—
Holyoke	18	13	Watertown	1	1
Malden	9	5	Plymouth	—	—
Chelsea	11	1	Southbridge	0	—
Newton	10	1	Weymouth	4	—
Salem	14	7	Framingham	4	2
Haverhill	12	7	Wakefield	—	—
Fitchburg	10	3	Webster	4	4
Everett	8	1	Arlington	1	—
Quincy	—	—	Greenfield	8	0
Taunton	20	7			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JULY 13, 1910.

STONER, G. W., surgeon. Granted four days' leave of absence from July 3, 1910, under paragraph 189, Service Regulations.

MAGRUDER, G. M., surgeon. Granted one month's leave of absence from July 8, 1910, on account of sickness.

COBB, J. O., surgeon. Leave for seven days from June 26, 1910, amended to read three days from June 26, 1910.

STIMPSON, W. G., surgeon. Directed to proceed to Tuckerton and Atlantic City, N. J., for the purpose of making examination of keepers and surfmen of the life-saving service. July 11, 1910.

CUMMING, HUGH S., passed assistant surgeon. Directed to proceed to Ocean City, Md., and Chincoteague, Wachapreague, and Cape Charles City, Va., for the purpose of making examination of keepers and surfmen of the life-saving service. July 11, 1910.

LAVINDER, C. H., passed assistant surgeon. Granted three days' leave of absence en route in Europe under paragraph 189, Service Regulations.

VON EZDORF, R. H., passed assistant surgeon. Leave for five days from June 28, 1910, amended to read three days from June 28, 1910, on account of sickness.

FOX, CARROLL, passed assistant surgeon. Granted seven days' leave of absence from July 9, 1910, under paragraph 191, Service Regulations. Directed to proceed to Point Pleasant, N. J., for the purpose of making examination of keepers and surfmen of the life-saving service. July 11, 1910. Granted seven days' leave of absence from July 16, 1910.

MCLAUGHLIN, A. J., passed assistant surgeon. Relieved from duty at Manila, P. I., and directed to proceed to San Francisco, Cal., reporting arrival to Bureau by wire. July 7, 1910.

FOSTER, A. D., passed assistant surgeon. Relieved from duty at Hongkong, China, and directed to proceed to San Francisco, Cal., reporting arrival to Bureau by wire. July 11, 1910.

PORTER, J. Y., quarantine inspector. Directed to make inspections of certain quarantine stations of Florida from time to time during present season. July 7, 1910.

BREADY, JOHN E., acting assistant surgeon. Granted twenty-seven days' extension of annual leave from June 2, 1910, on account of sickness.

CONVERSE, GEO. M., acting assistant surgeon. Granted seven days' leave of absence from July 11, 1910, under paragraph 210, Service Regulations.

CREPIN, H. E., acting assistant surgeon. Granted seventeen days' leave of absence from July 5, 1910.

FALK, C. C., acting assistant surgeon. Granted ten days' leave of absence from July 8, 1910.

HORNING, HENRY, acting assistant surgeon. Granted seven days' leave of absence from July 6, 1910, under paragraph 210, Service Regulations.

MASON, WM. C., acting assistant surgeon. Granted nine days' leave of absence from June 23, 1910.

SCHUG, F. J., acting assistant surgeon. Granted fifteen days' leave of absence from July 9, 1910.

STUART, ALBERT F., acting assistant surgeon. Granted thirty days' leave of absence from July 5, 1910.

LAGRANGE, J. V., pharmacist. Granted seven days' leave of absence from July 9, 1910, under paragraph 210, Service Regulations.

ILTIS, G. W., pharmacist. Granted seven days' leave of absence from July 1, 1910, under paragraph 210, Service Regulations.

STIER, CARL, pharmacist. Granted one day's leave of absence, June 16, 1910, under paragraph 210, Service Regulations.

BIERMAN, C. H., pharmacist. Granted ten days' leave of absence en route to station.

STERNS, C. O., pharmacist. Granted one day's leave of absence in June, 1910, under paragraph 210, Service Regulations.

ELDREDGE, M. B., pharmacist. Granted three days' leave of absence from July 5, 1910, under paragraph 210, Service Regulations.

APPOINTMENT.

CLAUDE C. CANNON appointed a pharmacist of the third class. July 6, 1910.

CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING JULY 23, 1910.

REED, E. U., passed assistant surgeon. Detached from duty from Naval Hospital, Norfolk, Va., and ordered to duty on the U. S. S. "Philadelphia." July 16.

DIEHL, O., medical inspector. Detached as fleet surgeon, U. S. S. "Charleston," Asiatic fleet, and ordered home. July 21.

BOOKS AND PAMPHLETS RECEIVED.

The Pathologic in Art. By Arthur C. Jacobson, M.D. Reprint.

Smallpox in the United States. By John W. Trask, M.D. Reprint.

Massage as an Occupation for the Blind. By L. Webster Fox, M.D., LL.D. Reprint.

Then and Now. By L. Webster Fox, M.D., LL.D. Reprint.

Conservative Surgery in Ocular Injuries. By L. Webster Fox, M.D., LL.D. Reprint.

Some Alleged Effects of Sodium Benzoate and Benzoic Acid. By C. A. Herter, M.D., New York.

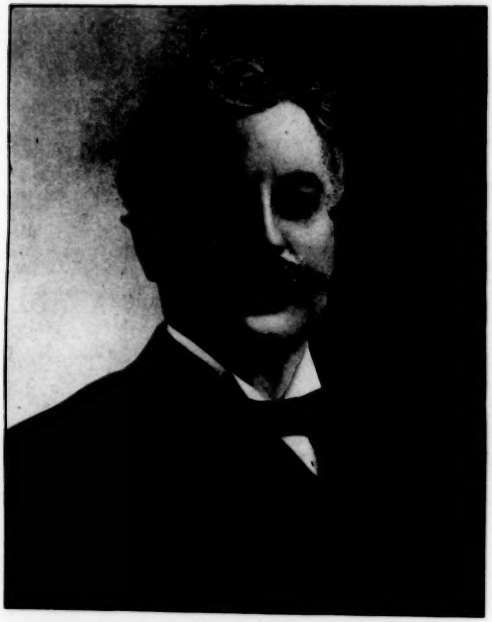
The Action of Sodium Benzoate and Benzoic Acid on the Human Organism. By C. A. Herter, M.D., New York.

The Evidence of Plague Infection among Ground Squirrels. By George W. McCoy, M.D. Treasury Department, Washington, D.C.

Tuberculosis, Its Nature and Prevention. By F. C. Smith, M.D. Public Health Bulletin No. 36, Washington, D. C.

The Relation of Climate to the Treatment of Pulmonary Tuberculosis. By F. C. Smith, M.D. Public Health Bulletin No. 35.

General Observations on the Bionomics of the Rodent and Human Fleas. By Maurice B. Mitzmain, M.S. Public Health Bulletin No. 38.



Chas. M. Cuyler

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DANVERS STATE HOSPITAL LABORATORY PAPERS, 1910,

Charles Whitney Page Series.

I. THE LABORATORY WORK OF THE DANVERS STATE HOSPITAL, HATHORNE, MASSACHUSETTS WITH ESPECIAL RELATION TO THE POLICY FORMULATED BY DR. CHARLES WHITNEY PAGE, SUPERINTENDENT, 1888–1898, 1903–1910.

BY E. E. SOUTHARD, M.D.

Bullard Professor of Neuropathology; Harvard Medical School; Pathologist to the Board of Insanity, Massachusetts.

II. THE MARGIN OF ERROR IN THE DIAGNOSIS OF MENTAL DISEASE: BASED ON A CLINICAL AND ANATOMICAL REVIEW OF 250 CASES EXAMINED AT THE DANVERS STATE HOSPITAL, MASSACHUSETTS, 1904–8.

BY E. E. SOUTHARD, M.D.

III. A STUDY OF THE DEMENTIA PRECOX GROUP IN THE LIGHT OF CERTAIN CASES SHOWING ANOMALIES OR SCLEROSES IN PARTICULAR BRAIN REGIONS.

BY E. E. SOUTHARD, M.D.

IV. TEN OBSCURE CASES OF MENTAL DISEASE: A CLINICAL AND ANATOMICAL STUDY.

BY L. B. ALFORD, A.B.,

Laboratory Interne, 1910, Danvers State Hospital.

V. A STUDY OF THE SENILE SPINAL CORD IN CASES OF MENTAL DISEASE.

BY A. S. HAMILTON, M.D.,

Instructor in Neuropathology, University of Minnesota; Student, Harvard Summer School of Medicine, 1909; Laboratory Interne, 1909, Danvers State Hospital.

VI. A HISTOLOGICAL STUDY OF THE THYROID GLAND IN MENTAL DISEASE, WITH SPECIAL REFERENCE TO CHRONIC THYROIDITIS.

BY A. H. PEABODY, M.D.,

Assistant Physician at the Danvers State Hospital.

VII. INCIDENCE OF HEART DISEASE IN ACUTE PSYCHOSES, DANVERS STATE HOSPITAL, MASSACHUSETTS, 1879–1909.

BY ALBERT A. HORNOR, 2D, A.B.,

Student, Harvard Medical School; Laboratory Interne, 1909, Danvers State Hospital.

VIII. BACTERIAL INVASION OF THE BLOOD AND THE CEREBROSPINAL FLUID BY WAY OF MESENTERIC LYMPH LODES: A STUDY OF FIFTY CASES OF MENTAL DISEASE.

BY E. E. SOUTHARD, M.D., AND MYRTELLE M. CANAVAN, M.D.

Assistant Pathologist to the Danvers State Hospital.

IX. BACILLARY DYSENTERY AT THE DANVERS STATE HOSPITAL, MASSACHUSETTS, SUBSEQUENT TO THE EPIDEMIC OF 1908 (DECEMBER, 1908–JUNE, 1910).

BY MYRTELLE M. CANAVAN, M.D.

X. ORGANISMS RECOVERED FROM DYSENTERY CASES STUDIED BACTERIOLOGICALLY, DECEMBER, 1908–JUNE, 1910, DANVERS STATE HOSPITAL, MASSACHUSETTS.

BY MYRTELLE M. CANAVAN, M.D.

XI. THE PERSISTENCE OF AGGLUTININS FOR B. DYSENTERIÆ IN DANVERS HOSPITAL CASES, TOGETHER WITH A SERIES OF CONGLUTINATION TESTS.

BY MYRTELLE M. CANAVAN, M.D.

XII. MANNITE- AND NON-MANNITE-FERMENTING ORGANISMS IN A CASE OF DYSENTERY, COMPLICATED BY HEMORRHAGIC ENDOMETRITIS PROBABLY DUE TO A THIRD ORGANISM.

BY MYRTELLE M. CANAVAN, M.D.

XIII. PRIMARY ADRENAL TUBERCULOSIS IN A CASE OF JUVENILE GENERAL PARESIS WITH MENINGEAL INFECTION (BACILLUS COLI COMMUNIS).

BY E. T. F. RICHARDS, M.D.,

Assistant Physician, State Infirmary, Tewksbury, Mass.; Assistant in Neuropathology, Harvard Medical School; formerly Laboratory Interne at Danvers State Hospital. (Proctor Foundation for the Study of Chronic Disease.)

XIV. A CASE OF AUTOCHTHONOUS SINUS-THROMBOSIS.

BY F. ROBERTSON SIMS, M.D.,

Assistant in Neuropathology, Harvard Medical School; formerly Assistant Physician, Danvers State Hospital.

XV. THE DIAGNOSIS OF FRACTURED SKULL AS AIDED BY THE FINDING OF BRAIN TISSUE IN THE VOMITUS.

BY GORDON T. BROWN, M.D., BRANT, ALBERTA,

Formerly Assistant Physician at Danvers State Hospital.

XVI. NOTE CONCERNING BRAIN AND OTHER VISCERAL WEIGHTS IN SIXTY-SIX SUBJECTS SHOWING CARCINOMA OR SARCOMA.

BY NEWELL B. BURNS, M.D.,

Laboratory Interne, 1909, Danvers State Hospital.

XVII. SOME EFFECTS OF OVERFEEDING WITH FATS IN CERTAIN CASES OF INSANITY.

BY HERMAN M. ADLER.

I.

THE LABORATORY WORK OF THE DANVERS STATE HOSPITAL, HATHORNE, MASSACHUSETTS, WITH ESPECIAL RELATION TO THE POLICY FORMULATED BY DR. CHARLES WHITNEY PAGE, SUPERINTENDENT, 1888–1898, 1903–1910.

BY E. E. SOUTHARD, M.D.

THE papers here collected represent the work, hitherto unpublished, of the last year or more in the Danvers State Hospital laboratory. At the time of Dr. Page's sudden and unexpected decision, in the spring of 1910, to retire from the superintendency of the Danvers Hospital, the laboratory workers in the hospital cast about forthwith for a way to express publicly their gratitude for his ardent support, and these papers — the product of their current work — have been here collected as the best token of honor at their command.

Those who know the difficulties of psychiatric work in general, and the almost universal lack of interest in psychiatry exhibited by the American practitioner of medicine, must be aware how little incentive to the hospital superintendent there is to wander afield from the circle of purely administrative and financial praise. To be a measurably good administrator and manager is becoming increasingly difficult. The state hospital superintendent is fast becoming a strategist, and no longer purely a tactician, and with the added hardship that many boards of trustees require him to be both. The administrative strategist of our state hospitals is in no position to cultivate the science of medicine; he is, in fact, losing immediate touch with the art of medicine. If he spends his time knowing his patients all by name and face, he must in many instances content himself with being a captain rather than a general. But generalship is what the modern state hospital demands of its superintendent.

Yet the military system of running great hospitals has its drawbacks. The fight we are trying to win or draw is, after all, not merely a financial fight, but a humanitarian fight. The patient, not the cost *per capita*, is the object of medical interest, which is itself only a concentration and refining of the interest of the public at large. The *per capita* considerations emerge soon enough. Nothing so quickly terminates humanitarian effort as extravagance and irregular or illogical expenditure.

In no wise supported by the American medical profession, which is, as a body, grossly ignorant of mental disease, and in his procedure dominated by considerations of *per capita* cost, as emphasized by governing boards, what wonder that the hospital superintendent often relapses into a martyred feeling of doing the best he can under the circumstances. The young man who preaches the value of science is apt to be termed a misguided enthusiast with inapplicable, not to say wholly millennial, ideas.

What happens to science in this plight? The neighboring university or medical school usually presents some enthusiastic young person with ideas drawn from pure biology, whether morphological, physiological or psychological, and this man is appointed pathologist. The pathologist now pursues, under cover of supervising or performing urine and blood analyses and autopsies,— *psychiatric problems?* No; the *biological problems*, which his university training permits him to make the most of. The pathologist may then relapse into a pure routinist; he may get interest in clinical problems and turn into a consultant or even into a superintendent; he may succeed so well in his biological work as to acquire important university connections and secede from psychiatry utterly, and for many of our young men the problem is not yet solved.

It is, therefore, not surprising that the pathologist to a state insane hospital has become understood to be a man pursuing the highest type of biological research of which he is capable under the aegis of the state. The model of certain privately endowed institutions has here been followed. Science is slipped in where legislators and trustees will not be concerned by it. The attitude of many superintendents to the introduction of science into their institutions is little short of refined smuggling. Of two equally high-minded superintendents, the one smuggles science in for the cause, the other regards this process as unethical and spends his energy on the creature comforts of his charges.

This situation seems to be chiefly due to a misconception of the possibilities of hospital laboratories. They have come to be regarded as addenda for pure research (whatever that may really mean!) and not as instruments of direct clinical value. *Clinical laboratories*, rather than research laboratories, are proper and, indeed, indispensable parts of a modern state insane hospital. *Research laboratories* belong, in the first instance, to universities and to privately endowed institutions. After demonstration of the value of clinical laboratories (and research products invariably accrue from good clinical laboratories), the state may become willing to invest in research laboratories. Shipwreck awaits reversal of this natural development. The research laboratory, set down complete and self-contained in a state hospital, is very apt to languish. Instances of such languishment or utter disappearance of exotic research laboratories could readily be multiplied in America.

But let the problems arise in the patients, and the clinico-pathological aim be held in mind, let the science be *applied* science, and the arrangement is never short-lived, nor does the laboratory become sequestered or subject to atrophy.

These peculiar conditions warrant our taking note of all such special and differentiated efforts as those of DR. CHARLES WHITNEY PAGE to develop a laboratory in a state hospital for the insane along durable lines. Doubtless we shall never pass through a similar era of transition again, and, when state hospital laboratories have become universally regarded as necessities, not luxuries, as local immediate benefits to the patient, not as hostages to the fortune of patients a century hence, we can afford to smile retrospectively at the hesi-

tant inductive progress of the early Danvers work. Already from the Government Hospital for the Insane in Washington, Superintendent White is preaching the advanced doctrine that the patient is benefited, and directly benefited, by the execution of pure research within the hospital walls: the most concrete benefit is to the stimulated staff. New York state and Michigan have central institutions of a type which prove that central authorities believe that *investigation pays*, and conversation with institutional officers from these states proves the general appreciation of these efforts, not merely in their research aspect, but also as to the direct educational value of the central institutions to the state officers.

Although no doubt can possibly exist of the extraordinary value of central psychiatric institutions, questions still arise concerning the degree to which local institutions should develop laboratories. The Government Hospital for the Insane at Washington is wholly exceptional on account of its central position. How far shall single state hospitals go? The Danvers State Hospital of Massachusetts presents one pronounced answer to this question.

The Danvers laboratory is, I believe, unique among insane hospital laboratories in having had four pathologists successively in charge whose work exhibits a certain continuity as well as a pronounced differentiation, and even a certain progressive evolution of an inductive sort. This fact argues for a certain durability of the plan as well as for its serviceability. The hospital itself is not especially favored by proximity to a medical center, and, in fact, has not to any extent ever been exploited for teaching purposes by pathologists eager for "material" and — not at all interested in the patients. In fact, Danvers is almost as inconvenient for teaching purposes as is any other state hospital, at least on the Atlantic seaboard.

The first autopsies (in 1879 and subsequent years) were performed, curiously enough by a classmate of Dr. Page, Dr. James Jackson Putnam, now Professor of Diseases of the Nervous System in the Harvard Medical School.

The standards were maintained by later workers, among whom may be mentioned Dr. Henry Rust Stedman, now trustee of the Taunton State Hospital, and superintendent of Bournewood Private Hospital, Brookline, Mass., and Dr. Sanger Brown, attending physician to Cook County, St. Luke's, and St. Elizabeth's hospitals, Chicago, Ill.

Next came an era in which the autopsies are in the main unsigned, and no regular pathologist was appointed until 1895, when, at Dr. Page's instance, the late Dr. William Leonard Worcester was obtained from Little Rock, Ark., as pathologist. The clinico-pathological range of Dr. Worcester's interest is seen from the following list of his papers.

TITLES OF PAPERS WRITTEN BY WILLIAM LEONARD WORCESTER, M.D., BEFORE HIS DANVERS APPOINTMENT.

Diphtheria in the Michigan Asylum for the Insane at Kalamazoo. Rep. Bd. Health Mich., vol. x, 344, 1881–2.

Cases Illustrative of the Localization of Cerebral Functions. Am. Jour. Insan., vol. xliv, 66, 1887.

The Mortality of Epilepsy. Med. Rec., N. Y., vol. xxxiii, 467, 1888.

Four Cases of Pernicious Anemia. N. Y. Med. Jour., vol. xlviii, 491, 1888.

Delirium. Am. Jour. Insan., vol. xlvi, 22, 1889.

Cases of Infantile Hemiplegia. Jour. Am. Med. Asso., vol. xiii, 302, 1889.

Is Puerperal Insanity a Distinct Clinical Form? Am. Jour. Insan., vol. xlvii, 52, 1890.

Insanity in Twins. *Ibid.*, 535, 1890–1.

Mechanical Restraint in the Treatment of the Insane. *Ibid.*, vol. xlviii, 476, 1891–2.

The Treatment of Ulcers. Jour. Med. Soc. Ark., vol. ii, 438, 1891–2.

The Mortality of Epilepsy in Asylums for the Insane. Jour. Nerv. and Ment. Dis., vol. xix, 177, 1892.

Cases of Multiple Neuritis. Am. Jour. Insan., vol. xlix, 591, 1892.

The Organization of Hospitals for the Insane. *Ibid.*, vol. li, 584, 1894.

Confusional Insanity. Maryland Med. Jour., vol. xxxii, 353, 1894–5. Also: Am. Jour. Insan., vol. li, 71, 1894–5.

TITLES OF PAPERS WRITTEN BY WILLIAM LEONARD WORCESTER, M.D., AFTER HIS DANVERS APPOINTMENT.

What is Insanity? Am. Jour. Insan., vol. lii, 602, 1896.

A Case of Paretic Dementia of Long Duration. *Ibid.*, vol. liii, 319, 1895–6.

A Case of Acromegaly with Autopsy. Boston Med. and Surg. Jour., vol. cxxxiv, 413, 1896.

Sclerosis of the Cornu Ammonis in Epilepsy. Jour. Nerv. and Ment. Dis., vol. xxiv, 229 and 263, 1896.

Cases of Paraphasia and Word Deafness. Am. Jour. Insan., vol. liii, 262, 1896–7.

The Preservation of Serial Sections. *Ibid.*, 287, 1896–7.

The Psychology of Insane Delusions. Trans. Am. Med.-Psychol. Ass., vol. iv, 200, 1897.

A Case of Landry's Paralysis. Jour. Ment. and Nerv. Dis., vol. xxv, 299, 1897.

Some Difficulties in the Retraction Theory. Am. Jour. Insan., vol. lvi, 101, 1897.

Regeneration of Nerve Fibers in the Central Nervous System. Jour. Exp. Med., N. Y., vol. iii, 579, 1898.

The Relations of Renal Disease to Mental Derangement. Trans. Am. Med.-Psychol. Ass., vol. vi, 210, 1899. Also: Am. Jour. Insan., vol. lvi, 275, 1899.

The Katatonic Symptom-Complex. Am. Jour. Insan., vol. lv, 659, 1898.

Three Cases of General Paralysis in Young Women. *Ibid.*, vol. lvii, 127, 1900.

Case of Patent Foramen Ovale in Advanced Age. Boston Med. and Surg. Jour., October, 1900.

In the same year, 1895, Dr. Adolf Meyer had been appointed pathologist to the Worcester State Hospital, coming from the Eastern Hospital at Kankakee, Ill., where he had been pathologist, 1893–1895. Such appointments were, as a matter of fact, in the air, though often determined purely on the score of availability of men. Even to this day hospitals are often unable to procure pathologists when they desire them.

During Dr. Page's temporary stay at the Connecticut Hospital for the Insane at Middletown, he procured the appointment of Dr. A. R. Diefendorf as pathologist, 1898 — Dr. Diefendorf had been assistant physician at the Worcester State Hospital, 1896–1898. During this period the work also of Dr. Jessie Weston Fisher was started at Middletown along bacteriological and hygienic lines.

During Dr. Page's stay at Middletown, Dr. Worcester died at the Danvers Hospital, and Dr. Albert Moore Barrett, who had been

pathologist at Independence, Ia., and had worked for a time with Meyer at Worcester and with Dr. Joseph Fraenkel, of New York, was appointed, after warm advocacy by Dr. Page, during the administration of Danvers Hospital by Dr. A. H. Harrington. Dr. Barrett spent a year in Germany, for the most part with Nissl and Kraepelin at Heidelberg, after receiving his Danvers appointment, and greatly influenced the writer, who was at that time, in an interval in his Boston City Hospital laboratory appointments, preparing to develop a course in neuropathology at the Harvard Medical School.

During his Danvers service, Dr. Barrett was particularly interested in developing the clinical diagnosis of mental disease and in correlating these conditions with the histology of the cerebral cortex, and various studies from Barrett's cortex collection, which has been continued, have since been made and will hereafter be made. Barrett has published the following papers from Danvers material:

Disseminated Syphilitic Encephalitis. Am. Jour. Med. Sc., March, 1905.

A Study of Mental Diseases Associated with Cerebral Arteriosclerosis. Am. Jour. Insan., vol. lxii, 1, 1905.

Spinal Cord Degenerations in a Case of Acromegaly, with Tumor of the Pituitary Region. Am. Jour. Med. Sc., February, 1906.

With H. W. Mitchell: Posterior Column Degenerations Following Injury to the Posterior Roots of the Seventh Cervical Nerves. Jour. Nerv. and Ment. Dis., vol. xxxv, 1908.

A Case of Pure Word-Deafness with Autopsy. *Ibid.*, vol. xxxvii, 1910.

Dr. Louis Hoag was assigned to laboratory duty in Dr. Barrett's service and spent much time in bacteriological work, most of which has not been published. He was especially interested in a diphtheroid organism, a preliminary report of which has been published.

"Organism X," Probably of the Corynebacterium Group: Its Differentiation from B. Diphtheriæ and Allied Organisms; Its Pathogenicity in Man, Especially in Bronchopneumonia, and Its Relation to General Paralysis of the Insane. Boston Med. and Surg. Jour., 1907, 157.

Although Dr. Hoag's work remains largely unpublished, its general results were of value in the laboratory in teaching the probable meaning of Ford Robertson's results in Scotland; for, in intensively following up diphtheroid organisms, the laboratory had come to be aware in how many non-paretic cases these organisms occurred.

Dr. Barrett was appointed assistant in neuropathology at the Harvard Medical School for the year 1905–6 and gave the first series of ward demonstrations to the second-year class in December, 1905. He was then appointed director of the psychopathic ward and professor of psychiatry in the University of Michigan, beginning Jan. 1, 1906.

The writer was appointed pathologist to take Dr. Barrett's place Jan. 1, 1906. Dr. Frederick Parker Gay was appointed bacteriologist to the hospital in August, 1906, and retained his connection one year, leaving to pursue research in immunology as assistant in pathology at the Harvard Medical School. Dr. Gay retained an advisory position with respect to the hospital, which will only be terminated by his approaching assumption of the professorship of pathology at the University of California.

PUBLICATIONS OF FREDERICK P. GAY WHILE ASSOCIATED WITH THE DANVERS INSANE HOSPITAL.

Recent Advances in the Prevention and Cure of Tuberculosis. International Clinics, i, seventeenth series, 1907, 23.

The Etiology and Experimental Study of Syphilis. *Ibid.*, iii, 1907, seventeenth series, 199.

Preventive Medicine. (An address before the Massachusetts Dental Society.) Dental Cosmos, 1907, 1136.

The Function of Tonicity in Human Isohemagglutination. Jour. Med. Research, xvii, 1907, 321.

With J. B. Ayer, Jr.: The Determination of the Alexic Activity of Human Blood Serum. *Idem.*, 341.

Alexic Activity of the Blood Serum of Cadavers. *Idem.*, 361.

With E. E. Southard: On Serum Anaphylaxis in the Guinea-Pig. *Idem.*, xvi, 1907, 143.

With E. E. Southard: On the Mechanism of Serum Anaphylaxis and Intoxication in the Guinea-Pig. *Idem.*, xviii, 1908, 407.

With E. E. Southard: On Recurrent Anaphylaxis and Repeated Intoxication in the Guinea-Pig by Means of Horse Serum. *Idem.*, xix, 1908, 1.

With E. E. Southard: The Relative Specificity of Anaphylaxis. *Idem.*, xix, 1908, 5.

With E. E. Southard: The Localization of Cell and Tissue Anaphylaxis in the Guinea-Pig, with Observations on the Cause of Death in Serum Intoxication. *Idem.*, xix, 1908, 17.

With E. E. Southard and J. G. FitzGerald: Neurophysiological Effects of Anaphylactic Intoxication. *Idem.*, xxi, 1909, 21.

With E. E. Southard: The Significance of Bacteria Cultivated from the Human Cadaver: A Study of 100 Cases of Mental Disease with Blood and Cerebrospinal Fluid Cultures and Clinical and Histological Correlations. (In press.) Centralbl. für Bakteriol., 1910.

Dr. Anna H. Peabody had been placed on the laboratory staff late in 1905, and Dr. Myrtelle Moore Canavan was appointed in the summer of 1907. Both have pursued histological and bacteriological studies, in part published.

Dr. E. T. F. Richards, working under the Proctor Foundation for the Study of Chronic Disease, was maintained by the hospital to continue the bacteriological work systematized by Dr. Gay. An opportunity for close correlation with the ward staff occurred in the extensive dysentery epidemic at Danvers Hospital in 1908. In the epidemiological side, a special laboratory interne, Mr. C. T. Ryder, a student at the Harvard Medical School, performed a thorough piece of work.

The whole was published as a special report in the Boston Medical and Surgical Journal in November, 1909.

REPORT OF AN EPIDEMIC OF BACILLARY DYSENTERY.

I. Statistical Report of the Dysentery Epidemic at Danvers Hospital in 1908. C. T. Ryder.

II. Investigation of the Possible and Probable Sources of Infection and of the Causes of Spread of Dysentery in Danvers Hospital. C. T. Ryder.

III. Identification of Epidemic Dysentery in Danvers Hospital as due mainly to Bacillus Dysenteriæ (Shiga Type). E. T. F. Richards, A. H. Peabody and M. M. Canavan.

IV. A Study of Agglutinations in Danvers Dysentery Cases: Comparative and Serial Tests with the Shiga and

Flexner-Harris Strains of Bacillus Dysenteriæ. E. T. F. Richards, A. H. Peabody and M. M. Canavan.

V. The Blood-Cell Picture in Bacillary Dysentery. Myrtelle M. Canavan.

VI. The Lesions of Bacillary Dysentery. E. E. Southard and E. T. F. Richards.

VII. The Nervous System in Bacillary Dysentery. E. E. Southard and C. G. McGaffin.

VIII. Ulcerative Vaginitis in a Case of Bacillary Dysentery. Myrtelle M. Canavan.

IX. The Occurrence of Dysentery in Hospitals and in the Community at Large, with a Summary of the Prophylactic Measures which should be Employed to Check the Disease. C. T. Ryder.

X. Conclusions from Work on the Danvers Dysentery Epidemic of 1908. E. E. Southard.

During 1907 Dr. James Bourne Ayer, Jr., served for a time as assistant pathologist. His papers, except those with Gay, are as follows:

Cyst of Dura Mater Occupying the Left Middle Cranial Fossa Associated with Anomalous Development of the Left Superior Temporal Gyrus. Am. Jour. Insan., lxiv, 3, 1908.

With E. E. Southard: Dementia Precox, Paranoid, Associated with Bronchiectatic Lung Disease and Terminated by Brain Abscesses (Micrococcus Catarrhalis). Boston Med. and Surg. Jour., 1908, 159.

With H. A. Cotton: The Cytological Study of the Cerebrospinal Fluid by Alzheimer's Method, and Its Diagnostic Value in Psychiatry. Rev. Neurol. Psychiat., 1908, 6.

Although Dr. H. A. Cotton was never, technically speaking, on the laboratory staff, his connection was actually so close, before his departure as director of the Trenton Insane Hospital, New Jersey, that he may be almost claimed as a laboratory man. His paper with Ayer has been mentioned above. Another was the following with the writer:

A Case of Central Neuritis with Autopsy. Am. Jour. Insan.

The writer was appointed pathologist to the State Board of Insanity, Massachusetts, in May, 1909, and his papers, except those mentioned above, are as follows:

PAPERS BY E. E. SOUTHARD.

A Case of Glioma of the Pineal Region. Am. Jour. Insan., lxi, 3, 1905.

A Case of Pott's Disease in the Monkey. Jour. Med. Research, xiv, 2, January, 1906.

With W. N. Bullard: Cystic Aplasia of the Cerebral Hemispheres in an Idiot Child. Jour. Med. Research, xiv, 2, January, 1906.

With W. N. Bullard: Diffuse Gliosis of the Cerebral White Matter in a Child. Jour. Nerv. and Ment. Dis., xxxiii, 3, January, 1906.

With C. W. Keene: A Study of Brain Infections with the Pneumococcus. Jour. Am. Med. Asso., xlvi, 1, Jan. 6, 1906.

With W. D. Ruston: Cerebral Seizures with Suboccipital Pain: Miliary Cerebral and Gross Vertebral Aneurysms. Boston Med. and Surg. Jour., 154, March, 1906.

A Case of Glioma of the Frontal Lobe with Invasion of the Opposite Hemisphere. Am. Jour. Insan., lxii, 4, 1906.

With R. R. Stratton: A Study of Acute Leptomeningitis (Streptococcus Pyogenes). Jour. Am. Med. Asso., xlvii, Oct. 20, 1906.

Lesions of the Granule Layer of the Human Cerebellum. Jour. of Med. Research, xvi, 1, March, 1907.

Diffuse and Focal Lesions in a Case of Late Epilepsy. Transactions of the National Association for the Study of Epilepsy, Sixth Annual Meeting, New Haven, Conn., Nov. 8, 1906, vol. iv.

With M. B. Hodskins: Note on Cell-Findings in Soft Brains. Am. Jour. Insan., v, 2, Oct., 1907.

With A. N. Collins: Gliotic Cyst of the Right Superior Parietal Lobule. *Ibid.*, lxiv, 2, Oct., 1907.

On the Mechanism of Gliosis in Acquired Epilepsy. *Ibid.*, lxiv, 4, April, 1908.

With Charles Ricksher: A Complicated Case of Brain Tumor. *Ibid.*

With H. W. Mitchell: Melancholia with Delusions of Negation: Three Cases with Autopsy. Jour. Nerv. and Ment. Dis., xxxv, 5, May, 1908.

With H. W. Mitchell: Clinical and Anatomical Analysis of Twenty-Three Cases of Insanity Arising in the Sixth and Seventh Decades with Especial Relation to the Incidence of Arteriosclerosis and Senile Atrophy and to the Distribution of Cortical Pigments. Am. Jour. Insan., lxv, 2, October, 1908.

With E. T. F. Richards: Typhoid Meningitis: Cultivation of Bacillus Typhosus from Meninges and Mesenteric Lymph Node in a Case of General Paresis, with Note on Experimental Typhoid Meningitis in the Guinea Pig. Jour. Med. Research, xix, 4, Dec., 1908.

A Study of Errors in the Diagnosis of General Paresis. Jour. Nerv. and Ment. Dis., xxxvii, 1, January, 1910.

With J. J. Putnam: Observations on a Case of Protracted Cerebrospinal Syphilis with Striking Intermittency of Symptoms: Attempt at Correlation with Ascending Meningo-Myelitis, Cranial Neuritis, Subcortical Encephalitis, and Focal Encephalomalacia Found at Autopsy. *Ibid.*

With J. G. Fitzgerald: Discussion of Psychic and Somatic Factors in a Case of Acute Delirium Dying of Septicemia: Note upon Experimental Guinea Pig Infection with Staphylococcus Albus. Boston Med. and Surg. Jour., 162, April 7, 1910.

Encephalitis and Brain Abscess. Osler's Modern Medicine, vii, 1910.

At this time, since the anatomical, histological and bacteriological methods had been established, the chemical, or, more properly, the clinico-chemical, point of view became appropriate, and Dr. Page's last appointment of a pathologist was that of Dr. Herman M. Adler. Dr. Adler represents the point of view of clinical research and has assumed charge of certain chosen patients, from whom the most can be learned, so far as can be predicted, from the clinical laboratory methods of internal medicine.

It seems obvious that the Danvers Hospital has enjoyed unusual advantages in many ways, but especially in the dominant policy of its retiring superintendent.

Dr. Page's institution of daily clinics is mentioned in Article II of this series ("The Margin of Error in the Diagnosis of Mental Disease"), where also are reprinted the conclusions of the writer's papers on "Errors in the Diagnosis of General Paresis" and "Anatomical Findings in Senile Dementia," both of which studies are wholly dependent on this system of daily clinics. The following is taken from the writer's discussion (with minor errors corrected) of Dr. Elbert M. Somers' paper before the American Medico-Psychological Association at Atlantic City in 1909, on "The Value of Staff Conferences in State Hospitals."

Dr. Southard. — "I would like to say a word about the economy of this conference system, because lately I have been enjoying the fruits of the daily staff conference at Danvers Hospital in a review of autopsy findings in cases that have been through the daily clinics. I wrote to Dr. Cowles, formerly of McLean

Hospital, to learn whether he had any data relating to the time at which this system was adopted, and he has written me a letter concerning the development attained at the McLean Hospital. He assigned the origin of such conferences originally to Germany, to Professor Ranke, who held a seminar for the discussion of historical matters by his pupils. That system has, of course, now spread into a number of our universities.

"In 1889, if I remember the date, the conferences were introduced at McLean. These conferences largely had the aspect of meetings at which special topics were considered and occasionally an introduction of patients. And then came in a number of hospitals in Massachusetts and elsewhere the occasional conference, perhaps a weekly conference.

"Dr. Page introduced the daily clinic in Middletown, Conn., during the latter years of the last decade of the nineteenth century, and, if I remember aright, it was in 1899. At the Danvers Hospital, in Massachusetts, it was begun and accurately recorded in 1903. We now have complete records for five years there. During that time a large number of cases have gone through the clinic, and 247 of them have come to autopsy. I have been reporting this year some data concerning the accuracy of diagnosis of certain diseases which I think bear upon medico-legal and other questions. At the New York meeting of the American Neurological Association, I showed that, on the basis of diagnosis in these clinics, the probable accuracy of diagnosis in the disease general paresis was 85%, or, if cases of tabes complicating mental disease were excluded, since these would perhaps not be termed errors of diagnosis, then the probable error of diagnosis was 1 in 10.

"The importance of these particular determinations of diagnostic accuracy lies in the fact that the diagnoses were made by several men. There was no induced uniformity of diagnosis due to autocratic methods, which must be in vogue in a certain degree in psychiatric institutions in the old world, but in our institutions we have the advantage of controversies among the assistant physicians. The Danvers daily clinics are very likely to bring out disagreements. Several members of this Association have been at times on the staff, and they are not all tempted to agree if there is any chance to disagree on the diagnosis.

"This shows that the development of the daily clinics has turned from the autocratic German, or one-man system, over to the republican system of considering diagnoses. That goes hand in hand with the method introduced (by Dr. Page) of giving cases in rotation to the different members of the staff so that even the younger members of the staff shall take the responsibility of diagnosis. I will venture to say, basing my ideas upon these results, that it is probably better so to introduce a feeling of responsibility in the younger men than to gain a somewhat greater accuracy of observation by leaving all the cases in the hands of some clinical director, first assistant or other possibly autocratic person.

"The exact recording of these diagnoses at a time long *prior to the making up of the annual report*, and without specific relation thereto, is important, and the fact that the diagnosis is set down in this way *before the autopsy* is another feature which makes results of importance in comparison with the results in an outpatient clinic.

"I said that the accuracy of diagnosis in general paresis was 9 out of 10; that is to say, out of 10 cases in which medical persons, or at least medical men of the average Danvers type, made the diagnosis, there would be 1 of the 10 which would not turn out at autopsy to be a case of general paresis.

"When we come to senile dementia, as I hope to show later in this session, the successes in diagnosis were 7 out of 10, at least taking the criteria of the books. I believe that by this correlating of autopsy findings with these republican diagnoses by the various members of the staff, we shall be able to improve our diagnostic ability."

Closely following in interest upon the daily clinic is another achievement of Dr. Page — the remarkable *index of symptoms* shown by all the patients at Danvers Hospital since its foundation in 1879. This gigantic task is now complete and the data so collected that, with very little labor, the index can be continued in future. Of course, the early observations leave much to be desired, but the data are in the main reliable so far as they are positive. For the more recent years they are of extreme service, as several pieces of statistical work now in progress have shown.

In this review I have not entered at all upon the individual aspects of Dr. Page's service, as, e. g., upon his early and constant advocacy of the non-restraint policy. His papers are as follows:

PAPERS WRITTEN BY CHARLES WHITNEY PAGE.

How can we Escape Insanity? Rep. State Bd. Health Connecticut, 1882.

The Relation of Attention to Hypnotic Phenomena. Am. Jour. Insan., July, 1890.

The Adverse Consequences of Repression. *Ibid.*, January, 1893.

John S. Butler: The Man and His Hospital Methods. *Ibid.*, vol. lvii, no. 3, 1901.

Connecticut's Influence in the Development of the American Hospital for the Insane. Proc. Connecticut Med. Soc., May, 1902.

Paranoid Dementia. Am. Jour. Insan., vol. lx, no. 3, 1904.

Mechanical Restraint and Seclusion of Insane Persons. BOSTON MED. AND SURG. JOUR., vol. cli, 22, 1904.

Tuberculosis in the State Institutions for the Insane. In Report of State Commission for Tuberculosis, Massachusetts, 1908.

Dr. Charles Whitney Page was born in 1845 and graduated at the Harvard Medical School in the class of 1870.

It is interesting that in his medical class and in neighboring classes graduated several other men who have since enriched the public medical service of Massachusetts. In Dr. Page's own class of 1870 graduated DR. CHARLES FOLLEN FOLSOM, for many years secretary of the Massachusetts Board of Health, a member of the commission which established the desirability of the Massachusetts Board of Insanity, and always a great force in the community for the improvement of psychiatric conditions, as well as DR. JAMES JACKSON PUTNAM, who, as noted above, was later to become pathologist to the Danvers Hospital. In the class below Dr. Page's graduated DR. GEORGE BRUNE SHATTUCK, for many years consulting physician at the Danvers Hospital. DR. GEORGE FREDERICK JELLY, long a member of the Massachusetts Board of Insanity, and DR. HOSEA MASON QUINBY, superintendent of the Worcester State Hospital, graduated in the class of 1868. Also in attendance at the medical school during Dr. Page's time were DR. WALTER CHANNING (1872), now

chairman of the Board of Trustees of the Boston State Hospital, and the late Dr. James Bourne Ayer (1873), a former member of the Massachusetts Board of Insanity.

Other physicians who attended the Harvard Medical School during Dr. Page's years and have since become of public note, although not identified with work in insanity, were William Lambert Richardson (1867); Henry Pickering Bowditch (1868), George Washington Gay (1868), John Hildreth McCollom (1869), James Read Chadwick (1871), George Howard Malcom Rowe (1868), Reginald Heber Fitz (1868), Frank Winthrop Draper (1869) and William James (1869).

Dr. Page served at the Hartford Retreat for the Insane, as assistant physician, from 1874 until 1888. He was elected superintendent of Danvers Hospital in June, 1888, and resigned in August, 1898, to become superintendent of the Connecticut Hospital for the Insane, Middletown, Conn. He resigned the latter position in September, 1901, and returned to the Danvers Hospital as superintendent in March, 1903. His resignation as superintendent of the Danvers Hospital was handed to the trustees in March, 1910, to take effect July 1, 1910.

The absolutely indispensable aid of the Board of Trustees must never be forgotten in estimating the work of an institution like the Danvers Hospital and of its superintendent.

The trustees of the Danvers Hospital spread upon their records at the time of Dr. Page's resignation the following, —

"The Trustees, having very reluctantly accepted Dr. Page's resignation as superintendent of the hospital, desire to place upon the records a statement of their appreciation of his services.

"He has served the state for many years and has shown unusual executive ability, judgment, force and initiative.

"He abolished mechanical restraint in the institution at a time when its use was general in this country; he was one of the first to establish a pathological laboratory in a hospital for the insane, which laboratory, judged by the amount and character of the work done, is second to none in this country; he was responsible for the building of the congregate dining room, which has promoted economy and the well-being of the patients. The hydrotherapeutic baths established by Dr. Page have met our highest expectations and will long remain a monument to his zeal in the use of physiological therapeutics.

"He took the initiative in erecting two tuberculosis wards, thus setting the example for other hospitals for the insane in this state.

"Under his administration there has been held a daily psychiatric clinic which has been not only of direct benefit to the patients, but has been a valuable source of instruction in psychiatry to the medical staff.

"Owing to this daily instruction, and to Dr. Page's unceasing efforts to obtain the best men available, the medical staff of the hospital has been second to none in the state.

"The largest part of Dr. Page's life work has been done in this hospital. It is a work that reflects the highest credit upon him and that makes this board, the hospital and its patients and the commonwealth his debtors."

What has been brought out *in extenso* above refers to the more purely scientific side of the Danvers work, as largely favored, advocated and mechanized by Dr. Page, to whom we wish to present the product of our recent work in the articles of this series. The chief considerations are as follows:

1. The insane hospital gets no vital support from a medical profession ill-educated in mental disease.

2. The situation is apt, in America at large, to be dominated by the *per capita cost* rather than by the humanitarian considerations which underlie the whole system of treatment of the insane.

3. The superintendency of a state hospital for the insane has become a position requiring generalship; is strategic rather than tactical.

4. Since the superintendent has oversight of the science as well as the art of psychiatry, as exemplified in his hospital, it becomes his duty continually to improve the laboratory as well as the ward facilities, and this *in the interest of the patient*.

5. Dr. Page's Danvers work has contributed to the economics underlying the proper co-ordination of the two aspects — the ward and laboratory aspects — of the large problem of diagnosis and treatment of insane patients in state hospitals.

6. Special attention may be drawn, (*a*) to the appointment of specially (though very variously) trained men to the pathologistships; (*b*) to the encouragement by maintenance of special laboratory internes; (*c*) to the daily clinic system with its republican feature of rotating leaders; and (*d*) to the complete index of symptoms now on file for all Danvers patients.

7. The maintenance of clinico-pathological laboratories in state hospitals for the insane is argued as a method for general adoption on account of improvements in diagnosis, and hence in treatment, which follow their establishment.

II.

The Margin of Error in the Diagnosis of Mental Disease: Based on a Clinical and Anatomical Review of 250 Cases Examined at the Danvers State Hospital, Massachusetts, 1904–8.*

BY E. E. SOUTHARD, M.D.

(From the Laboratory of the Danvers State Hospital, Hathorne, Mass.)

With the broadening of modern duties to the insane, nothing is more patent than the increasing necessity of accurate diagnosis. *Insanity* (a legal conception) has been supplanted by *the insanities* (a medical conception). And *the insanities* now grow, divide, multiply and die in the periodical literature quite after the fashion of disease entities in general. But the necessity of knowing which of the insanities a man has is no longer dictated by curiosity.

The diagnosis of mental disease actually modifies treatment. Institutional or home treatment,

* Read at the Washington meeting of the American Neurological Association, May, 1910.

hospital or asylum treatment, family care, special diets, drugs, baths or social service all are chosen on the basis of one's conception where the patient belongs nosologically. Especially is this true of the subtle modern forms of individualized treatment, whose applicability is so sharply limited to certain classes of patients.

From the standpoint of helping the individual patient and husbanding the state's resources, nothing can be wiser than to exert every effort to classify our patients better. We can rarely look to the general practitioner for a diagnosis, since medical-school instruction in psychiatry has been and still is inadequate. The patients arrive at the institution for the insane, as a rule, quite innocent of any adequate diagnosis.

This duty falls to the lot of the assistant physician, whose erroneous diagnoses (as well as some of his correct ones) are altered by the superintendent (or his deputy) for the official purposes of an annual report. As one well-known alienist has remarked, "The superintendent tires of the discussion and determines the matter."

The old order is changing, however, and an essential democracy is observable in many insane-hospital staffs. I will not say that in Massachusetts we constitutionally disagree. But, as the hospital superintendency has there become a strategic rather than a tactical position, the subordinate medical officers have assumed a greater dignity and independence, with tremendous benefit to the whole situation. The superintendent no longer thinks of "determining the matter," leaving that to the recorded facts or even leaving the matter undetermined.

A specially democratic plan has prevailed at the Danvers State Hospital, Massachusetts, which has the advantage that records have been preserved of the opinions of several diagnosticians (from three to eight, as a rule) concerning patients long before discharge, demise or other determination of the diagnosis has taken place. *Intra-vitam* diagnoses by the physicians in charge and by their more or less critical colleagues have thus been recorded for all but a small minority of the patients admitted to the Danvers State Hospital since 1904. This system, due to the superintendent, Dr. C. W. Page, will be described more in detail elsewhere. Its results are salutary in all ways.

A peculiar result of the Danvers system, or of the ideas informing that system, is the increase of "undiagnosticated" cases submitted for the annual reports. This is shown by the following comparison:

UNDIAGNOSTICATED COMMITMENTS.

	In Massachusetts Hospitals.	In Danvers Hospital.	
1904	91	26	(29%)
1905	93	34	(37%)
1906	58	28	(48%)
1907	81	18	(22%)
1908	92	39	(42%)
	415	145	(35%)

For general reasons, therefore, the whole question of accuracy in the diagnoses of mental disease seemed to deserve opening up. I naturally resorted to the autopsied cases of the Danvers series, selecting those which had been passed upon by several diagnosticians at the daily clinics during life. During the years 1904–8, 247 cases had passed through the clinics and the laboratory and, for convenience in determining percentages, I added 3 cases also from the clinics of 1908, but autopsied early in 1909, making a series of 250 cases subject to anatomical review.

GENERAL PARESIS.

The task which lay nearest to hand was to determine our percentage of accuracy and the reasons for our errors in the group of *general paresis*. These data were presented before the American Neurological Association at its thirty-fifth annual meeting held in New York, May 27, 1909, and were later published in the *Journal of Nervous and Mental Disease*, January, 1910.

The conclusions of the work on general paresis were as follows:

1. An effort has been made to establish the accuracy of diagnosis in general paresis. The method has been to analyze clinically the data of cases in which several experienced workers had agreed upon the diagnosis, and to compare their findings with the anatomical and histological data of the autopsies.

2. Thirty-five out of 41 cases unanimously diagnosed general paresis *ante mortem* proved to be cases of general paresis (85% accuracy).

3. Six cases of erroneous diagnosis have been especially studied. None of these showed plasma cells in the nerve tissues (Nissl's methylene blue and L. Ehrlich's pyronin methods), but all showed a variety of lesions which warrant placing them in an "organic" group.

4. The lesions probably responsible for the errors in diagnosis were: (*a*) Meningomyelitis and subcortical encephalitis (luetic?) (Case V); (*b*) tabes dorsalis and non-paretic cerebral disease (Cases I, IV); (*c*) arteriosclerotic brain disease with severe cerebellar involvement (dentate nuclei) (Cases II, VI); (*d*) cerebral sclerosis (type, perivascular gliosis) (Case III).

5. Although at first sight a probable error of 15% in the diagnosis of general paresis might suggest difficulties in possible medico-legal cases, it is obvious that, were the diagnosis confined to "incurable insanity," or even to "organic brain disease," the error would disappear. However, 2 cases proved to be general paresis (on the plasma cell criterion) in a series of 186 cases similarly examined in which the diagnosis of general paresis was not considered.

6. Improvements in our diagnostic ability could perhaps be introduced by lumbar puncture and cytological examination in a greater proportion of cases. But it is doubtful whether three of the six errors here studied would have been resolved by cytodiagnosis (meningomyelitis, tabes dorsalis). One other case (VI, arteriosclerotic brain disease) actually did show plasma cells in the lumbar puncture fluid, the source of which was not made out at autopsy.

SENILE DEMENTIA.

At about the same time, I presented the results of a study of the *senile dements* of the same series (at the sixty-fifth annual meeting of the American Medico-Psychological Association, held in At-

lantic City, June 3, 1909). The conclusions of the paper, published in the *American Journal of Insanity*, April, 1910, were as follows:

1. Forty-two cases unanimously diagnosed "senile dementia" at the Danvers Hospital clinics have been reviewed clinically and anatomically, with a surprisingly low general percentage of accuracy (66%) where *either* cerebral atrophy *or* cortical arteriosclerosis or both were regarded as confirmatory, and with still lower percentages: 48% where cortical arteriosclerosis was considered essential and 38% where cerebral atrophy was considered essential for a correct diagnosis.

2. The 14 cases which showed neither cerebral atrophy nor cortical arteriosclerosis (with obvious damage to the cortical tissues) are cases which probably should not have been termed senile dementia and perhaps more properly belong in a group of acute psychoses or other mental diseases occurring in old age, but not dependent on recognizable senile changes.

3. Of the residuum, it is clear that cases in which cerebral atrophy and cortical arteriosclerosis are combined are not suitable for exact study, and attention has been concentrated upon 8 cases of relatively pure brain atrophy, regarded as representing more nearly genuine senile dementia than the arteriosclerotic cases, which should be classed under the head of organic dementia.

4. True senile or senile atrophic dementia includes (1) cases in which the loss in brain weight proceeds *pari passu* with a general loss of weight in the other viscera, and (2) cases in which the loss in weight of the nerve tissues is differential.

5. The mental diseases of old age, therefore, include (*a*) Mental diseases occurring in, but not characteristic of old age.

(*b*) Organic dementias due to cortical arteriosclerosis.

(*c*) Senile atrophic dementias, attended with (1) general visceral atrophy; (2) differential atrophy of the nerve tissues.

6. Obvious suggestions for research in the two groups of senile atrophic dementias, as above stated, are that the phenomena of general visceral atrophy may depend upon general decadent agencies (dehydration?) and that the more differential atrophy indicates special metabolic flaws or toxic agencies.

7. Since such a grouping has not been hitherto rigorously borne in mind, it is not possible to state the clinical features of these cases in detail.

8. Taking the group senile atrophic dementia as a whole, we find all the 8 cases female, without special indications of arteriosclerosis (in some instances not clinically made out), all showing the characteristic external signs of senility and all showing either chronic diffuse nephritis (interstitial type predominant) or renal arteriosclerosis.

9. Neurologically, the 8 cases showed characteristically *tremors*, absence of certain *superficial reflexes*, variations in some *deep reflexes* (tendency to loss of leg reflexes), *defective organic reflexes*, alterations of *gait* and occasional slight *speech* disorder.

10. Psychiatrically, communication with the patients is difficult and impressibility or general perceptual capacity was deficient. The amnesia for recent events is characteristic and constant. The patients are perhaps *unoriented* rather than disoriented. Amnesia for remote events is also frequently present. Delusions are not prominent. Visual or auditory hallucinations (or illusions) characterized some cases. Motor excitement and nightly restlessness and noise are characteristic, though not quite constant, and are not in all cases certainly due to hallucinations. Garrulity was surprisingly uncommon in this group.

11. Anatomically, the pia mater was in general remarkably free from chronic changes, and, as the condition of the vessels was the basis of selection of the cases, the vessels naturally showed nothing grossly beyond involvement of the larger or pipe arteries (basal cerebral arteriosclerosis). The cerebral wasting was not in all cases quite uniform. One case even showed a slight granular ependymitis. The consistence of the brain tissue was in general increased.

12. A high percentage of obsolete tuberculosis characterized the autopsies.

13. Aortic sclerosis is probably constant in these cases. Sclerosis of other vessels is frequent but variable. The constancy of renal changes is interesting.

14. The cause of death is pulmonary in many cases, and is perhaps in some way bacterial in all.

15. No intensive microscopic examination has been undertaken as the object has been rather to define the group of senile atrophic dementias. The satellite cell findings are consistent with Metchnikoff's hypothesis concerning phagocytic processes in old age. It is believed, however, that cell and fiber changes are very probably primary and "neuronophagia" secondary, or at any rate that these processes run *pari passu*.

16. A few cases showed satellite cells preferring the apical cell processes rather than the basal regions of the pyramidal cells.

17. It is alleged that no convincing evidence has been brought of a causal relation between *local* vascular changes and senile nerve cell atrophy.

It became obvious from these two pieces of work that psychiatry has been very unevenly developed. Already at a time when general paresis begins to present highly specialized problems, — perhaps the most interesting of which is the possibility of confusing cerebellar disease therewith, — senile dementia, on the contrary, suffers from a lack of clearness in its very definition.

My observations on the degree of accuracy which we *have* obtained — an accuracy surprisingly large if we consider the slender requirements of medicolegal practice at the present day — seemed to meet with a certain disapproval in the minds of those who do not favor hospital observation for medicolegal purposes. I, therefore, decided to study intensively the whole series of 250 non-selected cases from the daily conference records of 1904–8 and the subsequent autopsy and microscopic records of the Danvers laboratory. In the pursuit of this work I have enjoyed the facilities courteously afforded by the superintendent, Dr. C. W. Page, and the present laboratory staff, Dr. H. M. Adler, assistant physician and pathologist; Dr. Anna H. Peabody, assistant physician, and Dr. Myrtelle M. Canavan, assistant bacteriologist to the Danvers State Hospital.

The general statistics are as follows.

TABLE I.

	Cases.
Cases at daily clinics, 1904–8, later autopsied,	250
Clinical diagnoses unanimous,	184
Revised on autopsy data,	21
Opinions divided or doubtful,	66
Every opinion incorrect as shown by autopsy,	7
Remain as yet obscure,	10

Diagnostic Accuracy.

	Cases.
89% with all agreed,	184
74% some one correct,	66
85% some or all correct,	250

Of course I will not for a moment conceal that the above percentages of accuracy cover a multitude of minor sins of diagnosis.

These sins of diagnosis are not prominent in the paresis group and will be washed away effectively by the Wassermann method, which was not in use at the period of these diagnoses. (The cases of tabes without cortical exudate, but with mental symptoms, due to arteriosclerosis or to something else, will remain difficult to diagnose.)

But the troubles of the senile and organic dementia groups are not readily resolved. If I had counted as an error of diagnosis (1) each case in which the clinical diagnosis was senile, but the autopsy indicated organic dementia, and (2) each case in which the clinical diagnosis favored focal brain lesions, but the autopsy showed only diffuse brain atrophy, then our percentage of accuracy would be considerably lowered. As it stands, I have contented myself with counting as errors only those diagnoses which pointed to senile atrophy or arteriosclerosis, separately or combined, as the adequate cause of the mental disease in question, but in my opinion erroneously so pointed. I take it that medicolegal demands at the present day would insist on little more than this. On the other hand, I am of opinion that to ascribe mental symptoms to senile brain wasting or to cortical arteriosclerosis, when neither exists, is to make an error which might conceivably damage the patient's chance of recovery. *Conceivably*, I say, for it is probable that the aged can sustain just as irrecoverable mental disease in the absence of these coarse changes as can adults that are not senile. These considerations bring to the foreground the neglected field of senile acute (or functional?) psychoses.

If some one reviews in a similar fashion the diagnostic results of 1909–1913, he will doubtless find the conception of senile dementia somewhat clarified, and the standard both of clinical and of anatomical diagnosis raised.

The statistics concerning the separate forms of disease in the unanimous group are as follows:

TABLE II.

	Cases
Unanimous diagnoses,	184
General paresis, clinically,	42
" " anatomically,	36
" " errors,	6
Organic and senile dementia clinically,	80
Brain atrophy or cortical arteriosclerosis,	62
Tumor, lues, porencephaly, *general paresis*,	4
Total organic anatomically,	66
Errors — senile acute psychoses,	14
Total errors, general paresis,	6+1 = 7
" " senile psychoses,	14
	21

In the group of 184 unanimous diagnoses, there were, in addition to 42 general pareses and 80 senile or organic dementias, 62 other cases, including acute psychoses, certain functional conditions, alcoholic cases and the like. I have gone over these cases with considerable care, since a number of them have fallen in groups which have been especially studied for other purposes (terminal infections, dysentery and the like), and have so far found nothing inconsistent anatomically with the clinical diagnoses assigned. Particular attention has been given to the manic-depressive cases (a part of the series described summarily at the Rutland meeting of the New England Society of Psychiatry, Sept. 28, 1909, not yet published) and to the dementia precox group (some of the cases to be reported for the American Medico-Psychological Association, at its Washington meeting, 1910). The requirement for inclusion in the dementia precox group, anatomically, has been some degree of satellitosis of the deeper cortex-layers and either generalized induration or certain focal indurations of the central nervous system anatomically. Meantime I would not wish to say that future study might not considerably readjust the correlations in the group. In particular I have been struck with the small degree of anatomical disturbance which alcoholic insanity may be consistent with. For the present purpose, it is more pertinent to consider the group of cases in which opinions were divided or doubtful, the statistics of which are presented in

TABLE III.

Doubtful or obscure cases,		66
One or more diagnosticians right,		49
Organic and senile dementia,	19	
Acute psychoses,	14	
General paresis,	9	
Brain tumor,	4	
Miscellaneous,	3	
No diagnostician right,		7
(One case each of general paresis, cortical arteriosclerosis, organic dementia, streptococcus septicemia, epilepsy, streptococcus meningitis, cerebellar abscess.)		
Obscure both clinically and anatomically,		10
Acute psychoses (?),	6	
Alcoholic insanities (?),	2	
Deliria (?),	2	

The margin of cases that remain obscure is, therefore, 4%. In this connection it will be remembered that Abbot,[1] in his analysis of 14,770 admissions and discharges in Massachusetts hospitals for the insane, 1904–8, found 512 undiagnosticated, or 3.4%. Abbot observes, "The difficulties of diagnosis lie, chiefly between dementia precox and manic-depressive insanity, or between these and involution psychoses." This is well borne out in the "obscure" group of the present analysis, all of which probably belonged somewhere in the dementia precox group, the manic-depressive group or the toxic group, as adopted by Abbot. This obscure group will be worth more extended analysis at a future opportunity.[2]

Suffice it to say, for the present, that both the cases that remain obscure and those that became clear at autopsy give very definite warning in what field to work for the improvement of diag-

[1] Abbot: Forms of Insanity in Five Years' Admissions to, and Discharges from, the Hospitals for the Insane in Massachusetts. Am. Jour. Insan., lxvi, 1, July, 1909.

[2] See L. B. Alford, Ten Obscure Cases of Mental Disease, this issue, BOSTON MED. AND SURG. JOUR.

nosis. For, omitting the case of epilepsy (whose diagnosis became clear *intra-vitam* long prior to death), and 3 organic cases (all in some respects atypical, especially the one I have termed "organic dementia," a patient with Graves' disease and cerebral sclerosis), we remain with 13 cases, in many of which, if I am not mistaken, the methods of internal medicine might have arrived at a nearer guess.

I think it, therefore, not out of place to maintain that the duty which lies nearest the modern psychiatric clinic is to adopt and develop, so far as possible, the methods which prevail in the best general hospitals, and employ them alongside the special neurological and psychological methods which more obviously, but not more indispensably, belong to psychiatry. That is to say, the modern psychopathic hospital must resolutely face the problems of what has come to be termed *clinical pathology*, a kind of pathology in which the autopsy is sometimes the *end*, but assuredly not the *aim*, of work.

Clinico-pathological studies of acute mental cases, *particularly in their first attacks*, may well unearth facts of commanding importance in psychiatry.

SUMMARY.

1. A series of 250 cases of mental disease, with *intra-vitam* diagnoses by several physicians, recorded at the Danvers State Hospital daily clinics, 1904–8, has been subjected to anatomical review for the sake of learning where lie the greatest difficulties in diagnosis.

2. Ten cases (4%) remain both clinically and anatomically obscure.

3. Seven cases (2.8%) had diagnostic doubts settled after the clinic either *intra-vitam* or *post-mortem* (one case each of general paresis, cortical arteriosclerosis, cerebral sclerosis with Graves' disease, streptococcus septicemia, epilepsy, streptococcus meningitis, cerebellar abscess).

4. Sixty-six cases (26%) were doubtful clinically, but the correct diagnosis was obtained by one or more diagnosticians in 49 of the 66 (74% of the doubtful group).

5. One hundred and eighty-four cases (74%) were clinically certain, and the clinical diagnoses were confirmed (or not altered) by autopsy in 163 of the 184 (89% of the unanimous group).

6. The correct diagnosis was obtained by one or more diagnosticians in 49 + 163 = 212 cases in 250 (85%).

7. The "correctness" of these diagnoses is subject to some reservation, (1) since within the "organic and senile dementia group" differentiation proved difficult, and (2) since anatomical "consistency" often signifies absence of characteristic lesions. The acute psychoses have been reviewed, however, bearing in mind modern views. Several alcoholic cases failed to exhibit striking brain lesions.

8. The majority of the real diagnostic difficulties uncovered by this analysis would appear to require more intensive work in the field of clinical pathology. For such work in psychopathic hospitals, this paper is an appeal.

III.

A Study of the Dementia Precox Group in the Light of Certain Cases Showing Anomalies or Scleroses in Particular Brain Regions.*

BY E. E. SOUTHARD, M.D.

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* Read in part at the Washington meeting of the American Medico-Psychological Association, May, 1910.

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CONCLUSIONS.

I. THE SCHISM OVER DEMENTIA PRECOX.

When it became apparent that the psychiatric world must needs split over the genesis of dementia precox, one party describing it as a species of intoxication with brain damage and the other as a dissociative mental disease without structural damage to the brain, one found one's mind almost wholly open in the matter. Perhaps, at the outset, one was not quite ready to admit dementia precox (Kraepelin's disease) among such relatively immortal entities as general paresis and hysteria, for example. The dissociation hypothesis possibly seemed the wider of the two, permitting each case to be a law unto itself in such wise that a proper diagnosis really turned into a fairly full katamnesis.

In any event, it was gratuitious to hypothecate a toxin *toto coelo*, and much more innocent to assume dissociations, especially if one could give precise descriptions of these for a number of typical cases. To be sure, some workers asserted characteristic satellitoses and other evidence of neuronic disease in the lower cortex-layers of the cerebrum; but these findings were perhaps inconstant, probably shared by other types of disease, possibly secondary either to the disease or to something else and certainly incapable of affording any explanation of the mechanism of dementia precox.

If one scanned the situtation in neuropathology, the outlook was not bright. Restricting oneself to the cerebral cortex alone, cytopathology appeared to have fallen on evil days. Nissl had given up his specific nerve-cell intoxication pictures. Alzheimer's methods for split products of nerve-cell metabolism had not been developed or fully applied. And, in any case, the effects of terminal complicating disease (intestinal, pulmonary, bladder and the like) with a variety of intercurrent infections and intoxications seemed to render dubious the outcome of almost any strictly cytopathological study, at least such as would contemplate symptomatic correlations. To conceive a "katatonic storm" sweeping through the cortex and leaving behind it a characteristic trail was within reason, but surely difficult of proof in the midst of so many cortical "storms" about the point of death.

Stratigraphic considerations were more hopeful. In fact, ever since Alzheimer's brief paragraph in 1897, — *Ebenso findet sich ganz zweifellos bei der Katatonie eine pathologische Gliafaserbildung in der Rinde, anscheinend auf gewisse Rindenschichten (und die Markleiste) beschränkt*,[1] — there has been an ever-recurrent assertion that satellitosis and correspondent nerve-cell disorder of the inner cortex-layers are characteristic of dementia precox, or at least of its katatonic form. In fact, these findings were supposed to draw together the two diseases, dementia precox and general paresis, since both showed the same changes, complicated in the latter by a multitude of other stratigraphic changes as well as by exudation.

Such opinions are not confined to Germany. Thus, in France, Klippel and Lhermitte, 1908,[2] consider dementia precox to be due to a progressive atrophy of the association neurones. The lesions of dementia precox, they say, are all essentially neuro-epithelial, i. e., confined to nerve-cells and neuroglia, and never essentially vasculo-conjunctive; or, as we should express it, ectodermal, never mesodermal. The fundamental lesion is "a regressive atrophy of the nerve-cells of the deep cortical layers and disappearance of the interconnecting processes," with neuroglia proliferation running *pari passu* with atrophic process. Meningovascular lesions, miliary hemorrhages, congenital malformations, terminal lesions due to cachexia or infection, are frequent, but are not indispensably found. Even cerebellar atrophy, and various instances of visceral hypoplasia, are simply signs of frail organisms, which either precede without causing dementia precox or are purely incidental effects thereof. Klippel, in discussion, admitted that similar neuro-epithelial (ectodermal) lesions were found in other chronic mental diseases.

Perhaps no work has been more widely quoted in this direction than that of Sioli, done partly at Munich under Alzheimer and partly at Bonn, and summarily reported in 1909. Sioli's statements

refer, however, only in part to stratigraphic considerations.

Sioli, in his brief *Autoreferat*, 1909,[3] states that he found *in all parts examined* of 20 cases of dementia precox certain evidences of destruction of nerve tissue. A portion of Sioli's data is cytopathological (nerve-cell disease with increase of Scharlach-stainable lipoids), but he indicates that the process may lead to atrophy or disappearance of cells, amounting in places to distinct stratigraphic disorder. Degenerative products were found accumulated in clear non-cellular spaces about the vessels, and protagonoid and Scharlach-stainable substances were found in tissues and in adventitial cells *en route* to the vessels. Inflammatory exudation was quite lacking. Perivascular and periganglionic glia-cell proliferation, fibrillary gliosis in the subpial zone, in deep cortex-layers and in the white matter, alterations of glia cell cytoplasm, ameboid neuroglia in the white matter occurred. The severest cases, especially those with their perivascular spaces packed with degeneration products, are thought to correspond with acute katatonic exacerbations.

Alzheimer, in his masterly statement concerning split products of nerve-cell and fiber metabolism, 1910,[4] maintains that much new light has been thrown, by his new methods and adaptations of old ones, upon such conditions as status epilepticus, severe paralytic attacks, deliria and katatonic excitements, and he believes that any one using these methods will be convinced that dementia precox and epilepsy are severe organic diseases. Alzheimer would almost risk differentiating histologically between a katatonic excitement and a mania because the katatonic case will show characteristic ameboid glia cells whereas the mania will not. For the purposes of this differentiation, severe disease of the other viscera must not step in to complicate the picture, since such disease may bring out the ameboid glia cells in the nervous system. Again, a severe toxic delirium at its height and a severe katatonic excitement at its height will exhibit similar changes (just as the posterior columns of a tabes and of a spinal transsection might be confused under certain circumstances from the granule-cell content of both). The fact seems to be that "organic" changes can now be demonstrated in a number of conditions formerly termed "functional." The differentiation of katatonia remains difficult, however, on account of precisely the conditions mentioned by Alzheimer, — toxic delirium and severe bodily disease, — which may produce somewhat the same pictures.

One remarkable case of sudden death in a stuporous katatonic who had no demonstrable physical disease is mentioned by Alzheimer to show that, without loss of any nerve-cell or degeneration of a single axis-cylinder, a true *Hirntod* may occur due to changes demnostrable by methods for the split products.

Unfortunately for the neuropathologist, such cases of pure *Hirntod* are rare. In the Danvers State Hospital material, infection at the time of death is almost the rule. Exact experiences with the cultivation of the more easily growing organisms from the blood and cerebrospinal fluid in 150 unselected cases have been communicated by Gay, Canavan and myself.[5,6] Cerebrospinal fluids are particularly prone at death to show organisms. This experience, as well as an inspection of the great numbers of tuberculous and acute infections in our material, caused us to discount in advance the cytopathological change *per se* and to hold somewhat in doubt the acute or recent neuroglia change as indicating mental disease. The asserted stratigraphical changes (cell-atrophies and losses in lower cortex-layers and correspondent satellitosis) seemed more trustworthy, but obviously less differential (seen also in general paresis and in some senile cases).

The status of the dementia precox question may be summed up as follows:

One body of workers prefers to describe dementia precox in such terms as *dementia sejunctiva* (Gross [7]), *Misserhältniss zwischen Affekt und Vorstellung* (Kölpin [8]), *dysphrenia* (Wolff [9]), *dementia dissecans* (Zweig [10]), *schizophrenia* (*Zerreissung oder Spaltung der psychischen Funktionen*) (Bleuler [11]), *apraxia ideatrix* (Dromard [12]), emphasizing in general the dissociative factors which emerge upon psychological analysis of the more clearly cut cases. "Disruptions of judgment," "specific factors in individual cases," "unpsychological reactions," "intrapsychic ataxia" or, more specifically, "noothymopsychic ataxia," "intrapsychic inhibition," "psychogenic conflicts," "psychological dispositions," "psychic causes," "psychic trauma," are phrases picked almost at random from certain modern discussions.[13,14,15]

Other workers pin their faith to the supposed "organic" character of this disease. The ground of this belief is often scarcely more than that the disease is essentially deteriorative on the mental side and hence *must* be "organic" on the cerebral side. Others set much store by auto-intoxication and believe that the effects of auto-intoxication must be registered in the cerebral cortex, could we but read it aright. Proceeding from the dictum that insanity and, therefore, dementia precox are brain diseases, these workers argue that dementia precox is presumably a destructive disease of the cerebral cortex after the manner of general paresis.

A few workers accord significance to both the functional psychic features and the organic cortical features. There is, however, a general tendency to take sides, with the almost universal feeling that the histologists have not satisfactorily proved the "organic" nature of the disease.

I was instigated to the analysis of my own material by the conviction that, though the histopathologists had not proved their point beyond peradventure, the functionalists were in the same plight. I had been engaged upon an analysis of cases of mental disease with onset after the fifieth year,[16,17] and had there come upon so many instances of satellitosis in the deeper layers of the cortex without distinct katatonic features clinically that I had been disposed to discount

the differential character of deep-layer gliosis for any type of mental disease. This reaction, in brief, appeared to be a necessary and natural result of destructive processes involving these layers, and the deposition or increase of neuroglia cells in this locus did not assume to my mind the differential character of such findings, as, e. g., the plasma-cell exudate of general paresis. Even the plasma cell, as all will admit, is not, *sensu strictiori*, pathognomonic for general paresis (witness trypanosomiasis, not to mention tuberculous and frankly luetic processes). Gliosis of the deep layers of the cortex is obviously far less differential than plasma-cell exudation, if only because normally we find neuroglia and satellite cells in this region.

Feeling a deal of uncertainty about the differential value of stratigraphic alterations, and especially of satellitosis, I was also not disposed to believe that dementia precox would turn out to be a diffuse cell disease. All that Alzheimer maintains, if I understand him aright, is that any one who chooses to examine dementia precox material by certain methods can convince himself that it is invariably an "organic" disease.[18] It would be a much longer step to assert that the changes invariably found are differential changes. Indeed, deliria and severe physical disease are consistent with the same changes.

Neither stratigraphic changes nor cytopathological changes, taken as exhibited *throughout a brain*, appealed to me as likely to throw much light on the immediate mechanism of dementia precox. Indeed, these changes bring up more new problems than they solve old ones in the wide field of neurobiology.

The *topographic idea* then occurred to me. In making, some years ago, an analysis of the first 1,250 autopsies of the Danvers State Hospital, and collecting the lesions of different parts of the brain in card-catalogue form, I had been much struck with the preponderance of brain lesions in certain areas. The frontal incidence was particularly high, and this I took to be due to the greater lability of the frontal tissues (on the stock evolutionary grounds). Having no convenient opportunity to correlate these findings with clinical data (a want now happily supplied by the index of clinical symptoms which Dr. Page has had constructed), I did not further work up these relations.

In connection, however, with work on encephalitis,[19] on gliosis,[20,21] and especially on the "soft brain,"[22] I had begun to gather unusually careful data concerning focal and general variations in consistence of brains. I had, therefore, some hope that my series would prove unusually suitable for topographic study.

Upon analysis, as the sequel will prove, not merely focal scleroses, but also easily identifiable macroscopic atrophies (or aplasias) were found in a surprisingly large number of cases. My topographic data depend, therefore, only in part upon the palpable mild scleroses which I had been especially studying.

On the basis of the anatomical data, and without necessarily any reference to microscopic studies (which have been carried out more or less thoroughly in the series), I wish to commend the topographic idea concerning lesions in dementia precox to neuropathologists. Whether a superior frontal atrophy or a post-central aplasia is or is not superior to a psychic scar or ataxia, as really explanatory of the mechanism of dementia precox, I will not pretend to say. In any event, the brains of all dementia precox cases should be carefully examined.

II. MATERIAL WITH STATISTICAL ANALYSIS.

The autopsy material of the Danvers State Hospital Laboratory from May, 1902, to January, 1910 (including the services of Dr. A. M. Barrett, E. E. Southard, and a portion of Dr. H. M. Adler's), consists of 647 cases. Sixty-three of these have been chosen on clinical grounds as probable or possible examples of dementia precox. The 10% thus chosen constitute the maximum rather than the minimum number of possible cases, since it was thought best to include certain doubtful cases for purposes of comparison. As will presently appear, several of the cases are so clouded by other factors, such as certain congenital features, alcoholism or attacks suggestive of manic-depressive insanity, that the diagnosis of dementia precox may appear extremely doubtful. It was felt that histological features might serve to extract the true cases.

As it is extremely desirable not to confuse phenomena of a normally aging brain with possible findings based on mental disease, the age of the subjects at death is important. The series is quite representative.

TABLE I.

Classified by decades according to age at death, the material shows:

Cases Dying.	Decade.	Ages.	Male.	Female.
11	3	21–30	8	3
19	4	31–40	7	12
12	5	41–50	3	9
11	6	51–60	6	5
8	7	61–70	7	1
2	8	71–80	2	0
63		21–80	33	30

It is also necessary to secure a representative series from the standpoint of age at onset. The series even includes two cases with strongly congenital coloring.

TABLE II.

Classified by decades according to age at onset, the material shows

Cases.	Decade.	Ages.	Male.	Female.
6	2	11–20	6	0
28	3	21–30	13	15
20	4	31–40	9	11
7	5	41–50	3	4
2	congenital features (possible imbecile),		2	0
63			33	30

It is essential to know how long the morbid process may be supposed to have lasted. Although many of these cases are not at all progressive, yet in many others slow transitions in clinical disease-type are exhibited. The total durations are given in

TABLE III.

Classified by duration of symptoms in hemidecade periods, the material shows

Cases.	Ages.	Male.	Female.
18	under 5	8	10
11	6–10	5	6
10	11–15	3	7
3	16–20	2	1
7	21–25	4	3
4	26–30	2	2
3	31–35	3	0
3	36–40	2	1
1	41–45	1	0
2	46–50	2	0
1	61–65	1	0
63		33	30

Although it is well known that various clinical phenomena are rather thoroughly commingled in this disease, making the older distinctions hard to maintain and more or less justifying Kraepelin in his union of types under a single caption, yet certain features do particularly characterize some cases, and the following table presents the impressions which these cases made, so to say, in the rough, before intensive analysis.

TABLE IV.

SUPERFICIAL ANALYSIS OF CASES.

	Cases.	Male.	Female.
Hebephrenic,	5	2	3
Katatonic,	17	9	8
Paranoid,	30	18	12
Dementia-precox-like:			
Imbecile,	1	1	0
Alcoholic,	1	1	0
Manic-depressive, involutional and unclassified,	9	3	6
	63	34	29

There was such an admixture of symptoms in several of the cases, or symptoms of doubtful import, that possibly the katatonic cases should number 20, and the paranoid cases 32. Imbecile traits came in question in 7 cases in all, though possibly not to obscure the eventual diagnosis in more than 3. Alcoholism can with difficulty be disengaged from the clinical picture of 5 cases. The at times doubtful or eventually unclassified cases which have been chosen to study with this group number 15, but of these perhaps 8 only can be fairly claimed as not instances of dementia precox; and, if a somewhat liberal definition be admitted, all these cases will warrant consideration. As Table IV indicates, 52 cases (29 male, 23 female) probably belong in the group with some certainty on clinical grounds.

In the process of anatomical analysis, much may be gained from the weight-correlations of certain organs. If the brain-weights stand up well, we at least have indication that no such conditions as those underlying general paresis or cerebral atrophy are present. The brain-weights in this series correspond well with the normal, though they show a slight tendency to reduction (2%).

TABLE V.

BRAIN WEIGHTS BY SEX.

	Dementia Precox. Gm.	Normal (Viercordt). Gm.
Male (26 cases),	1,336	1,357
Female (29 cases),	1,218	1,235
Differences,	118	122
Percentages:		
Male,	98%	100%
Female,	98%	100%

An analysis of the brain-weights according to age at death yields by no means so even a curve, doubtless because the numbers are too small for this particular purpose. The results are as follows:

TABLE VI.

BRAIN WEIGHTS BY DECADES IN WHICH DEATH OCCURRED.

	Cases.	Dementia Precox. Gm.	Normal (Boyd). Gm.
Male, 21–30,	6	1,333	1,358
Female, 21–30,	3	1,278	1,239
Male, 31–40,	5	1,476	1,366
Female, 31–40,	11	1,194	1,222
Male, 41–50,	3	1,350	1,348
Female, 41–50,	9	1,237	1,244
Male, 51–60,	6	1,353	1,345
Female, 51–60,	5	1,222	1,225
Male, 61–70,	5	1,364	1,315
Female, 61–70,	1	1,100	1,210
Male, 71–80,	1	1,390	1,290

It might be suspected that the different forms of dementia precox would lead to different degrees of brain-weight reduction. The weights in the hebephrenic, katatonic and paranoid cases, in accordance with the clinical analysis of Table IV, have been arranged.

TABLE VII.

	Cases.	Dementia Precox. Gm.	Normal (Viercordt). Gm.
Hebephrenic:			
Male,	2	1,338	1,357
Female,	3	1,168	1,235
Katatonic:			
Male,	9	1,329	1,357
Female,	8	1,193	1,235
Paranoid:			
Male,	12	1,309	1,357
Female,	11	1,240	1,235

The differences are all less than 70 gm. and the weights are consequently within 5% of the assigned normals.

Since the duration of the disease, though it certainly does not vary with the duration of any active process in all cases, might be supposed to bear some relation with the extent of any destructive process, the weights have been arranged according to duration:

TABLE VIII.

	Dementia Precox.	Normal (Vierordt).
Cases with duration under 10 years:		
Male,	1,331	1,357
Female (16 cases),	1,223	1,235
Cases with duration 11–20 years:		
Male (5 cases),	1,261	1,357
Female (7 cases),	1,243	1,235
Cases with duration over 20 years:		
Male (10 cases),	1,375	1,357
Female (6 cases),	1,173	1,235

Obviously these figures produce no even curve, but, should they be confirmed by other material, the inference could certainly be drawn that these brains stand wear and tear particularly well.

If such figures tend to show that no coarse katabolic effects evince themselves in the brains of this group, it is interesting to inquire whether any evidence of such disorder can be traced in other organs by this method.

TABLE IX.

HEART WEIGHTS.

	Dementia Precox.	Normal (Vierordt).
Male, (31 cases)	281	
Minus 3 hypertrophies (500+ g.),	244	313
Female (27 cases),	264	
Minus 1 hypertrophy,	253	310

TABLE X.

LIVER WEIGHTS.

		Normal (Vierordt).
Male (30 cases),	1,369	1,579
Female (28 cases),	1,257	1,526

TABLE XI.

SPLEEN WEIGHTS.

		Normal (Vierordt).
Male (30 cases),	160	
Minus 1 case wt. 870,	132	149
Female (27 cases),	106	180

TABLE XII.

COMBINED KIDNEY WEIGHTS.

		Normal (Vierordt).
Male (31 cases),	280	277
Female (29 cases),	255	264

Tables IX to XII appear to show that certain organs of the trunk are more disposed to evince losses in weight than is the brain. The kidney weights, however, stand up well. The weight of the spleen, as always, showed marked variations, and these variations largely depend probably on certain terminal conditions independent of mental disease.

Reductions in average weights of heart and liver reach a little over 8% for both males and females in both series. It is hard to draw a significant conclusion therefrom.

To sum up the data of this section, we learn from a fairly representative series of cases of dementia precox and similar disease that a reduction in brain weight of 2% is perhaps to be expected in the total group, that the reductions in brain weight of 5% occur in certain forms (here a larger number of cases is required for deductions), that the brain weights do not undergo progressive reduction with the duration of the disease, and that the hearts and livers of the series show in general a reduction of 8% in weight. Since the weights of the trunk viscera probably vary rather uncontrollably in the present state of knowledge (the factors of muscular activity and of nutrition in these patients come particularly in question), it is plain that more stress must be laid on brain conditions. The brains must be approached, therefore, with the premonition that changes, if any, will be fine changes, and possibly qualitative and transformatory rather than destructive.

III. GROSS ANATOMICAL ANALYSIS OF THE BRAIN FINDINGS.

As it is our object to show *either* first that there are no characteristic brain findings in this series of cases, *or*, secondly, that there are characteristic findings common to the series, it is obviously necessary to exclude cases with certain features which we are sure are not characteristically allied with dementia precox. Such complicating features are *coarse cerebral atrophy* and *regionary arteriosclerosis*. These features complicate and sometimes influence the course of dementia precox, but it is certain that arteriosclerosis, and highly probable that coarse cerebral atrophy are not characteristically associated with the disease.

As is well known, the question whether brain atrophy exists cannot be safely answered from the brain weight alone, since apparently high weights are consistent with atrophy of originally large brains, and apparently low weights may mean simply that the original weights were low. Qualitative data are safer guides here.

Five brains gave the qualitative impression of *generalized atrophy*. All these cases were of long total duration (eleven years or more).

It seems safe to eliminate this group from prior consideration, despite the fact that the gliosis shown may be more or less closely related with dementia precox.

One of the best indices of damaging local arteriosclerosis is afforded by *cysts of softening*, which were found in three cases, 1274 and 1297 of Table XIII, and 1171 (5986, female, forty-three, paranoid, duration seventeen plus [thirty?] years, brain weight, 1115 gm.), also excluded from prior consideration.

TABLE XIII.

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	Terminal Disease.	Brain Weight. Gm.
752	9888	F.	64	Hebephrenic	39 years	Pneumonia, 7 days	1,100
958	10738	F.	37	Paranoid	11 years	Exhaustion, 1 month	1,210
1266	7559	F.	58	Paranoid	13++ years	Dysentery, some weeks	1,250
1274	11027	M.	56	Katatonic	31 ± years	Hemiplegia, 1 month	1,365
1297	7511	F.	47	Paranoid	19 years	Cancer of uterus, 2+ months	1,390

Also it may be safer at first to exclude seven cases (1099, 13180, male, sixty-seven; 1121, 13398, female, fifty-six; 1174, 9769, female, forty-eight; 1258, 2, male, sixty-four; 1270, 617, male, sixty-eight; 1337, 15017, female, forty-five; and 1368, 121120, male, fifty-six) on the score of *marked sclerosis of vessels of the circle of Willis*. It is certain that this sclerosis has no direct effect upon the mental life; but there is at least a suspicion of vascular disease in the finer branches in such cases (only two of which in this series, viz., 1337 and 1174, are under fifty-six years of age).

It is noteworthy that we are required to exclude on these grounds (grounds, namely, of complicating "organic" brain-disease) only about 20% of our series. This confirms the impression gained from our statistical analysis of the brain weights. There is another general condition frequently found in cases of all descriptions (both sane and insane), which might be considered to have some bearing especially upon the histology of the superficial layers, *chronic leptomeningitis of diffuse distribution* (to the focal distributions we shall return in a moment). Eleven cases (842, 904, 913, 943, 958, 1014, 1025, 1027, 1093, 1234, 1338) may be excluded on this ground. These eleven and four others (already excluded) yield another perhaps surprisingly small percentage (about 22%) of cases showing diffuse chronic leptomeningitis.

For completeness are also presented the data concerning

TABLE XIV.

DURAL AND CALVARIAL CONDITIONS.	Cases.
Arachnoidal villi unusually developed,	3
Thickening of dura mater (not included under adhesions),	4
Chronic internal hemorrhagic pachymeningitis,	3
Dense calvarium,	9
Thick calvarium,	6
Thick and dense calvarium,	2
Thin calvarium,	3
Calvarial adhesions of the dura mater,	25

If we rely upon the statistical analysis of Section II, we cannot be so sure that *mild focal lesions of an atrophic or sclerotic nature* have nothing to do with processes in dementia precox, since these lesions will not appreciably influence brain weights. It is, of course, *a priori*, unlikely that such circumscribed foci, which are doubtless in the vast majority of instances due to some degree of local tissue destruction, can correspond with the extended series of vital reactions which we term dementia precox. Nevertheless, it is wise to examine our series carefully for foci of a slightly destructive or perhaps purely irritative character which might bear on the course of certain cases.

Consequently, excluding as diffusely atrophic 5 cases, as markedly arteriosclerotic (cysts of softening or basal cerebral arteriosclerosis) 8 cases, as showing diffuse chronic pial changes 11 cases, we remain with a material of 39 cases which deserve primary consideration from the standpoint of *possibly significant focal brain lesions*. Obviously the results of the search in these 39 cases (2 of which must be excluded through inadequate protocols) may be applied with due caution to the remainder.

A group of 12 cases amongst these 37 "non-organic" cases showed certain *minor lesions* made out in the gross, but *not frankly destructive, some possibly congenital in origin*. A summary view of these cases is presented in

TABLE XV.

MINOR MACROSCOPIC BRAIN LESIONS IN DEMENTIA PRECOX.

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	Frontal Lobe Lesions.
I. *Pre-Rolandic Lesions.*						
840	11211	F.	38	Katatonic	3 years	Atrophy and gliosis of frontal lobes
1062	7987	F.	38	Paranoid (alcoholic)	11 + years	Gliosis of superior frontal, prefrontal and orbital gyri
1143	8823	F.	47	Paranoid or katatonic	10 years	Gliosis of frontal, including orbital, gyri (see also cerebellum)
1294	10862	F.	37	Paranoid	6 years	Frontal lobe gliosis (see also post-Rolandic and cerebellar groups)
1310	13582	F.	28	Hebephrenic mannerisms	4 years	Frontal lobe gliosis (see also post-central group)
1358	10580	M.	24	Katatonic	10 years	Gliosis of left inferior frontal lobe
1360	10168	M.	51	Suicidal	10 years	Atrophy of prefrontal gyri
II. *Post-Rolandic Lesions.*						
1137	6531	M.	35	Paranoid, later katatonic	15 years	Right superior parietal microgyria (atrophy?)
1168	11863	F.	24	Hebephrenic, paranoid?	3½ years	Bilateral aplasia of post-central gyri
1298	14591	F.	36	Katatonic	10 months	Right post-central atrophy (see discussion)
1310	(See Frontal Group)					Left post-central aplasia or atrophy
1294	(See Frontal Group)					Occipital region gliosis
1149	11641	M.	57	Paranoid	32 years	Occipital region gliosis
1317	12143	F.	44	Paranoid	21 years	Occipital microgyria
III. *Infra-Sylvian Group.*						
1319	14597	F.	31	Paranoid (imbecile?)	8 years	Superior temporal anomaly

IV. *Cerebellar Lesions.*

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	Frontal Lobe Lesions.
1034	12756	M.	35	First paranoid, later katatonic	2 years	Sclerosis of dentate nuclei of cerebellum
1143	(See Frontal Group)					Sclerosis of right dentate nucleus, culmina, and clivi of cerebellum. Pons and olives firm
1168	(See Post-Rolandic Group)					Sclerosis of right dentate nucleus, cacumina, and clivi of cerebellum. Sclerosis of olives

A somewhat similar small group of four cases has shown certain appearances in the spinal cord indicating abnormality of quite doubtful interpretation.

If we eliminate the alcoholic (1240, no gross lesions) and doubtful cases (819, 939, 1151, no gross lesions; 1143, 1360, frontal lobe lesions; 1350, spinal cord lesion; 1135, generalized gliosis

TABLE XVI.

GROSS LESIONS OF THE SPINAL CORD.

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	Gross Lesions of the Spinal Cord.
1317	(See Post-Rolandic Group)					Cervical portion abnormally firm
1319	(See Infra-Sylvian Group)					Cervical cord abnormally large
1335	(See Table XVII)					Cord abnormally small
1350	4820	M.	62	Katatonic	35 + years	Gliosis of lumbar spinal cord

Here, then, as indicated in Tables XV and XVI, is a group of fifteen cases showing certain minor chronic lesions (or evidences of aplasia) in the central nervous system of quite doubtful, though certainly very varied, origin. Adding four more cases of *generalized cerebral sclerosis* of a mild form, not associated with gross atrophy, viz.

[compare Tables XV and XVI]) for the time being, we obtain 52% of our group (now reduced to 29 cases) showing minor lesions.

A microscopic analysis of the 15 cases showing minor lesions may indicate what type of lesion to look for in those cases which failed to show gross lesions. Lesions of this sort should be demonstra-

TABLE XVII.

Autopsy Number.	Clinical Number.	Sex.	Age.	Disease-Type.	Duration.	Brain Weight. Gm.
991	11047	M.	35	Paranoid	11 years	1,170
1135	11296	F.	28	Katatonic	6 years	1,430
1303	11624	F.	55	Hebephrenic	25 years	1,220
1335	13648	M.	32	Katatonic (alcoholic)	20 years	985

we obtain a total of *nineteen cases of slightly, though macroscopically, abnormal central nervous system in a series of thirty-seven cases, selected as not showing coarse complicating features like brain atrophy, intracranial arteriosclerosis, cysts of softening and the like.*

These nineteen cases, or at all events a certain number of them, demand attention as a group of dementia precox cases with lesions of doubtful interpretation, but not readily set aside as non-significant.

If we should group our cases up to this point we should obtain (1) *complicated cases* showing gross lesions certainly not related with dementia precox, 40%; (2) *cases with minor lesions* having a doubtful relation to dementia precox, 31%; and (3) a residuum of *cases without observed gross lesions*, 29%.

It will be wise at this point to analyze the cases of groups (2) and (3), i. e., the non-complicated cases, from a clinical point of view. The 37 cases are distributed as follows:

TABLE XVIII.

	Cases.	Male.	Female.
Hebephrenic,	4	2	2
Katatonic,	12	5	7
Paranoid,	13	7	6
Alcoholic,	1	1	0
Doubtful,	7	3	4

ble by any method which displays cells and nuclei well.

In case the lesions should prove non-stratigraphical, i. e., not ideally demonstrable by complete cell counting, the task will be more difficult. The qualitative intracellular or special extracellular properties which this latter search would entail will require material very seldom obtained, material free from terminal complications. Cases hitherto reported have suffered perhaps from such terminal disease. Tuberculosis is a special offender in this direction. Tuberculosis occurred in our series as follows:

TABLE XIX.

TUBERCULOSIS IN 63 CASES OF DEMENTIA PRECOX.

	Cases.
Active forms,	21
Healed and chronic forms,	16
All forms,	37

TUBERCULOSIS IN 39 CHOSEN CASES.

	Cases.
Active forms,	16
Healed and chronic forms,	7
All forms,	23

In both series there is 58% of tuberculosis, counting all forms. One case in three of the whole series

either died with or showed an active form of tuberculosis, whereas about two cases in five of our chosen "non-organic" series showed similar active tuberculosis.

Whereas it has never perhaps been convincingly shown that active tuberculosis outside the nervous system can produce important non-exudative lesions within the nervous system, it is probably a sound policy to exclude such cases from a list *sans reproche*, especially if intracellular conditions are to be studied. This process would leave us with *23 cases free from coarse destructive brain lesions and from active tuberculosis.*

Nine cases showing *decubitus*, 10 cases of "soft brain" (only one of which occurred in the non-organic series), and 3 cases of *edema of brain substance* might also offer obstacles to finer cytological analysis. For this purpose a list of 21 cases is available, but clinical doubts and difficulties remove 8 cases, leaving 13 cytologically appropriate cases (840, 884, 891, 944, 1006 [typhoid fever], 1034, 1081, 1298, 1303, 1317 [carcinomatosis], 1350, 1358, 1360).

To sum up, we have divided our cases upon anatomical grounds into three groups, (1) cases complicated by gross destructive brain lesions (40%), (2) cases having certain minor anomalies or mildly destructive or irritative lesions (31%), and (3) cases without observed gross lesions (29%). After excluding cases unsuitable for analysis on various grounds, we obtained a group of 29 cases, 15 of which (52%) showed the minor anomalies and mild lesions just mentioned. It will be the task of the next section to study these 15 cases intensively to see whether they evince any common features. Later studies may then apply these observations to the rest of the series, in which significant lesions may well occur hidden among complications.

IV. CLINICAL AND ANATOMICAL ANALYSIS OF FIFTEEN CASES OF DEMENTIA PRECOX SELECTED AS SHOWING CERTAIN MINOR GROSS LESIONS OF THE NERVOUS SYSTEM.

At this point it seems pertinent to inquire whether, upon a closer analysis of the cases which show minor gross lesions or anomalies, any hint of correlation between these lesions and individual clinical phenomena can be detected. It must be pointed out forthwith that no very close correlation can be hoped for, since we deal with far less constant phenomena than, e. g., those of epilepsy. The histories presented below in as condensed form as deemed advisable to offer a sound basis for clinical diagnosis obviously betray far greater variations in course and qualitatively more complex features than would a similar number of histories of epileptics. But clinical and anatomical correlations even in epilepsy are difficult, despite the firm establishment of the "uncinate" group on an anatomical basis. In view of the clinical variety of the dementia precox group, or even of the group of cases characterized by katatonic symptoms, it is at the outset doubtful whether a "frontal lobe group," a "post-central group," a "cerebellar group" can be firmly established for dementia precox. Obviously such a group should be earnestly essayed.

The *condensed histories*, drawn from the records of numerous workers, among whom may be mentioned Drs. H. W. Mitchell, H. A. Cotton, H. M. Swift and Charles Ricksher, who have been at the heads of services during the major part of the time covered by these reports, and the *summarized autopsy protocols* (for which the pathologists, bacteriologists and assistant physicians named below have been responsible) are here presented.

Case I. S. M., Danvers State Hospital No. 11211, Path. No. 840. Female, thirty-seven, single, school teacher. Born in Cambridge, Mass., of Irish parentage. Was a case of dementia precox, katatonic type, of three years' duration.

Heredity: Negative.

Previous history: Patient taught school from twenty-two to thirty-five. In August, 1901, after a period of overwork, the patient became depressed ("had lost her soul"); her mind dwelt on suicide. Patient remained unoccupied; two weeks after onset of depression was committed to McLean Hospital, where she showed languor, slow in movements, little spontaneous talk, a general effect of emotional gloom and certain somatic delusions ("bowels gone"). A brief attack of excitement followed, with confusion and resistiveness. Short periods of excitement followed with later increasing inertia and little spontaneous talk. Seven weeks after commitment she began to show increase of muscular tension and had to be tube-fed.

Patient was transferred to Danvers Hospital April 1, 1903, and then showed a flushed face, clammy skin and considerable acne. Pulse slow and weak, respirations shallow.

The katatonic signs consisted of an evenly distributed increase of muscular tension. Patient lay constantly in bed, on one side, with arms loosely adducted, hands clenched, legs flexed, chin and knees drawn together, eyelids tightly closed, a fixed facial expression, with lips protruded.

At first patient would take food from a cup, but tube-feeding was later constantly resorted to.

Patient would flinch slightly to pin pricks, but would not move limb even if pin was deeply thrust. Risus sardonicus appeared at times. Occasionally, the eyelids were kept half closed and the eyeballs rolled upward.

Within six weeks a slight physical failure was noted. Patient would occasionally speak at night. Later, talking spells occasionally appeared, such as "Go away," "Stop that. Oh, what shall I do? I can't read. Oh, a thousand times. It is nothing at all," or again "I shall have to stop in this bed forever. God Almighty in heaven, here I am talking, and I have no head. I am as empty as space. There is nothing in this bed, and I have no head. I have fixed everything wrong. It is terrible. Look, I am talking without a head. It is impossible. Is it not? An empty bed. I am a skeleton bitch. This is a frightful impossibility." (Looking at her hands she said,) "These are not hands. How can I do this talking without a head? God help me. It is all wrong. I simply imagine that I see them. There is nobody here, the bed is empty. I don't know what I am doing."

Emaciation became rapid late in 1903, and patient died after a period of continued fever.

Anatomical Diagnosis. (A. M. Barrett.) — *Cause of death:* Phthisis pulmonalis.

Chronic conditions: Poor musculature, malnutrition, bilateral chronic adhesive (apical and posterior) pleuritis, tuberculous cavity of apex of left lung, cavitation and disseminated tuberculosis of upper lobes of both lungs, enlarged bronchial lymph nodes, bronchitis, chronic fibrous ("milk patch") pericarditis.

Recent conditions: (Possibly bronchitis and bronchial lymphnoditis), fatty liver (microscopic evidence), fatty kidney (microscopic evidence slight).

Nervous system: Brain weight, 1090 gm.; generalized increase of consistence of brain, slight visible atrophy of gyri of both frontal regions, cerebral cortex unusually dark in color, but without puncta cruenta.

CASE II. P. F., Danvers State Hospital No. 10147, Path. No. 991. Male, thirty-five, married, carpenter. Born in Nova Scotia, of Nova Scotian parents. Was a case of dementia precox, paranoid type.

Heredity: Negative.

Previous history: Masturbation, sexual excess. At twenty-one years, married, five children. At thirty-one years, "nervousness," loss of confidence, somatopsychic delusions ("heart gone," "insides working"). In hospital quiet, apathetic, hypochrondriacal. Discharged at thirty-five and next year recommitted. Diagnosis, hypochrondriacal paranoia. The diagnosis was later changed to chronic melancholia. Emaciation and suspicion of phthisis at thirty-eight years. Signs of phthisis upon recommitment at Danvers State Hospital, Oct. 25, 1902. Extremities blue, teeth poor. At first refused food. Groaning and complaints of pain and abnormal sensations. Disorientation (lack of interest) for time and place.

"I can't speak because it pulls down and pulls up, and is wound around me." At no time katatonic signs, except mutism (possibly paranoidal origin).

ANATOMICAL DIAGNOSIS (A. M. Barrett.) — *Cause of death:* Phthisis pulmonalis.

Chronic condition: Malnutrition, poor musculature, chronic obliterative pleuritis, bilateral, phthisis pulmonalis with cavitation and fibrosis, chronic perisplenitis chronic interstitial nephritis, exostosis on inner surface of frontal bone, adherent dura.

Acute condition: Acute fibrinous pericarditis (organism of colon group).

Nervous system: Brain weight, 1360 gm.; slight generalized cerebral gliosis.

CASE III. R. O., Danvers State Hospital No. 11871, 12756, Path. No. 1034. Male, thirty-five, single, shoe factory operative. Born in Italy. Was a case of dementia precox, at first paranoid, later katatonic, of two years' duration.

Facts concerning *heredity* unknown.

Previous history: Emigrated from Italy at about twenty-three. Shoe factory operative of average capacity. Easily affected by alcohol (some beer and whiskey daily). In March, 1904, stated that anarchists and socialists wished to kill him; that he heard men talking and singing in the next room; thought that people were going to "do him," and ceased to work steadily. In the course of five or six weeks patient began to feel that his friends had turned against him, and when a man borrowed his mandolin and returned it minus one string, patient reasoned that he was being hypnotized. At that time, the diagnosis lay between dementia precox and alcoholic insanity, the former preferred.

Patient was committed to Danvers Hospital April 27, 1904. Undersized, unusually hirsute. There was slight swaying in the Romberg position. The knee jerks were exaggerated. Patient was reticent. At one time said, "There is going to be something this side and then on the other side," making signs with his fingers around his head. Once asked to play cards, snatched the cards from the table and refused to give them up. Dulness and inactivity increased, with a tendency to stupor, interspersed with brighter intervals. Nine months after admission, periods with marked echepraxia and some cerea flexibilitas with diminished response to peripheral stimuli set in. Patient became reluctant to eat.

Discharged Feb. 2, 1905, to go to Italy. Patient was readmitted Oct. 5, 1905, with mutism, cerea flexibilitas, slight resistiveness on being roused, fixed facial expression, staring eyes and pouting lips. Slight albuminuria was now demonstrated for the first time. Automatism shortly developed, with prompt obedience to commands, such as protrusion of the tongue for incision. Patient habitually sat for hours with hands spread over knees, staring at the floor. Saliva was held in mouth for hours. Symptoms of pulmonary gangrene set in and patient died a week later, Jan. 23, 1906.

ANATOMICAL DIAGNOSIS. (E. E. Southard.) — *Cause of death:* Gangrene of right lung.

Chronic conditions: Emaciation, unequal pupils, irregularity of right pupil (iris narrow above), slight mitral valvular sclerosis, small heart (150 gm., but left ventricle 1.5 cm. thick) and small aorta (5 cm. in circumference).

Acute conditions: Gangrene of posterior portion of right upper lobe of lung (culture, streptococcus pyogenes and diphtheroid organisms), with acute fibrinous pleuritis, bronchial edema and swelling of bronchial lymph nodes, septicemia (determined on culture, streptococcus pyogenes and diphtheroid organisms).

Unusual hirsuteness.

Nervous system: Brain weight, 1,410 gm.; dentate nuclei abnormally firm and yellowish.

CASE IV. D. R., Danvers State Hospital No. 7987, Path. No. 1062. Female, thirty-eight, married. Born in Nova Scotia, of Irish parentage. Was a case of dementia precox, paranoid type, of eleven years' duration.

Facts of *heredity* unknown.

Previous history: At the age of twenty-eight, about a month before commitment to Danvers State Hospital, patient had been depressed and suicidal, with delusions that she was being killed, had been partially buried, had seen spirits, had had two hearts and was immortal. It appeared that the patient had been lately deserted by her husband and much overworked. She had had three children, one living.

Shortly after admission, Aug. 31, 1895, she was given the diagnosis of primary delusional insanity. She showed râles in both apices and edema of ankles. Patient worked in the laundry. Was occasionally reticent, but at other times freely stated her delusions. Toothaches and neuralgic pains she attributed to external influences. Was at times abusive, noisy and obscene. At other times would show no evidence of mental disorder for several weeks. In the course of two or three years, physical inertia increased, delusions could be still elicited, with somewhat less coherent explanations. Sample of conversation: "I was referring if you thought I felt well and if it was for your purpose to ask these questions. I proved it whether I am worthy of my home. There are two police stations, and if you are acquainted with medical things you will see the church about me." Active auditory hallucinations appeared at times. The tuberculosis probable at admission became definite ten years later. Patient died after a terminal disease of about four months. This patient apparently never showed well-defined katatonic signs, unless occasional reticence with physicians and a single period of mutism can be so interpreted.

Anatomical Diagnosis. (E. E. Southard.) — *Cause of death:* Phthisis pulmonalis.

Chronic conditions: Poor musculature, malnutrition, poor teeth, linear atrophiæ of abdominal skin, chronic obliterative pleuritis (right) and extensive adhesions of left pleura, extensive bilateral tuberculosis with cavitation of lungs and bronchitis, enlargement and induration of bronchial lymph nodes (tuberculosis microscopically), aortic, common iliac, internal iliac (slight), renal (microscopic) and (slight) coronary arteriosclerosis, fatty liver with (microscopically) slight portal cirrhosis, genitalia atrophic, thyroid small (aberrant thyroid above bifurcation of trachea, right anterior, 2 by 1.5 by 0.5 cm.), marrow of right femur red.

Nervous system: Brain weight, 1,260 gm.; gliosis of superior frontal, prefrontal and orbital gyri; brain (except gliotic areas and occipital gyri) and spinal cord (especially lumbar) reduced in consistence; cerebellar cortex darker than cerebral cortex.

Case V. M. R., Danvers State Hospital No. 6531, Path. No. 1137. Male, thirty-five, single, shoe factory operative. Born in Lynn, Mass., of Irish parentage. Was a case of dementia precox, at first paranoid, later at times katatonic and finally demented of about fifteen years' total duration.

Heredity of insanity denied. Father possibly alcoholic. A brother died of tuberculosis.

Previous history: Sept. 1, 1891, patient developed a delusion that persons in an electric-light plant opposite his shop were putting currents on him. Insomnia, constipation, lack of appetite, pains in the head and confusion of mind followed, and patient was committed to Danvers State Hospital, Oct. 2, 1891, with exaggerated knee jerks and little or no physical disorder. Apparent dementia increased. Unusual motions and gestures could not be explained by patient. At first he worked well in the brush shop, but later ceased work, became mute and sat still in one place, smiling. The attendant could get patient to walk up and down the ward. Limbs were habitually blue and cold. In taking exercise, a certain number of steps were always taken and a certain crack in the floor was followed. When seated, the limbs were held fixed and the mouth open. At times the patient would sit gesticulating for long periods at a time. Later, the gestures and peculiar attitudes ceased, but mutism persisted. Once, in 1903, the patient whispered a few words. There was never any refusal of food during the Danvers stay. Death Jan. 19, 1906.

Anatomical Diagnosis. (E. E. Southard.) — *Cause of death:* Phthisis pulmonalis.

Chronic conditions: Malnutrition, chronic adhesive pleuritis of left upper lobe and right apex, mitral valvular sclerosis, brown atrophy of heart muscle, small heart (170 gm., but left ventricle 1.3 cm. thick) and small aorta, chronic interstitial nephritis, dilatation of stomach, right testis fibrotic.

Recent conditions: Tuberculous pneumonia of left lung, with acute fibrinous pleuritis, bronchopneumonia of posterior portion of right lung, early enterocolitis (?) with large, soft mesenteric lymph nodes, acute splenitis fatty liver and kidney (both slight).

Nervous system: Brain weight, 1,465 gm.; superficial asymmetry in minor sulci of cerebrum, microgyria of right superior parietal lobule (no certain evidence of atrophy, but more flaring sulci; in particular the right parieto-occipital fissure is 1 cm. deeper and much wider than the left), focal chronic fibrous leptomeningitis of right parieto-occipital fissure, consistence of brain diminished (anterior poles least, and lower surface of cerebellum less than upper surface).

Chemistry: The water-content of three portions of the brain was determined in the chemical laboratory of the Harvard Medical School by Mr. J. B. Ayer, Jr., who found the following percentages: Frontal region, 75% water; parietal, 77%; cerebellum, 82% water. These findings parallel the consistence noted with the finger. The anterior poles were the least softened. The low percentage of water possibly indicates relatively high neuroglia content.

Case VI. G. B., Danvers State Hospital No. 11641, 3238, Path. No. 1149. Male, fifty-seven, single, carpenter. Born in Salem, Mass., of American stock. Was a case of dementia precox, paranoid type, of perhaps thirty-two years' duration.

Heredity: Facts not known.

Previous history: Was perhaps not "just right" from boyhood. Had certain delusions and may possibly have been suicidal early in life, but was shortly transferred after his first stay at Danvers to the Salem Almshouse, where he was quiet and industrious. Patient showed insomnia at times and had sensations of "sparks of fire" dropping on his head.

Readmitted Jan. 1, 1904, with signs suggesting tuberculosis at both apices. A coarse tremor of extended tongue, a moderately fine tremor of extended fingers and markedly exaggerated knee jerks. Examination by Dr. H. W. Mitchell showed that the knee jerks are usually followed by momentary clonus or tonic spasm of the leg, followed by general body spasm, which does not seem to be always the same. The different movements depend upon the different postures of the body at the time the knee jerk is obtained. Often the same body spasm can be gotten by a feint to strike the quadriceps tendon. Achilles reflex is prompt, but not much increased. It is followed, however, by various spasms of the legs, the most common being a tonic spasm of the muscles of the leg and thigh, often accompanied by irregular spasms of muscles of the trunk. *Triceps* and *biceps* prompt and lively and followed by irregular body spasms. *Cremasteric* and abdominal slight. *Plantar* very much increased, followed by tonic or clonic leg spasms. Usually no lifting of right toe. Rarely a suggestion of Babinsky reflex. The only physical stigma consisted in poorly formed lobules.

Auditory hallucinations had been frequent for many years, always in the tones of attendants or other bystanders. There was one episode of visual, olfactory and gustatory hallucinations of an unpleasant character.

Very characteristic were patient's description of peculiar spiritualistic phenomena, with "forerunners and communications." Patient would often communicate with God, assuming a rigid position, gazing into space, and saying, "God, our Heavenly Father, I would like to communicate, if convenient, don't discommode yourself?" He pauses a few moments and then says, "Is that you? Is that you really, Heavenly Father? Please come as an apparition, as strong as you can"; then in a faint voice, "That's pretty good, pretty good. Can you come a little stronger, I wish you would if you could; that's pretty good, that's good. God, Heavenly Father, is it safe to show the forerunner in the face of Dr. Mitchell? Are you sure, perfectly sure? All right." He would then make a peculiar movement of the hands which he alleges is a forerunner and has the power of destroying life. Asked to forecast the future, he calls up God as previously and says, "I wish to ask a question in regard to Dr. Mitchell's success in the future? Is your time precious, God? Can you spare it?" He turns to examiner and says, "He is gone now to examine. He examines by astronomy." In the meantime, patient converses pleasantly about the weather until God calls, and later assures examiner that his success is to be unlimited and that he has received

communication. Result of these communications was, as a rule, optimistic.

Patient made characteristic, elaborate, decorative drawings, ostensibly for certain Masonic lodges. In 1905 certain slight mannerisms appeared, which later grew more frequent. He would wet his hands frequently, repeat certain muscular movements, shake his body and make peculiar noises in his throat.

The patient died March 1, 1907, having been taken the day previously with vomiting and severe abdominal pains.

ANATOMICAL DIAGNOSIS. (H. W. Mitchell and F. P. Gay.) — *Cause of death:* Tuberculous enterocolitis with ulceration and perforation with localized peritonitis (bacillus coli communis in heart's blood at autopsy.)

Chronic conditions: Emaciation, chronic fibrous pericarditis, slight tricuspid valvular sclerosis, chronic obliterative pleuritis (left) and chronic apical adhesive pleuritis (right), disseminated tuberculosis of both lungs, caseating mesenteric lymph nodes, chronic pericholecystitis, hepatic atrophy (especially left half of right lobe and all of left lobe), chronic splenitis (marked).

Acute conditions (see Cause of Death): Acute nephritis.

Nervous system: Brain weight, 1,490 gm.; generalized cerebral sclerosis (without visible atrophy), occipital lobes firmer than rest of brain, chronic fibrous leptomeningitis confined to the superior frontal gyri, cerebellum and spinal cord soft, slight chronic external adhesive pachymeningitis.

CASE VII. R. B., Danvers State Hospital No. 11863, Path. No. 1168. Female, twenty-four, single, a weaver by occupation. Born in Canada, of French-Canadian parentage. Was a case of dementia precox, hebephrenic type, of four years' duration.

Heredity: An aunt insane.

Previous history: Of normal early developement. Four years a weaver in Massachusetts. Deserted by lover at twenty. Indifference and melancholy, auditory hallucinations, delusions of persecution, subjective sensations of heat. Occasional attacks of violence and refusal to be dressed followed.

Upon commitment, April 22, 1904, a slight tremor of tongue, slight albuminuria and semi-adherent lobules were noted. Patient was quiet, usually mute, indifferent, occasionally irritable and resistive. Patient lay in bed with clothes pulled over her head and would start up suddenly, rocking back and forth.

There was an apparent amnesia for recent and remote events. Auditory hallucinations, ill-defined delusions of persecution, a silly apathetic attitude persisted. Mutism developed later.

About a year after admission, signs of tuberculosis and physical failure set in, and seventeen months after admission, signs of tuberculosis were detected and tubercle bacilli were found. Thereafter patient grew brighter and would occasionally sing, but would not talk and had to be tube-fed. The knee jerks, normal on admission, were later lost (September, 1906).

The patient died May 4, 1907, about fourteen months after onset of physical failure.

ANATOMICAL DIAGNOSIS. (E. E. Southard.) — *Cause of death:* Thrombosis of left common iliac vein and vena cava (unidentified organisms).

Chronic conditions: Malnutrition, ascites, hypertrophic cirrhosis of liver (2,260 gm.), chronic adhesive pleuritis (both upper lobes), bilateral phthisis pulmonalis, bronchial lymph node tuberculosis, brown atrophy of heart muscle, slight mitral valvular sclerosis, coronary arteriosclerosis, chronic gastritis, slight enlargement of right lobe of thyroid gland.

Recent conditions (see Cause of Death): Edema of left leg, fatty changes in liver and kidney, acute perisplenitis (extension from pleural process).

Nervous system: Brain weight, 1,105 gm. The cerebral hemispheres show no variety in consistence and suggest a slight softening of post-mortem origin. The convolutions are everywhere of the usual richness and appearance, except that the upper two thirds of the post-central gyri appear narrower than normal, being scarce two thirds the width of the precentral gyri. It is impossible to make out on section that the underlying white matter is firmer in the post-central than in the precentral gyri. The limits of this lesion cannot be made out exactly, and the lesion probably represents an anomaly of the post-central gyri. Basal ganglia not remarkable. Weight of cerebellum, bulb and pons, 145 gm. The olives have the consistence of those of a normal brain. The right dentate nucleus is firmer than usual. There is a suggestion of thinning out of the laminæ in the clival and cacuminal regions.

Middle ears: Normal.

Spinal cord: Shows an increase of consistence in the lumbar region, and several segments at various points seem to show a thinning-out of the anterior halves, without, however, demonstrable diminution in the area of cross section.

CASE VIII. J. O., Danvers State Hospital No. 10862, Path. No. 1294. Female, thirty-seven, married, housewife. Born in Lynn, Mass., of Irish parentage. Was a case of mental disease, possibly dementia precox, paranoid type, of six year's duration.

Heredity: Facts not known.

Previous history: Patient was married at twenty-three and had four children, three girls and a boy. Nineteen days after the birth of the last child, which took place normally, except that both legs had been swollen, patient became noisy, thought she was dying and asked for the priest. She was carried to the Lynn Hospital and was there excited and had auditory hallucinations. The left leg had swollen much worse ten days after birth of child.

Upon commitment to Danvers State Hospital, June 5, 1902, this leg was still swollen and the skin scaling. The patient was confused and suspicious, at first tractable, later resistant, occasionally listening to imaginary voices, stating "they seem to speak from my head." Delusions were sometimes somatic. When asked what was the trouble with her, "It is like little bits of formed children. It makes me nervous." Pointing to physician's notebook, she said, "That is not saints' work." Periods of violence with biting, kicking and scratching would alternate with quiet and agreeable periods. Food was refused. Ten days later the patient had become somewhat better and developed some insight, and about a month after admission was apparently recovered from hallucinations. Removed upon a visit by her husband, the patient again became depressed, apprehensive and confused. Heard "rappings" at night. Patient stated, "These things I am telling you are all lies, but I have got to say them, because I have that feeling and cannot explain. I feel as though some one was compelling me to go through with it. This person has a grudge against me." There was considerable variation in the development of hallucinations. Patient spoke of queer doings going on at the hospital and talked about seeing "four generations" walking out of the dining-room. Exceedingly active hallucinations developed again in November, 1902, and patient broke glass to reach her husband, who was being crucified. Patient became resistive, violent, profane, would then relapse into depression and confusion. Food was refused as unnecessary. In February, 1903, patient had become dull, would talk little, was occasionally resistive.

March 9, 1903, said, "When the sandbags came on the ward for the old lady with the fracture, the Lord said even the sandbag liked her because she had sandbags at the Lynn Hospital, and she used to go to the beaches too." Occasionally talked in a grandiose way about being St. Johanna. Occasionally struck patients without provocation and would frequently run the length of the ward for no apparent reason. Patient often spoke of herself in the third person and often knelt in an attitude of prayer. While walking, attempted to touch every tree. Patient began to refuse to dress and take care of her room. Conversation became loose and contained many meaningless phrases. "Why did you come here? You hear me and you know my reports as a queen. Yes, I am the Queen of England. I was known as Mrs. Page in the hospital. The carriages and horses are all in my name. Do you deny it, Johnnie? Who do you mean? Nothing now. I have all my money invested. I have my own rights and places up there."

In 1907 the patient was transferred to the tuberculosis ward and there died, Dec. 14, 1908. Toward the close of life, knee jerks had been exaggerated. There was apparent amnesia and only partial orientation could be demonstrated.

Anatomical Diagnosis. (A. H. Peabody and M. M. Canavan.) — *Cause of death:* Phthisis pulmonalis and tuberculous enteritis with ulceration.

Chronic conditions: Malnutrition, slight ascites, hydrothorax and edema of ankles, hydropericardium, slight chronic fibrous endocarditis, chronic obliterative pleuritis (right), chronic apical pleuritis (left), ovarian atrophy, erosion of cervix, tuberculous ulceration of colon, enlarged lymph nodes near cecum and along aorta, cavitation of left upper lobe, disseminated tuberculosis of right lung, enlarged bronchial lymph nodes, calvarium dense, slight chronic external adhesive pachymeningitis.

Acute conditions: Acute nephritis.

Nervous system: Slight chronic leptomeningitis with adhesions at frontal and temporal tips; brain weight, 1,120 gm.; generalised increase of consistence of cerebrum (especially frontal and occipital), pons and cerebellum.

Case IX. J. W., Danvers State Hospital No. 14591, Path. No. 1298. Female, thirty-six, married, housewife. Born in Dracut, Mass., of Irish parentage. Was a case of dementia precox, katatonic type, of about nine months' duration.

Heredity: Negative. One brother and one sister died of tuberculosis.

Previous history: Healthy as child. A good student, disposed to quick temper. Married at twenty-five. Miscarriage at five months, followed by three boys and a girl. Became nervous and run down at thirty-four years.

Present illness: Onset of pain in right side about April 1, 1908. Several weeks later patient dropped her work complaining of "physical incapacity and pain in the chest." Insomnia and brooding followed, and in June patient complained of having tuberculosis, but said she could not get well. After a vacation she began in August to worry more. She was once disposed to jump out of a window, and several times stated that relatives were trying to cut her up. She feared poison in her food. There were spells of looseness of bowels, followed by constipation.

Patient was committed to Danvers State Hospital, Oct. 6, 1908. Partially adherent lobules of ears. Slight hypertrichosis of upper lip. Gothic palate. Teeth in poor condition. Atrophy of breasts. Expansion of right lung less than that of right. Slight resistence on passive movements. Upon admission patient chiefly lay in bed, as a rule with her eyes full of tears, moved very slowly and expressed the idea that every one was trying to hurt her. Patient's emotional reactions were very slight, although stating that deep palpation of the abdomen hurt her. Her expression gave no signs of pain; although describing fear of being hurt, she gave no further evidence of fear. At first appeared depressed and retarded, she later improved. Had a spell of untidiness, became more active, gave irrelevant replies and showed inertia suggesting dementia precox. The diagnosis of manic-depressive insanity, depressed phase, was first made, largely based on retardation in conversation and movements. In the middle of December, 1908, patient again became untidy and sat on floor, showed certain physical failure. Her conversation was limited largely to "I want to go home." Without definite proof of tuberculosis, she was placed in the building for tuberculosis, and there showed restlessness, negativism, a tendency to pulling bedclothes from other patients and untidiness. There were several slight rises of temperature. Jan. 7, 1909, patient had a severe generalised convulsion, after which time she lost weight, became unable to speak and to swallow easily. She mentioned slight headache in the last few days of her life. Death, Jan. 16, 1909.

Anatomical Diagnosis. (M. M. Canavan and C. G. McGaffin.) — *Cause of death:* Ileocolitis with iliac ulceration. Infection of cerebrospinal fluid with organism resembling bacillus of fowl-cholera.

Chronic conditions: Malnutrition, sacral and trochanteric decubitus, teeth poor, gastroptosis, chronic perisplenitis, chronic peri-appendicitis, chronic adhesive apical pleuritis, slight chronic parietal endocarditis, mitral valvular sclerosis, small vegetation of aortic valve, slight aortic sclerosis, tuberculosis of apices, slight cirrhosis of liver with fatty change, chronic purulent cholecystitis, laceration of cervix, chronic external adhesive pachymeningitis over vertex.

Acute conditions: Tumor of left kidney, acute nephritis (pyelonephritis?), acute endocervicitis, thrombus of left internal iliac artery, ulcers of ileum, injection of jejunum, ileum, colon and rectum.

Nervous system: Pia faintly injected and adherent to dura over left middle frontal in an area 1 by 1 cm. in diameter, 16 cm. from tip of pole. Pia is raised from the brain by a clear fluid over the vertex region. Pia slightly cloudy over vessels, but strips from cortex smoothly. Hemispheres equal in size and in general slightly firmer than normal. The left second temporal convolution is more prominent than others of its side or the opposite temporal convolutions. The left precentral gyrus measures, on mesial aspect, 3 cm.; left post-central, 1.5 cm. The right precentral measures, on mesial aspect, 5 cm.; the right post-central, 1 cm. Sulci around right post-central gaping. Cut sections show the post-centrals to have faint and thin gray matter, and their white matter shrinks from the knife. The ventricles are smooth. Ganglia normal. Basal vessels not notable. Sections of the brain show no further gross lesions; brain weight, 1,300 gm.; pons and cerebellum, 190 gm.

Middle ears, Gasserian ganglia and cord not notable.

Case X. M. M., Danvers State Hospital No. 2874, 11624, Path. No. 1303. Female, single, fifty-five, compositor. Born in Peabody, Mass., of American parentage. Was a case of dementia precox, observed in a terminal stage.

Heredity: An uncle insane at Danvers State Hospital.

Previous history: Patient was admitted to Danvers State Hospital with diagnosis of chronic mania (duration six months) June 6, 1883, and was discharged unimproved to Salem Almshouse Aug. 28, 1885. At twenty-nine believed she was a clairvoyant; apparently

had auditory hallucinations. Complained of pains in throat and constantly spitting blood. "Could feel other people's injuries." Excitement on admission, assumption of absurd attitudes and declamation. Disconnection in talk. Made mysterious mention of Masonic signs. More active delusions brought out by menstruation. Her delusions dealt chiefly with injuries brought upon others which she could feel. At Salem Almshouse the dementia advanced. She had a vagrant tendency and was resistive.

Upon second admission to Danvers State Hospital, Jan. 4, 1904, patient showed a heavy growth of hair on chin and upper lip, a narrow, high palate and slight arcus senilis. Exaggerated knee jerks, continuous tremor of lips, slight lingual tremor, inconstant tremor of hands, slight peripheral arteriosclerosis and signs of aortic sclerosis. Mentally, patient talked disconnectedly in answer to questions. Failed to occupy herself in any way, wore an unchanging facial expression. Claimed to have been dead and reborn many times. Persistently stated that she bore another name than her own and showed an apparent defect of memory for both recent and remote impressions. Was unable to make her way about the ward. Sample of conversation: "We don't know whether it is heaven or earth we are sitting in. The house feels such a move. It moved right along this morning like a train. You were marked when you came in." Do you hear voices sometimes? "I hear the occupants of another world." Do you have any thoughts? "When I read books?" Do you read books? "Sometimes I believe I am a baby with all these attacks." What attacks? "The attacks, points and scoops." Are you out of your mind? "You have got to pray to God to get out of this building. My father told me I would be the Lord's wife. He told me to obey my husband and my Lord." How long have you been married? "I can't tell, a number of years. I have been a baby twice since I have been married."

Again, Why were you sent here? "Because I pushed the bed back and a bullet came through the wall. I was chewed and born and clambered and went through shambles." Why were you sent here? "Because there were so many thieves around." What did you do? "I started my nun work and read my Bible in my room, thank God and all God."

Patient at Middleton Colony restless and vagrant. In last few months the patient grew careless of dress and showed mannerisms, stereotyped movements, resistivism and severe Bright's disease. Death Feb. 16, 1909.

ANATOMICAL DIAGNOSIS. (A. H. Peabody and C. G. McGaffin.) — *Cause of death:* Chronic diffuse nephritis and acute bronchitis.

Chronic conditions: Malnutrition, slight sacral decubitus, aortic valvular sclerosis (foci of calcification), slight aortic sclerosis, coronary arteriosclerosis, dilated stomach, chronic diffuse nephritis, chronic perisplenitis, mural and subperitoneal fibromyomata of uterus, atrophy of ovaries, calvarium dense, exostosis of frontal bone, adherent dura, chronic tympanitis auris, calcification in calx cerebri.

Acute conditions: Acute bronchitis, slight enlargement of mesenteric lymph nodes, abrasions of forehead and left hand.

Nervous system: Brain weight, 1,220 gm.; chronic fibrous leptomeningitis of vertex, along sulci at base of brain and over cerebellar cisterna, generalized increase of consistence of brain, pigmentation of cerebral gray matter.

CASE XI. E. F., Danvers State Hospital No. 13582, Path. No. 1310. Female, twenty-eight, single, mill operative. Born at Manchester, N. H., of Scotch-Irish parentage. Was a case of dementia precox, probably of hebephrenic type, possibly originally imbecile. The total duration of the dementia precox features was perhaps four years.

Heredity: Facts unknown. Insanity in family denied.

Previous history: Patient always of subnormal mental capacity. "Peculiar, stupid and ugly." Dull and backward at school. Worked steadily in a mill, but never saved money. Was sullen and cranky. At twenty-four years irritability, indolence, untidiness, aimless wandering and increasing silliness set in. A tendency to gluttony. The police often picked her up on the street at night.

Patient was admitted to Danvers State Hospital April 5, 1907. Adherent ear lobules. High arching palate. Acne eruption. Gait peculiar, at times normal, at times patient swings one foot in front of the other and totters back and forth (mannerism?). Occasionally turns and twists her fingers about in a stereotyped way, touching objects with finger tips. Knee jerks exaggerated. Patient smiled and grinned, was untidy and habitually lay in bed with clothes over her head. Patient mute except on repeated questioning, when an occasional "yes" or "no" can be elicited. Later patient became more tidy and again untidy. Patient was apparently not oriented while in hospital and showed amnesia and defective impressibility.

Developing fever in November, 1908, she was transferred to the tuberculosis building, where she grew weaker and died March 22, 1909.

ANATOMICAL DIAGNOSIS. (C. G. McGaffin and N. B. Burns.) — *Cause of death:* Phthisis pulmonalis.

Chronic conditions: Malnutrition, unequal pupils, asymmetry of thorax, marked mitral sclerosis, hypertrophy of left ventricle, hydropericardium, chronic adhesive pleuritis of anterior portion of left lung, tuberculosis with cavitation of left lung and slightly of right lung, enlarged bronchial lymph nodes, chronic passive congestion of liver, dextroflexion of uterus, thyroid gland small, cyst of left Fallopian tube.

Acute conditions: Thrombosis of left auricle, staphylococcus septicemia.

Nervous system: Gliosis of both frontal regions, atrophy of left postcentral gyrus, left precentral gyrus broader than right; brain weight, 1,300 gm.

CASE XII. M. C., Danvers State Hospital No. 12143, Path. No. 1317. Female, forty-four, single, mill operative. Born in Ireland, father English, mother Irish. Was a case of dementia precox of paranoid type of twenty-one years' standing.

Heredity: Father intemperate.

Previous history: Patient a woman of ordinary mental capacity. Limited education, of melancholy and reserved tendency. Attack began at twenty-three with insomnia and anorexia, followed later by auditory hallucinations, fear, desire to become a nun and wandering tendency.

On admission to Danvers State Hospital, Oct. 25, 1897, the diagnosis of primary dementia was made. Patient was resistive, repeating "O, my God, protect me." Had auditory hallucinations and various delusions, sometimes religious. Mutism, refused to eat, restlessness, later increased stupidity, untidiness and troublesome activity. In 1890 patient was able to work in the laundry, but in 1893 became quarrelsome and violent, often laughed in meaningless fashion and could not be prevailed upon to answer questions. Removed to Lawrence Almshouse June, 1893.

Recommitted to Danvers State Hospital, Aug. 31, 1904. Patient sat about idly, talking to herself or laughing in a silly manner, and if permitted would wear four or five aprons. Her speech was peculiar and

babyish, and many replies were in whispers. Disorientation was apparently complete. Memory for recent and remote events was poorly preserved. Grimaces and various mannerisms. Patient would for long periods sit about listlessly and then become talkative. At times patient became quarrelsome, noisy at night and resistive.

Cancer of left breast was noted in July, 1908. Operation, Nov. 30, 1908, had no effect on mental state. Death from metastases May 19, 1909.

ANATOMICAL DIAGNOSIS. (A. H. Peabody and M. M. Canavan.) — *Cause of death:* Multiple metastatic carcinomatosis.

Chronic conditions: Inequality of pupils, edema ankles, brown atrophy, heart muscle, slight coronary arteriosclerosis, chronic peri-appendicitis, chronic adhesive pleuritis, lateral displacement of uterus, chronic gastritis, surgical removement of left breast (carcinoma), *carcinoma* of axillary lymph nodes, left lungs, bronchial lymph nodes and liver.

Acute conditions: Icterus, hemorrhagic conjunctivitis, hemorrhagic endometritis, acute nephritis, hypostatic pneumonia.

Nervous system: Adherent dura, chronic fibrous leptomeningitis along sulci, occipital microgyria, cervical spinal cord firm; brain weight, 1,210 gm.

CASE XIII. M. K., Danvers State Hospital No. 14597, Path. No. 1319. Female, thirty-one, married, mill operative. Born in Ireland. Was a case of dementia precox of the paranoid type (possibly imbecile) of eight years' duration.

Heredity: Sister epileptic.

Previous history: Poor scholar and truant in convent school in Ireland. Housework and mill work after coming to America at fifteen. Married at eighteen, three children, followed by separation. Illegitimate child at twenty-three. An attempt at suicide is asserted at twenty-three and twenty-four. History before commitment is limited. Insomnia and street-walking are reported.

Commitment to Danvers State Hospital Oct. 10, 1908. Slight coarse tremor of fingers and tongue. Patient dull and apathetic. Lay quietly in bed looking at one point on ceiling as if hallucinated. Orientation imperfect. School knowledge and calculability deficient. Memory somewhat impaired for remote events, still more impaired for recent events. It later transpired that she could see the Virgin Mary at any time. Patient at times sang religious strains. Muscular movements were in general slow and languid. She was apt to assume attitudes suggesting those of saints in religious pictures. Once she betrayed a fear that men were after her. In January, 1909, she had become at times resistive and fearful. She was tube-fed several times. At times patient stated that she had a bad taste in her mouth.

Died May 28, 1909, of colitis.

ANATOMICAL DIAGNOSIS. (A. H. Peabody and M. M. Canavan.) — *Cause of death:* Acute follicular colitis.

Chronic conditions: Malnutrition, inequality of pupils, edema of ankles, ascites, chronic adhesive pleuritis (left), chronic fibrous pericarditis, chronic fibrous endocarditis, aortic sclerosis, tuberculosis of left apex, chronic perisplenitis, renal arteriosclerosis, chronic diffuse nephritis, slight cirrhosis of liver, chronic endocervicitis, calvarium dense.

Acute conditions: Acute nephritis, acute jejunitis, ileitis and colitis, acute proctitis, acute vaginitis.

Nervous system: Cervical spinal cord large, anomaly of superior temporal gyrus, slight chronic leptomeningitis, especially basal; brain weight, 1,250 gm.

CASE XIV. F. O., Danvers State Hospital No. 8471, 13648, Path. No. 1335. Male, thirty-two, single, shoemaker. Born in Lynn, Mass. Father born in Massachusetts, mother born in Nova Scotia. Was a case of dementia precox, katatonic type, of twenty years' duration.

Heredity: Paternal grandfather alcoholic.

Previous history: At twelve years an attack of confusion and more or less unconsciousness lasting two weeks. Pains in back and head at intervals for years. At eighteen years spells of laughter and boisterousness, delusions of being mesmerized, elation and depression in spells, insomnia, threats of violence and suicide.

On commitment to Danvers State Hospital, Oct. 23, 1896, patient was talkative and expressed numerous delusions and pseudoscientific theories. "The moon is the blind eye of some animal. There is a change every thousand years, so that the men of a thousand years ago are now women, and vice versa. The reason why the Egyptians are so small is because he put vitriol into them a thousand years ago, and it is all described in the inscriptions. He has the shoulders of an Egyptian, the head of Napoleon or an Italian, and his limbs are French. We are all being continually acted upon by minerals, herbs, electricity and magnetism, and one person's brain acts directly upon another's."

The physical condition was well maintained. There was a progressive apathy, with occasional noisy spells and unprovoked assaults on patients. In 1898 assigned historic parts to officers — head supervisor was Mrs. Grover Cleveland, superintendent was Napoleon, the pathologist was Daniel Webster, etc. Much profane, obscene and foolish talk.

Later, patient was habitually found mumbling and laughing foolishly on a settee. Eczema of buttocks and scrotum from dribbling of urine. Dysentery in September, 1904. The urine then began to show albumin.

Patient's apathy occasionally gave place to excitement, denudative spells and the expression of extravagant delusions.

Transferred to Foxboro State Hospital, March 5, 1907. Readmitted to Danvers State Hospital, May 10, 1907. Untidy, manneristic, with tendency to hold fixed positions. Placed in tuberculosis building in 1908, where he had spells of noise-making. Diarrhea set in in July, 1909, but there was no blood or mucus in the stools. Toward the close, patient could not keep a straight line in walking. Patient's characteristic position was similar, both lying, standing and walking, and consisted in a curled-up stoop with arms folded over abdomen.

Death suddenly, after a gradual exhaustion, Aug. 21, 1909.

ANATOMICAL DIAGNOSIS. (M. M. Canavan and A. A Hornor.) — *Cause of death:* Phthisis pulmonalis, intestinal obstruction.

Chronic conditions: Malnutrition, dilatation of pupils, oval from above downwards, scaling and pigmentation of skin, chronic focal adhesive peritonitis, chronic adhesive apical pleuritis (left), hydrothorax (right), heart small (145 gm.), slight chronic fibrous endocarditis (left ventricle), tuberculosis of apex of left lung, tuberculosis with cavitation of right lung, liver weight 940 gm., cystitis and prostatitis, slightly adherent dura, chronic tympanitis auris (left).

Acute and recent conditions: Intestinal obstruction, acute jejunitis and ileitis, mesenteric lymphnoditis, acute nephritis.

Nervous system: Spinal cord small, chronic leptomeningitis along sulci of vertex, in Sylvian fissures and at base of brain, thrombi of superior longitudinal and left lateral sinuses.

CASE XV. M. D., Danvers State Hospital No. 10098, 10580, Path. No. 1358. Male, twenty-four,

single, shoemaker. Born in New Brunswick, of Irish-Canadian parentage. Was a case of dementia precox, katatonic type, of ten years' duration.

Heredity: Unknown. Orphan.

Previous history: Two years before commitment, malaria, with refusal to talk (patient's statement). Normal to fifteen years, of average school capacity. Ten days before commitment, patient had spells of crying, jumping, shouting and incoherent talk, with refusal of food for about a week. Patient believed he had appendicitis. Urine was drawn with catheter four or five days before commitment. Headache during two nights before commitment.

Commitment, Danvers State Hospital, Sept. 15, 1900. Nose asymmetrical. Malnutrition. Depression explained by patient as due to lack of sleep, having no mother and lack of appetitie. Patient was dazed and bewildered, refused food, was at times normal, later mute, untidy, resistive. The katatonic symptoms then diminished, and patient could be got to take food. Periods of mutism and fixed attitudes alternated with brighter and more responsive periods. Late in 1900, he had become apathetic but worked in the dining-room; occasionally noisy and mischievous. Tonsillitis in March, 1901. Weight and physique had in general much improved. Active symptoms then almost wholly ceased and patient was discharged April 1, 1901.

After discharge, patient worked well in shoeshop and drove team acceptably to employers. On being taken to learn a trade in Boston, August, 1901, he stayed but two weeks and returned erratic, boastful, profane and threatening and was recommitted Oct. 12, 1901, in approximately perfect physical health.

As a rule surly and profane, patient was sometimes tractable (November, 1901; February to July, 1902; September to January, 1903). Occasionally untidy. Often restless, sleepless and annoying to helpless patients. A second attack of follicular tonsillitis, September, 1902.

April, 1904, confusion, peculiar way of putting on clothes, swaggering about, mutism or incoherent responses to questions, facial grimaces, twitching of facial muscles. November and December, 1904, orderly and tractable, though apathetic, correspondent with an attack somewhat suggestive of typhoid fever (positive Widal reaction in second week).

During 1905 and 1906, patient was apathetic, idle, properly oriented and had very good memory.

In the spring of 1906, patient grew depressed and unwilling to eat, became untidy, mumbling and disoriented, and during July and August became restless, excited, given to running about, making peculiar movements and assaulting helpless patients. A period of dulness followed.

Patient's weight increased, he was given parole privileges.

In February, 1909, patient grew despondent and untidy, often refused food and took to continual praying. In August dysentery set in, with persistent diarrhea, mutism and occasional prayers.

Sudden collapse set in on Nov. 18, 1909. Death. Patient mumbled a few words to physician on day of death.

Anatomical Diagnosis. (H. M. Adler and M. M. Canavan.) — *Cause of death:* Acute ulcerative ileocolitis (bacillary dysentery).

Chronic conditions: Malnutrition, unequal pupils, trochanteric decubitus, chronic appendicitis, chronic obliterative pleuritis (right), obsolete tuberculosis of left apex, chronic perisplenitis, chronic gastritis, cystitis (thickened wall), calcification of lymph node near pancreas, calvarium thick, slightly adherent dura mater.

Acute conditions: Acute ileocolitis, enlargement of mesenteric lymph nodes, acute bronchitis (right), acute splenitis, fatty changes of liver and (slight) kidneys.

Nervous system: Sclerosis of left inferior frontal gyrus; brain weight, 1,200 gm.; slight chronic fibrous leptomeningitis, lumbar spinal cord soft.

In seeking for correlations in these data, let us first inquire how many of the lesions described can safely or probably be regarded as congenital anomalies or lesions acquired long prior to mental change. For a proper judgment here we shall need to take into account not merely the lesions in question, but the total clinical and anatomical impression presented by each case.

I. 840. A woman of Irish extraction, a capable school-teacher for thirteen years, developed at thirty-five, after over-work, a depressed, delusive, languid state, upon which typical katatonic symptoms shortly supervened, and died of phthisis at thirty-seven. Possibly the brain was somewhat atrophied, but not visibly so, save in the frontal regions. Although visible generalized atrophy cannot be asserted, there was a palpable generalized gliosis. (*Acquired.*)

II. 991. A Nova Scotian carpenter, given to frequent masturbation and later to excess in venery, developed a mental disease at twenty-four, variously diagnosed in different state hospitals as "hypochondriacal paranoia," "chronic melancholia," "neurasthenia"; is said to have threatened suicide; complained of pain, abnormal sensations ("brain and legs whirling round," "I can't speak because it pulls down and up and wound around me"— making motions from abdomen to neck); was hypochondriacal, eventually answered only in monosyllables, developed tuberculosis and died at thirty-five. Slight generalized cerebral gliosis without visible atrophy. (*Acquired.*)

III. 1034. An Italian immigrant, for ten years a shoe operative of average capacity, somewhat easily affected by alcohol, developed at thirty-three auditory hallucinations and persecutory delusions, later grew dull, reticent, given to impulsive acts, and then showed echopraxis, cerea flexibilitas, mutism, at times automatism, died of pulmonary gangrene at thirty-five. A kind of simian hirsuteness and hypoplasia of heart and aorta perhaps suggest "degeneracy." The pupils also were unequal and one was oval. The brain of this case was of good weight, and the solitary lesion it showed was a sclerosis and pigmentation of the dentate nuclei of the cerebellum. (*Acquired.*)

IV. 1062. An Irish housewife, who had borne three children, was deserted by her husband and developed at twenty-eight somatic delusions, depression and suicidal tendencies. On commitment signs of tuberculosis of both apices were discovered, which tuberculosis was fatal ten years later. Full of delusions, abusive, noisy, obscene, the woman never showed katatonic signs unless reticence and a single period of mutism can be so interpreted. The brain of this case was of proper weight and showed palpable gliosis (without visible atrophy) of the superior frontal, prefrontal and orbital gyri. At death (thirty-eight years) the genitalia were already atrophic. There was an aberrent thyroid. (*Acquired.*)

V. 1137. An Irish shoe operative (father possibly alcoholic) developed loose delusions of influence and a little later peculiar motions and gestures, mutism, stereotyped movements. All these symptoms, except mutism, ceased in later years. The total process lasted fifteen years and the man died at thirty-five. As in Case II, both heart and aorta were small. One testis was atrophied. The brain weighed 1,465 gm. and

showed a striking microgyria of the right superior parietal lobule. Whether this lesion is acquired or aplastic would be hard to decide on anatomical grounds, but there was a focus of chronic pial change in the adjacent parieto-occipital fissure. There is a suggestion of sclerotic changes in the frontal regions and the lower surface of the cerebellum. (*Acquired? Congenital?*)

VI. 1149. A carpenter, hyperreligious, and given to spiritualism, perhaps never "just right," has episodes of auditory, visual, olfactory and gustatory hallucinations (possibly also tactile), but during a quiet course of thirty-two years eventually settles into habitual, apparently voluntary, "communications" with God. Certain tremors, of doubtful interpretation, partly voluntary, were at one time evident in reflex tests. Characteristic mannerisms were late in appearing (fifty-five) and were then slight. Death at fifty-seven. The brain showed a generalized increase in consistence (without visible atrophy) and especially firm occipital regions. There was no palpable sclerosis of the frontal regions, but there was a regionary chronic leptomeningitis. (*Acquired.*)

VII. 1168. A French-Canadian woman, of normal development and a weaver for four years, after desertion by lover developed auditory hallucinations, persecutory delusions, certain subjective sensations and resistivism; later apathy, mutism and loss of knee-jerks. Death four years after onset, at twenty-four years. The brain weighed 1105 gm. and showed an atrophy (or aplasia) of both post-central gyri, a mild sclerosis of the right dentate nucleus and possibly other slight chronic cerebellar lesions. (*Acquired. Congenital?*)

VIII. 1294. An Irish housewife, who had borne four children, developed swelling of both legs at her fourth confinement and nineteen days after birth of child became boisterous, fearful of death and had auditory hallucinations — thrombosis of left leg had set in. Auditory hallucinations, delusions of suspicion and periods of violence gave place to virtual recovery. At home, recurrence of hallucinations, followed in the hospital by violence, resistiveness, refusal of food; later, apathy. Impulsive movements, frequent genuflexion, employment of third for first person, stereotyped movements. Death after six years, at thirty-seven. Generalized slight cerebral sclerosis, especially frontal and occipital. Slight focal leptomeningitis, frontal poles and tips of temporal lobes. Atrophy of ovaries. (*Acquired.*)

IX. 1298. An Irish housewife, who had borne four children, developed pains, insomnia, ideas of suicide, fear of tuberculosis, delusions of poisoning. On commitment, hypertrichosis of upper lip and atrophy of breasts had set in. The palate was Gothic. The symptoms first suggested the depressed phase of manic-depressive insanity. Apathy, negativism, untidiness followed a severe generalized convulsion nine days before death (nine weeks after onset, thirty-six years). Brain of proper weight. Atrophy (or aplasia?) of post-central gyri. Gliosis of left second temporal gyrus. (*Acquired? Congenital?*)

X. 1303. A woman compositor of New England parentage (uncle insane) believed at twenty-nine that she was clairvoyant and apparently had auditory hallucinations as well as somatopsychic delusions, possibly based on hallucinations. Apathy, peculiar autopsychic delusions toward death, carelessness in dress, mannerisms, sterotypy, resistiveness. Course of twenty-five years. Death at fifty-five. Generalized increase of consistence of brain, with pigmentation and a chronic leptomeningitis of the vertex, along sulci, at the base and over cerebellar cisterna. (*Acquired.*)

XI. 1310. A Scotch-Irish mill-worker, a woman always of subnormal mental capacity, developed at twenty-four a pronounced change of character, with hebephrenic features. In hospital, mannerisms or peculiarities of gait, certain mannerisms of finger movements, and virtual mutism. Unequal pupils. High palate. Asymmetry of thorax. Death at twenty-eight. Small thyroid gland. Frontal lobe gliosis. Atrophy (or aplasia?) of left post-central gyrus. (*Acquired. Congenital?*)

XII. 1317. Woman, mill-worker (father alcoholic), at twenty-three had insomnia, followed by auditory hallucinations, fear, religiosity, vagrancy. In hospital, resistive, hallucinated, delusive, mute, refusing to eat; later violence. Finally apathy, with manneristic speech and grimaces. Death from carcinomatosis, twenty-one years after onset. Occipital microgyria. Chronic leptomeningitis along sulci. Cervical spinal cord firm. (*Acquired.*)

XIII. 1319. High grade imbecile. Irish mill-operative. Sister epileptic. Mother of three children and a fourth illegitimate. One attempt at suicide? Eight years' course, with onset at twenty-three. Religiosity. Could see Virgin Mary at any time (hallucination rather than delusion). Imitation of saints' attitudes as seen in pictures. Possible gustatory hallucinations. Death at thirty-one. Unequal pupils. Superior temporal anomaly. Cervical spinal cord unusually large. Slight leptomeningitis, especially basal. (*Acquired and congenital.*)

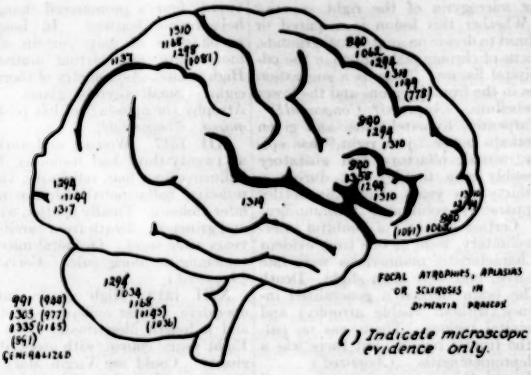
XIV. 1335. Shoe operative. Attack of doubtful character at twelve years. Paranoid symptoms began at eighteen. Katatonic symptoms gradually supplanted the paranoid. Death at thirty-two. Spinal cord unusually small. Brain weighed 985 gm., but was apparently not to any great degree atrophied. Heart (145 gm.) and liver (945 gm.) also small. (*Congenital.*)

XV. 1358. Irish-Canadian, shoe-operative. Onset at fifteen. Katatonic, later apathetic, then apparently recovered (seven months after onset). Recurrence four months later. Remarkably periodic course. Death at twenty-four. Palpable sclerosis of the left inferior frontal gyrus. Slight chronic fibrous leptomeningitis. (*Acquired.*)

One's superficial judgment, therefore, concerning the origin of the lesions in question is that they took rise in the adult brain in 840, 991, 1034, 1062, 1149, 1168 (at least in part), 1294, 1303, 1310 (at least in part), 1317, 1319 (in part), 1358 = 12 cases; possibly also in 1137, 1298 = maximum of 14 cases. So far as 1335 is concerned (Case XIV), it might well be doubted whether the hypoplastic nervous system formed more than a nidus for the mental process; perhaps this case should be put in the macroscopically normal group.

It is but fair to insist, on the other hand, upon the congenital features. Besides, 1335, 1137, 1168, 1298, 1310, 1319, gave rise to a suspicion of congenital features in the nervous system alone = 6 cases. And, if we add anatomical features outside the nervous system, then 1034 (hirsuteness, hypoplasia of heart and aorta), 1062 (aberrant thyroid) might be added = a maximum of 8 cases probably or possibly in part provided with congenital features.

It appears, accordingly, that, although congenital features are not absent from our group, there is strong color for the provisional judgment that numerous acquired lesions of the nervous system exist in our series.



The Pre-Rolandic group. The frontal region was specially marked out for injury (whether acquired or congenital is for the moment not considered) in Cases 840, 1062 and 1358; was prominently injured also in 1294 and 1310; and obviously shared to some degree in the generalized mild injury which was macroscopically made out in 991, 1135, 1303 and in 1335 (unless this brain be regarded as showing hypoplasia of congenital origin), i. e., in at most 9 cases.

Consider, first, the three cases in which the macroscopic lesions specially affected the frontal region. Case 840 was at first paranoid, then shortly katatonic; 1062 was paranoid, perhaps never katatonic; 1358 was a katatonic case with remarkable remissions. At first sight it seems hopeless to seek clinical correlations in these cases. But, bearing in mind the conclusions of Campbell and Brodmann concerning the histological differentiation of the so-called frontal region into subdivisions, it is clear that we cannot demand close clinical correlations here.

As a matter of fact, the lesions of 840 (the case with paranoid-katatonic course) involved, so far as eye and finger could determine, the *whole* of both frontal regions, and the whole brain itself showed a generalized increase of consistence. Whatever the relation of the patient's brain disease to her symptoms, there is not the slightest doubt that the patient had been subject to a sclerosing brain disease of mild but generalized character during the last years before death (assigned duration, three years). Microscopically, the gliosis of this case was generalized and not demonstrably severer in the infrastellate layers.

But, though the changes of 840 are too severe and widespread and the symptoms too mixed for correlation, the same is not true of 1062 (paranoid, perhaps never katatonic), a woman of the same age as 840, but with a much longer assigned duration of symptoms (eleven years or more), and with alcoholism clouding the issue; 1062 had maintained proper brain weight and showed gliosis confined (so far as macroscopic examination could determine) to the superior frontal, prefrontal and orbital gyri, i. e., to a continuous area probably containing but two histologically separate cortex-types. It is perfectly true that microscopic examination shows a degree of the same process (gliosis, satellitosis) in other regions, so that here again the brain cannot be freed from the suspicion of a generalized change. Still, both macroscopic and microscopic examinations seem to prove that the superior frontal and prefrontal cortex is subject to the most severe and possibly to the oldest process of injury. It becomes, therefore, at least a working hypothesis for this case to consider the paranoid symptoms as related with lesions in the superior frontal and prefrontal regions.

But what kind of interpretation is left open for the purely katatonic case, 1358? The analysis of this case is still far from complete. The greater part of both frontal regions was, as a matter of fact, wholly spared from macroscopic lesion. Only the left inferior frontal gyrus was affected, presenting an induration of an isolated and distinct, though mild, character in the midst of an otherwise apparently normal brain (slight general leptomeningitis). What relation, if any, this particular lesion bears to the katatonia of this (clinically somewhat unusual) case is impossible to say, but it is certain that the data of 1358 do not controvert in any respect the correlations suspected for 1062 (the practically pure paranoid case) or even for 840 (a clinically more rapidly progressive and mixed case), as the macroscopic distribution of the lesions indicates.

The other frontal lobe cases deserve brief mention. The distribution of the lesions in 1294 is in consonance with the progressive paranoid-to-katatonic character of the disease: the case resembles in some respects 840 (just considered), but its duration is longer (six years) and the katatonic symptoms were much delayed in their development. The brain had undergone a mild generalized sclerotic process (widely distributed gliosis microscopically) which had especially affected the frontal and occipital parts of the brain and included the cerebellar cortex and even the

pons. The frontal tips actually showed a few pial adhesions (a rare event outside of general paresis and other exudative or post-exudative lesions). The extent of this prefrontal process again recalls 840, but the whole case is obviously too complex, progressive and long-standing to permit more than a suspicion of the course of cortical events.

Case 1310 is best considered below among complications of the post-Rolandic group; it showed both delusions and katatonic symptoms, but was at first pronouncedly hebephrenic.

The group of generalized glioses (without defined gross atrophy) here considered numbers three. One of these (991) was practically paranoidal throughout its eleven-year course, and, as a matter of fact, microscopically showed a marked superior frontal lobe gliosis (with satellitosis); but the case is clinically not too clear and no deductions need be risked therefrom.

Another generalized gliosis, 1303, was apparently the end-stage of a hebephrenic, with a disease of twenty-five years' duration. Correlations are impossible. Histologically there were marked gliosis and satellitosis, especially of deeper layers.

Case 1335, the last of this group, is very possibly an instance of hypoplasia or of arrested development of the brain. The brain at autopsy weighed but 985 gm. (heart, 140 gm.; liver, 940 gm.). Correlations here also are difficult.

Before dismissing the pre-Rolandic group, 1149 may be considered in this connection. I have placed 1149 provisionally in the post-Rolandic group largely on the basis of the well-defined occipital gliosis, but the brain showed a generalized sclerosis (microscopically marked, with some degree of satellitosis in places). The reason for possibly including it more especially in the frontal group is the occurrence of chronic fibrous leptomeningitis, confined to the superior frontal gyri. The case was clinically a supreme example of a paranoid dementia precox of thirty-two or more years' duration, and with certain katatonic symptoms appearing very late in life.

The above sketch of the features of the pre-Rolandic group leaves us with the suspicion that paranoid cases begin with lesions striking especially the frontal tips and the superior frontal gyri. Cases with katatonia supervening later and with a progressive course of greater duration show involvement of other regions or even of the whole brain.

The Post-Rolandic Group. (*a*) Cases 1137, 1168, 1298 and 1310 (also frontal) form a subgroup which might, perhaps, be termed sensory-perceptual. (*b*) Cases 1149 and 1317 are cases of occipital lesion, 1319 of superior temporal lesion.

(*a*) The post-central-superior-parietal or sensory-perceptual group of cases claim attention as exhibiting lesions in a region doubtless of great importance in interpretation of sensory impulses. All four of the cases were alike in developing katatonic symptoms.

Case 1137 began, it is true, with a delusion, but a peculiar one (electrification), possibly due to sensory misinterpretation; thereafter the patient developed katatonia, demented seriously, and died (fifteen years' duration). The visible atrophy (or aplasia) in the right superior parietal region, accompanied by microgyria and a dense local deposit of fibrous tissue, formed a striking local lesion. At the time of death, however, gliotic changes with satellitosis had become widespread. Purposely I avoid discussing whether the lesion is acquired or congenital and what its pathogenesis may be, since for the time being the topographic distribution of these lesions is the important consideration.

Case 1168 showed at autopsy what looked like a bilateral anomaly — a hypoplasia of both post-central gyri in their upper two thirds. The onset in this woman occurred at twenty after desertion, and katatonic symptoms were admixed with persecutory delusions and subjective heat-sensations almost at the start. The course was katatonic thereafter.

Case 1298 pursued an acute course of katatonic character, with death after nine months. The brain showed, besides double post-central gliosis in the white matter and visible atrophy of the right post-central gyrus, a peculiar focus of duropial adhesions over the left middle frontal gyrus. This case was at one time diagnosed as depressed phase of manic-depressive insanity.

Case 1310 appears clinically to show a marked imbecilic strain. Perhaps the left post-central atrophy and the precentral inequalities are largely of congenital derivation. The frontal gliosis is consistent with the imbecilic or hebephrenic cast of the case. Numerous katatonic features developed.

The sensory-perceptual subgroup, as represented by these cases, shows lesions which lead to the suspicion, if not the proof, of congenital anomalies. Symptomatically these cases have katatonic symptoms in common.

Post-Rolandic group (*b*). Cases 1149 and 1317, as well as 1294 (discussed with the pre-Rolandic cases), belong to an occipital group.

Case 1149 was briefly mentioned in the frontal connection above because the prominence of the frontal region (which could not be differentiated on palpation from the remainder of the sclerotic brain) was emphasized by a local frontal leptomeningitis. In point of fact, the occipital regions were more markedly sclerotic than the rest of the brain. The case might be asserted to present a beautiful instance of anatomo-clinical correlation were we to insist on the relation between the occipital gliosis and the well-defined, constantly recurring, voluntarily executed visual episodes ("communications with God"). Obviously, such a superfine correlation would mean running a good horse too hard. Those "communications" must have involved numerous cortical events outside the occipital region. It seems safe to maintain, however, that, granting some agency exerting a mildly destructive or irritative effect upon the occipital region, a useless mental habit like these "communications" would probably assume a visual coloring. The existence of disease in a

given brain-region may well be conceived to determine the course of events in the intact remainder. The histological examination of this case is incomplete, but I conclude from available sections that the calcarine cortex-type is relatively intact, whereas the common occipital cortex-type exhibits much more marked gliosis and satellitosis. In this early phase of our problem, it seems best to rely upon coarse and well-defined qualitative distinctions rather than the cell-enumerations which later work will demand. I judge from recent comments on cortex-architecture that the occipito-calcarine relations will be the most vulnerable point of attack in this direction.

Case 1294, which has been discussed above, also exhibited similar histologically demonstrable variations in the intensity of lesions in the calcarine and occipital regions (common occipital type more markedly affected in the infrastellate layers). As a matter of fact, however, in 1294 the hallucinations shown were auditory rather than visual (though the patient once broke glass to reach her husband being crucified). The brain showed frontal, cerebellar and pontine gliosis in addition to the occipital. No temporal gliosis was made out macroscopically, but there were foci of leptomeningitis both at temporal and at frontal tips.

Case 1317 again breaks down in anatomo-clinical correlation much as does 1294, since, despite the occipital microgyria, the hallucinations, so far as was made out clinically, were auditory. There were some religious delusions.

With respect to relative developments of paranoidal and katatonic features in this occipital sub-group, it has been pointed out that 1149 was a classical paranoid case with a few katatonic symptoms toward the close of life (thirty-two years' duration). Case 1317 was more doubtful, but probably can be interpreted as mainly paranoidal; katatonic symptoms developed late in a course of twenty-one years. Case 1294 was paranoidal.

If we compare the sensory-perceptual group (*a*), Cases 1137, 1168, 1298 and 1310, with the occipital group (*b*), 1149, 1317, (1294), we cannot but be struck with the predominantly katatonic character of group (*a*).

Infra-Sylvian group. I have provisionally placed but one case, 1319, in this group, a paranoidal case, probably upon an imbecilic basis. There are no striking anatomo-clinical correlations in the case. This group will undoubtedly grow with further experience. Case 1294, e. g., showed focal leptomeningitis of the temporal tips.

Cerebellar group. It is noteworthy that the cases which we procure at autopsy in dementia precox are provided, as a rule, with multiple lesions. This is particularly true in the advanced cases, where interpretation may be difficult by reason of the fact that gliosis has overtaken the brain as a whole. This difficulty reappears in the cerebellar cases.

Case 1034, however, is a macroscopically pure case of sclerosis of the dentate nuclei of the cerebellum. Clinically, 1034 was a classical example *cerea flexibilitas*, in an Italian of thirty-five years, who began with paranoid symptoms (feared anarchists), and in less than six weeks became typically katatonic. Microscopic examination shows in various areas of the brain a gliosis which had escaped palpation in the gross. Some of the areas of intracortical alteration were undoubtedly far too small to attract attention macroscopically. There was a slight satellitosis of the frontal region. The case appeared, then, like many other cases of this series, microscopically not so definite as the data of palpation had indicated.

Case 1168 is a case which has been briefly mentioned in the sensory-perceptual subgroup of the post-Rolandic cases as showing a hypoplasia of both post-central gyri in their upper two thirds. In addition thereto there was a sclerosis of the olives of the right dentate nucleus of the cerebellum and of the cacuminal and clival portions of the cerebellum. This case was classified as hebephrenic, but mutism, resistivism, assumption of fixed attitudes and impulsive rocking movements give rise to the suspicion that katatonic features cannot be excluded. A congenital element is also very possible from both history and brain findings.

A third case, 1143, showing almost the same findings in the brain, has been excluded from the group of typical dementia precox cases, but might be included upon a more liberal interpretation of sumptoms.

Other cases would have to be added to this group on the score of serious microscopic alterations which were made out in the face of protocols to the effect that the cerebella were macroscopically normal. The group is, therefore, actually much larger than the two cases (1034 and 1168) would indicate.

PROVISIONAL GROUPING OF FOURTEEN CASES WITHOUT RECORDED GROSS LESIONS.

I have analyzed in some detail the cases with recorded minor gross lesions and anomalies to the number of 15. There are 14 outstanding cases having a clear clinical title to the diagnosis of dementia precox, but in which no gross lesions were recorded. It is of interest to learn what light a microscopic examination will throw upon these cases, and whether any cases are subject to a tentative topographic grouping.

There are several cases about which there is no doubt that they actually belong in the gross lesion group. Thus 1145 should, perhaps, have been excluded altogether from this study since the protocols were mislaid. Ample block material exists, however, which microscopically shows characteristic satellitosis of the deep cortex layers and a marked gliosis of the dentate nuclei (more marked left than right). This case might well be placed in Table XVII above, as well as in the cerebellar group.

Case 1145, 10705, female, thirty-seven, paranoid, six years; brain weight, 1,185 gm. (pregnancy at origin).

I am sure, also, that, with increasing experience, Case 1036 would have become an accession to the gross list in the cerebellar group. A sketch of this case was presented by the writer in 1907 in his study of the granule layer of the cerebellum.[23]

Case 1036, 11317, male, twenty-eight, hebephrenic, six years cardiorenal, renal six plus years; brain weight, 1175 gm.

Case 778, a paranoid case upon an imbecilic basis, I should desire to place (with some trepidation) in the superior frontal group. The reason for this is that the superior frontal gyri, far more than other regions examined, gave evidence of a sclerotic process; considerable gliosis of the underlying white matter, superficial gliosis of rather focal character, and perhaps a slight generalized gliosis of the whole gyri, with infrastellate satellitosis. That the process was not confined to this region is true, and neuroglia cell mitosis was a curious finding in the right precentral gyrus. The paranoid features had come on two years before death at forty-one in this imbecile. Very possibly the case scarcely belongs with dementia precox as usually conceived, but it seems certain that a similar process has begun in the tissues.

Case 1081, a suicide, can with some confidence be placed in the post-central subgroup, if only by the evidence of the stained sections which demonstrate a marked inequality in the two post-central gyri. After considerable search, a focus of gliosis and satellitosis was found in one of the orbital regions. This case, a good instance of a hebephrenic with onset at eighteen and suicide at forty-five, shows how a minor lesion — anomaly or acquired lesion, it would not be safe to say which — can be overlooked at autopsy. Had not the post-central gyri been sectioned in co-ordinate places, and had not the orbital gyri been sectioned, this brain might well have passed into the "normal" group both macroscopically and microscopically.

Case 1208 is a case described by Ayer and the writer in 1908,[24] in which the gross findings are so altered by the effects of a suicidal attempt and by terminal metastatic brain abscesses that a judgment concerning essential lesions of dementia precox is difficult. The case should perhaps be excluded from the whole series on the ground of complications.

So excluding 1208, we arrive at the judgment that 15 cases in which gross lesions were actually described, together with 4 cases in which (in all conscience and with greater experience) gross lesions should have been observed, our total of gross lesion cases would run to 19 in 28 (the chosen uncomplicated 29 cases minus Case 1208). This result would mean that gross lesions — focal atrophies and aplasias, and a few focal and diffuse glioses without visible atrophy — are found in 68% of a series of typical dementia precox cases, from which have purposely been previously excluded all instances of frank arteriosclerotic and coarsely wasting processes.

It seems strange that such a high percentage of visible and tangible lesions should have escaped attention if this Danvers series is at all typical of dementia precox in general. I am sure that in many laboratories the brains of autopsied cases fail to get intensive study until after long immersion in formaldehyde solution, which obliterates (or by distortion perhaps conceals) minor size-differences in gyri. Moreover, anatomists, familiar with sculpture anomalies of such relatively plastic organs as the liver, kidney and spleen, are inclined to dismiss cerebral anomalies of sculpture as of the same minor order of interest. Again, the careful palpation of the cerebrum and of the cerebellum is not duly practiced in all laboratories, nor are blocks for microscopic examination chosen on the basis of such intensive inspection and palpation of the brain as careful work demands.

Our own experience has shown how difficult it may be to keep one's house in order for intensive work. Eight cases are outstanding in which notes of gross lesions are missing. Of these 8, 4 show in certain regions characteristic gliosis and satellitosis (891, 944, 977, 1165). The other 4 (794, 806, 873, 1006) have so far proved refractory to our efforts to show stratigraphic alterations.

The result is that 24 out of the chosen 28 cases show either gross and microscopic lesions or microscopic lesions alone, i. e., 86%.

V. THE TOPOGRAPHIC IDEA IN THE STUDY OF DEMENTIA PRECOX AND ALLIED CONDITIONS.

The eternal hope of the neuropathologist is the hope of showing visible "changes" in the nervous system in the functional psychoses, and not only *in* them, but *of* them. All insanity, we hear on every hand, is really nothing but brain-disease, and, if our technic were only better, we should be able to point out the particular brain-changes which are responsible for insanity. I was assured by an enthusiastic psychopathologist that these brain changes are actually so certain to exist that we should not waste our time looking for them!

There are reasons which make this equation

Insanity = brain-disease

really erroneous. In the first place, certain psychiatrists to the contrary notwithstanding, modern work has shown that the equation should better read

Insanities = brain-diseases,

and in the particular form

Some insanities = brain-diseases

perhaps we should be inclined to accept at least the spirit of the statement.

Ever since the doctrines of Flourens were overthrown, from the days of Hughlings Jackson and Hitzig down to the era of the topographers (Campbell and Brodmann, for example), it has been known that the brain is a complex of organs. The brain has parts. Yet those authors who assert that

insanities are diseases of the brain are, as a rule, quite silent as to the brain-*parts* involved. The brain as an organ of mental disease is, for these authors, really the old Flourens brain, having interchangeable parts like a liver or a kidney.

The only justification for this view of which I am aware is the sound idea that the brain, although its parts are not homogeneous and interchangeable, still works in a certain integrated, organized way, and, when disorder and disorganized working of brain-elements supervene, then mental diseases appear. Thus Wernicke supposes that

Insanity = disease of the association elements of the brain.

This is a definite advance upon older conceptions, at all events in clearness. I suppose no one doubts the conceivableness of a mental disease based upon such transcortical lesions of association fibers as Wernicke supposes. But few would be so bold as to generalize the transcortical-injury idea to cover the great bulk of mental diseases.

Even in the field of aphasia, one observes with recent writers a tendency to replace the focal-destruction theory with some theory more consonant with modern ideas as to the tremendous breadth and complexity of the cortical areas subtending speech. From the psychological and logical side comes a vigorous plea from Wundt against the fashionable focalizing of the speech functions in specified areas.

Thus a curious situation develops. On the one hand, the topographers, both physiological and histological, are demonstrating more and more the extreme delicacy of subdivision which exists in the brain-cortex as elsewhere in the nervous system, so that one gains the idea that perhaps no parts of the brain are functionally interchangeable save by re-education. On the other hand, logicians and critical workers are calling a halt upon the focalizers and denying some of the most classical and approved localizations. These latter objections are brought with the more force against the localization of a complex function like speech, which savors of the old faculty-psychology and contains a *soupçon* of phrenology.

I believe we should be even more critical concerning the structural foundations of mental disease. Suppose we grant that any mental symptoms you please, e. g., delusions, hallucinations, negativism, *cerea flexibilitas*, have a cerebral origin, is it necessary to suppose likewise a cerebral disease as a basis therefor? Yes, some would reply, a cerebral disease, but not necessarily structural, perhaps functional only. Even the latter escape I should be tempted to forbid.

Consider diabetes mellitus. The glycosuria has in one sense a renal origin. But it would be a mistake to consider diabetes mellitus a renal disease, structural or functional. I believe that the brain permits certain mental symptoms to develop and purveys these symptoms, much as the kidney of a diabetic permits and purveys glycosuria.

Similar considerations hold with respect to the purveying of convulsions by the brain, an account of which I presented in a paper on the mechanism of gliosis in epilepsy. Neither a convulsion nor a katatonic impulsive movement nor the clenched fist of a thug is adequately explained by lesions of the muscles involved, by lesions of the motor nerves or spinal cord, by activities in the pre-central gyrus or even necessarily by any post-Rolandic or pre-Rolandic brain mechanism or combination of mechanisms. Perhaps, indeed, the reason lodges back of the central nervous system; the convulsion might have been a phenomenon of reflex epilepsy due to intestinal worms; even the katatonic movement might conceivably prove a normal and proper reaction to some received stimulus and the thug's brain might have been quite "normal" while engaged in permitting an asocial act for whose source one should seek far afield.

On such grounds it has not seemed certain to me that mental disease is necessarily brain disease or that, were we able to inspect thoroughly all brain-parts, we should necessarily discover "changes" therein in mental disease. Perhaps the thyroid or the pituitary glands might induce mental symptoms without inducing brain "changes" over and above the proper physiological changes going on in any brain-part during the execution of its normal function. We might be forced to look into the thyroid for the cause of some mental diseases just as into the pancreas for that of a diabetes mellitus.

A priori, therefore, it has not seemed to me at all necessary that diseases like manic-depressive insanity or dementia precox (to use Kraepelin's nomenclature) should exhibit, even theoretically, brain changes. One was especially disposed not to conceive brain changes of a universal character, such as the universal liver changes in phosphorous poisoning, as underlying these diseases. No doubt there are instances of such universal brain change, and no doubt mental symptoms occur as a consequence. Hyperpyrexia might serve as an example. General paresis, however, our paradigm in this field, despite the severe and widespread brain changes which characterize it, is still an example of a disease of focal character. From its protean and progressive character, a theoretically similar focality for brain lesions in dementia precox was thought probable. The mild irritative and persistently complex character of many symptoms in dementia precox seemed to argue very mildly destructive or irritative lesions, such that an occasional definite cure or disappearance of a given symptom or set of symptoms could be effected by removal of irritating factors or by advancing destruction of the offending elements.

If these contentions were sound, it became clear that no random block of brain tissue could demonstrate the nature of dementia precox, as a particular block of lung tissue might demonstrate that of pneumonia. Neither would all the cells be equally or peculiarly affected, nor would the cells of certain strata do more than demonstrate the effects of disease in those strata.

But, if the cells or strata of no random block of brain tissue could serve as a test of dementia precox, would not particular and happily chosen blocks, or even ideally possible total brain sections suitable for cytopathology, solve the problem? I suppose all would agree that such work might solve the problems at least of localization and possibly of pathogenesis in dementia precox provided that the disease is really a brain disease.

I therefore began to study all cases of dementia precox accessible to me (the protocols and prepared sections from the Danvers collection made in Professor Barrett's service and my own) to get a general view of the subject. As will be seen, I at first included with type-cases also cases only doubtfully belonging in dementia precox, and these I have excluded from the conclusions of this report, although many exhibited lesions which might well serve, if we were surer of our conditions, to bring the cases back into the group.

The histopathology, although studied in connection with many of the lesions, has been left in the background to avoid involvement in a tangle of discussion concerning intracortical reflex arcs.

CONCLUSIONS.

1. Existent evidence for the organic nature of dementia precox is not wholly convincing, since (*a*) the cytological changes described are found also in cases of toxic deliria and in cases complicated by severe visceral disease, and (*b*) the stratigraphic changes described are found also in certain senile cases without characteristic symptoms of dementia precox.

2. Resort must, therefore, be had to the topographic idea, for the adequate exploitation of which total-brain sections, with cytological exploration of *all* areas, are ideally necessary.

3. Random blocks of brain tissue with demonstration of satellitosis, infrastellate gliosis or disintegration products of cell disorder will throw little light on the mechanism of dementia precox.

4. The data of the functionalists (dissociation, sejunction, intrapsychic ataxia and the like) are of the utmost importance as indicating the essential focality of the pathogenic process and the focal variations in its severity.

5. The curability of certain cases, the remissive character of some cases, the speedy disappearance of particular symptoms, the persistent complexity of reaction in some instances, the absence of characteristic severe projection-system symptoms, all indicate that the process is histopathologically mild and that the focal changes found will be but slightly destructive or even irritative (in the sense of slight injuries readily repaired or compensated for).

6. Grossly destructive lesions of a transcortical character in Wernicke's sense might conceivably effect, e. g., a permanent katatonic complex, and doubtless will be found to do so occasionally; but the protean and progressive character of dementia precox will exclude such transcortical injuries from playing a large part in the pathogenesis.

7. The focal lesions to be sought for will doubtless escape macroscopic notice in many instances since the volume of apparatus engaged in effecting very prominent symptoms is often slight and spread very thin in numerous areas.

8. Studies of the "soft brain" and of gliosis in epilepsy have proved, however, that even comparatively slight degrees of cortical gliosis can often be palpated at autopsy.

9. Palpable glioses of a focal or variable character, combined in numerous instances with visible atrophy and microgyria, have been found in over half the series under examination, cases regarded as clinically above reproach and *not* subject to coarse wasting processes, focal encephalomalacia, cortical arteriosclerosis or diffuse chronic pial changes.

10. The frequent co-existence of several foci of sclerosis or atrophy in the same brain and the microscopic observation of milder degrees of nerve-cell disorder and gliosis in regions without gross lesions tend to the conception that the agent is more general and diffuse in its action than would seem at first sight, so that future research may well demonstrate that certain instances of coarse brain wasting and even of diffuse chronic leptomeningitis belong in the group (microscopic corroboration necessary for assigning values to focal variations).

11. The microscopic examination of the residue of cases in which gross lesions or anomalies were not described shows the same tendency to gliosis and satellitosis in numerous instances, and the same tendency to focal variations from gyrus to gyrus exhibited by the gross lesion group. These findings suggest that the minor gross lesions and anomalies of several cases actually escaped notice (the protocols, though drawn up with a certain system, are by various hands) at autopsy, so that the probable actual proportion of gross lesions is 68%. If microscopic evidence is resorted to, the "organic" proportion in our series rises to 86%.

12. Several groups of cases were classified from the distribution of macroscopic lesions, although the focal purity of these cases can often be brought in question from the results of microscopic examination (infrastellate gliosis and satellitosis in macroscopically "normal" areas).

I. Pre-Rolandic group, including a superior frontal-prefrontal subgroup of paranoidal trend (*cf.*, e. g., Case 1062).

II. Post-Rolandic group, including

(*a*) Postcentral-superior parietal (sensory-perceptual) subgroup in which katatonic features are the common factors (*cf.*, e. g., Case 1298).

(*b*) Occipital subgroup (*cf.*, Case 1149).

III. Infra-sylvian group (too small for clinical correlations).

IV. Cerebellar group (katatonic features).

13. If these data find general confirmation, they will doubtless go far to unify discussion, since mild, variable and progressive intracortical lesions, proceeding at different rates in different parts of the apparatus, and having the peculiar distributions indicated above, would explain ade-

quately some of the contentions of the dissociationists, while remaining not wholly inconsistent with Kraepelinian ideas.

14. The frontal-paranoid correlation is in line with modern physiological ideas, but it must be granted that the occipital and temporal regions, as elaborating important long-distance impulses, may well play a part also in paranoid states.

15. The cerebellar-katatonic correlation is doubtless in line with some contentions of the Wernicke school, and obvious comments might be made in connection with the proprioceptive functions of the cerebellum (Sherrington).

16. The post-central-superior parietal relations to katatonic symptoms are perhaps theoretically the most novel suggestion from the work, but here again the results are not inconsistent with modern physiology.

17. The topographic study of dementia precox brains, both gross and microscopic, is commended as likely to shed new light on the pathogenesis of certain symptoms, notably paranoidal and katatonic symptoms.

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IV.

TEN OBSCURE CASES OF MENTAL DISEASE: A CLINICAL AND ANATOMICAL STUDY.

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IN his study of the margin of error in the diagnosis of mental disease, Southard found 10 cases (4%) of a series of 250, specially reported clinically (at Danvers Hospital conferences) and later autopsied, which, unlike the remainder of the series, did not readily fall into accepted clinical groups. As it was thought that a more intensive study of these cases might reveal appropriate diagnoses, the following analysis was undertaken. First, condensed histories and anatomical analyses were drawn up, from which provisional anatomical and clinical diagnoses were made. Secondly, analysis of available microscopic material was made in every case, and provisional diagnoses made therefrom. Thirdly, a comparison of the three provisional — clinical, anatomical and microscopical — diagnoses was made for each case, and on the basis of this comparison a set of probable diagnoses of still greater finality was drawn up.

Owing to the obscure state in which the structural aspect of mental disease still remains, it is obviously impossible from a study of the microscopical brain and gross autopsy findings alone definitely to place a case in a clinical group. A tentative grouping was made of cases with similar morphological findings, and an effort made, first, to place the cases examined in this study in one of these groups, and then more definitely in a clinical group if possible. Four groups were made as follows:

I. Organic group, in which there are prominent blood-vessel changes or well-defined destruction of brain tissue. It includes general paralysis, cerebral syphilis, arteriosclerotic insanity, tumors, trauma, etc.

II. Senile group, in which there is a diffuse destruction of nerve cells without (necessarily) prominent vessel changes, accompanied by either atrophy of convolutions or decrease in brain weight. It may or may not be accompanied by marked visceral disease.

III. A group of which the mental symptoms may be due to toxic and nutritional disturbances. This group includes cases in which the brain shows no changes outside of physiological limits, but where marked visceral disease of such a nature as to produce toxins or disturbances of nutrition is found. It is made up of the infection and exhaustion psychoses, thyrogenous insanity, etc.

IV. Functional group, in which there are no universally accepted findings of note either in the brain or trunk. It includes dementia precox, manic-depressive insanity and the acute intoxication psychoses.

These groups are not entirely satisfactory. The first and second are fairly definite, but the third and fourth are rather loose. It is impossible to say whether a certain combination of lesions would produce sufficient disturbance of nutri-

tion to cause mental symptoms, so all that can be done is to select lesions that must produce some disturbance of nutrition and assume that they were or were not sufficient to cause mental symptoms in the particular case. Unfortunately, this method will not identify the acute toxic and exhaustive psychoses that have no distinct pathology. It also does not exclude the last group, the "functional" diseases, which may be associated with visceral disease. However, the classification was the best that presented itself for the study of a group of mental cases from the morphological side, and the diagnoses are made tentatively, subject to revision when compared with the clinical symptoms.

The cases are presented in the form of condensed clinical summaries and summarized autopsy protocols. The microscopic examinations are by the writer.

Case I. E. N., Path. No. 850. Male, age seventy years, bookkeeper. Admitted to Danvers State Hospital January, 1883; discharged Jan. 14, 1888. Readmitted Dec. 10, 1903; died Feb. 12, 1904.

One sister insane. Father died of consumption. First admission: Had a common school education. Was cheerful; a moderate drinker; used tobacco to excess. Had been a bookkeeper since 1872. Cause of trouble given as overwork and ill-health. Poor health for one year; for two months in Boston City Hospital. Here he had a cough, vertigo, dyspnea on exertion and pulse of 112. Nervous and excitable.

In hospital was depressed, apprehensive, not violent, had delusions. Took nourishment poorly. Believed he set fire to the city of Portland. Apathetic. Physically on admission was poorly nourished; physical and neurological negative. Diagnosis: Delusional insanity. Discharged on a visit, January, 1907, but was soon brought back by friends.

Second admission, December, 1903. Quiet, feeble, rambled in conversation. Orientation good for place, defective for time. Poor knowledge of current events. No delusions or hallucinations; fair insight. Memory fair for remote events, not so good for recent events; impressibility poor. Emotions normal; at times is confused. Diagnosis: Senile dementia.

Physical examination on admission: Emaciated; arcus senilis. Heart regular, first sound rough, radials thickened. Trace of albumin. Very weak. Tremor and twitching of fingers. Reflexes normal. Pupils equal and sluggish. Sensation dulled.

Autopsy by A. M. Barrett: Decubitus, emaciation, miliary tuberculosis of lungs, liver, spleen and umbilicus, with ulceration, chronic adhesive pleuritis, left and right, chronic fibrous myocarditis, milk spot, chronic mitral endocarditis, chronic fibrous peritonitis, arteriosclerosis with calcification of aorta, chronic parenchymatous nephritis, enlargement mesenteric lymph nodes, chronic external adhesive pachymeningitis, arteriosclerosis of small arteries of brain. Brain weight, 1440 gm.

Cause of death: Miliary tuberculosis, senile debility.

No. 850. The cortex picture is that of a senile brain. The nerve cells are atrophic and deeply pigmented and are slightly decreased in number. The glial cells are increased in number in the gray matter and contain pigment. A number of satellite cells surround the larger nerve cells. The blood vessels are moderately sclerotic, with an increased amount of pigment in the adventitia. Although no mention of convolutional atrophy was made in the protocol, the diagnosis of senile dementia is made on the presence of regressive changes in the nerve cells and glia and the cortical arteriosclerosis.

In the protocol, certain visceral lesions are mentioned which must have produced toxic and nutritive disturbances, and which may have had some influence on the mental symptoms. The chronic tuberculosis and chronic nephritis are probably related with the emaciation noted at autopsy. The milk spot, endocarditis, chronic peritonitis and pleuritis may indicate a former acute infection, or even septicemia, which may also have been a factor in causing the mental symptoms.

The first mental trouble, coming on during a period of ill-health and low vitality, is indefinite in nature and can best be explained as due to a disturbance of nutrition acting on a brain with hereditary weaknesses. It seems reasonable to assume that this attack may have been in some way associated with the septicemia mentioned above; at least the mental symptoms cleared up when the physical conditions improved, and for a number of years the patient was probably without mental symptoms. The second mental disturbance was typical of senile dementia and may or may not have had a connection with the first trouble. The toxemia resulting from the tuberculosis could be thought of as helping to produce mental symptoms, since the brain findings are hardly prominent enough to account for great mental disturbance.

Case II. M. P., Path., No. 896. Female, age seventy-five dressmaker. Admitted to Danvers State Hospital Jan. 1, 1904. Died Aug. 12, 1904.

Heredity: Negative. Common school education. Married at the age of twenty-seven; three children, two girls alive, youngest forty-two years old. Husband died thirty-six years ago. Since that time worked at dressmaking. Had articular rheumatism for twenty years. Went to Salem Almshouse twenty years ago. Onset gradual, five years ago. Thought people talked of her, saying she was a murderess and prisoner; calm unless spoken to, when she became excited.

In hospital was quiet, good-natured, talked freely, depressed. Well oriented, fair knowledge of current events. Memory for recent and remote events good. Heard voices talking about her, usually at night, and had delusions of persecution; often cross and irritable. No insight.

Physical examination on admission. Poorly developed, emaciated; skin dry, eyes sunken; joints of hands and feet enlarged. Pupils normal, arcus senilis. Hearing and vision defective. Reflexes normal. Dullness of right apex. Arteries knotty. Pulse 100, weak. Second aortic accentuated. No murmurs.

Autopsy: Seventy-seven hours post-mortem by A. M. Barrett: Bronchopneumonia of both lungs, acute splenitis, chronic diffuse nephritis, chronic passive congestion of liver, milk spot, old scars at apices, enlargement retroperitoneal lymph nodes, sclerosis of basal vessels, chronic leptomeningitis, increased cerebrospinal fluid, unequal pupils. Brain weight, 1180 gm.

Cause of death: Bronchopneumonia.

No. 896. The changes found in the brain are senile in character. The nerve cells show atrophic changes everywhere and are decreased in number to a slight extent. The glial cells are increased focally both in

gray and white matter, and especially so in the subpial region. Many cells contain pigment. The vessels are slightly arteriosclerotic in places. These changes are nowhere prominent, and it is difficult to say whether they are outside the physiological senile limit, especially since no mention of atrophy of convolutions is made in the protocol.

Outside the terminal condition of bronchopneumonia, there is nothing in the gross findings severe enough to have much importance in producing mental symptoms. The only things in the morphology of any importance, then, are the slight senile brain changes, and the diagnosis of a senile condition of a mild degree must be made. The brain weight is low, 1180 gm., and there may have been some atrophy of convolutions that was not recorded.

The diagnosis of senile paranoia was made clinically, and doubtless is correct. Whether the diagnosis can be said to be supported by the morphological findings is an open question. At least there is nothing to disprove it, and the fact that there was little dementia present agrees with the absence of great atrophy of convolutions and the slight changes found in the microscopical picture of the cortex. It must be admitted, however, that these changes are very slight and in another case might not be associated with mental symptoms at all and that the real cause of the mental disturbance is not clearly disclosed in the morphological findings.

Case III. J. M., Path. No 904. Male, age thirty years, hatmaker. Admitted to Danvers State Hospital Nov. 21, 1903; died Sept. 4, 1904.

Previous history not obtained. *Onset* gradual. Used little liquor. Melancholy. Refused to speak; eyes staring and vacant; would not eat or work. Laughed and cried, slept most of time, shunned companions.

In hospital was quiet, stayed in bed, mute. Understood directions pretty well, took nourishment, cheerful, lay in bed quietly for hours. Would not work at one thing for very long. No cerea. Never spoke a word.

Physical examination on admisson. Well-developed, well nourished. Physical and neurological negative.

Autopsy eighteen hours post-mortem by A. M. Barrett. Acute ulcerative ileocolitis, acute valvular endocarditis (aortic mitral), acute lymphadenitis of mesenteric lymph nodes and those of colon, slight hydropericardium, acute proctitis, fatty myocarditis, chronic diffuse nephritis, fatty liver, chronic passive congestion of the liver, chronic leptomeningitis (frontal), granular ependymitis.

Brain weight, 1650 gm.

Cause of death: Ulcerative enterocolitis (dysentery).

No. 904. Nissl sections show marked cell changes of a destructive nature, and an actual decrease in the number of nerve cells. None of the cells contain much pigment. The neuroglia is not remarkable. Satellite cells surround the larger nerve cells. The vessels show pigmentation in places, but are not thickened. Marchi sections show myelin degeneration in the white matter.

Outside the terminal condition, the only gross condition of interest is the chronic diffuse nephritis. The nerve cell changes noted are probably due to the terminal condition. Hence no diagnosis can be made, and the case is placed in the functional group.

Clinically, the diagnosis is obscure because of absence of history and because the patient refused to speak. The mutism without retardation suggests dementia precox, but there were no other signs that would indicate it. Since this diagnosis cannot be either supported or disproved from the morphological picture, it will have to remain in the functional group without being diagnosed more definitely. Manic-depressive insanity is preferred.

Case IV. B. C. S., Path. No. 969. Male, age fifty-eight years, junk dealer. Admitted to Danvers State Hospital Dec. 30, 1904; died April 21, 1905.

Father and mother both lived to old age. No history of insanity given. Born in Massachusetts; was married fifteen and thirty-five years ago; had three children. No illnesses, no alcohol used. Two years ago was operated on at the Massachusetts General Hospital for carcinoma recti and anal fistula. Here was given morphine, which he continued to use after leaving hospital. Had stricture of the urethra and was operated on several months later at the Malden Hospital for pain in the abdomen, and diffuse aneurysm of left common iliac was found. While here had to be restrained with a sheet. No relief from operation. Went to Carney Hospital for another operation, abdominal, which showed nothing; grew worse. Operated on privately for varicocele. Still continued to have much trouble with stomach; vomited and refused to eat. Wife thinks he ate when she was away. Was quiet during the day, but noisy and restless at night. Threatened suicide, but never made an attempt; was destructive.

In hospital lay in bed; seemed to suffer great pain in abdominal regions. Oriented; no speech defects. School knowledge fair. Had no hallucination; memory fairly good; talked of stomach trouble all the time. Complained more when somebody was around. Tidy; restless at night. After some weeks became quieter; also became disorientated. Said he couldn't die.

Physical examination on admission: Poorly developed, poorly nourished, cyanosis of legs. Skin dry. Dulness over both scapulæ. Heart enlarged to left. Brachials slightly thickened. Neurological examination negative. Hemaglobin, 60%; poikilocytosis.

Autopsy ten hours post mortem by A. M. Barrett: Pulmonary hypostasis, emaciation, pulmonary tuberculosis slight, chronic diffuse nephritis, chronic orchitis, scar of penis, chronic fibrous leptomeningitis (frontal, parietal), chronic external adhesive pachymeningitis, soft edematous brain substance.

Brain weight, 1370 gm.

Cause of death: Pulmonary tuberculosis. Marasmus of involutional melancholia.

No. 969. The nerve cells show changes corresponding to the edema changes of Hoch (Dr. Barrett). Cells are not decreased in number. Pigmentation is prominent in all the larger nerve cells. Glia shows regressive changes. Satellitosis is marked in all the cell layers. There is a slight gliosis of the deeper cell layers. Vessels are not changed. Outside the terminal changes, there is not enough upon which to make a diagnosis.

In the autopsy findings there are pulmonary tuberculosis and chronic diffuse nephritis with emaciation, lesions which indicate that toxemia and disturbance of nutrition occurred. With little in the brain to explain the mental condition,

primary importance must be assigned to these changes, so the case is placed in the toxic group.

Clinically, the diagnosis of involutional melancholia was made. From the history one would conclude that disturbances in nutrition played an important part in the causation of the mental symptoms. The various operations, the morphinism and the stomach trouble all indicate such a disturbance, and, since they occurred before any mental symptoms, can be properly regarded as bearing on the mental symptoms. Although these changes were not disclosed at autopsy, they are in line with and confirm the autopsy findings. The brain changes are doubtless due to the disturbance of nutrition, so that this disturbance can perhaps be accepted as the whole cause of the mental trouble.

Case V. M. G., Path. No. 976. Female, age sixty-five years, housewife. Admitted to Danvers State Hospital May 22, 1905; discharged June 7, 1905.

No insanity in family. Parents lived to old age. Education, common school. Left school to work. At twenty-one married a sailor; husband now a letter-carrier. Had three children, all living, youngest thirty-five years. No serious illnesses. Habits good. Trouble came on six months ago when patient worried much over domestic troubles. Had stomach trouble with vomiting, culminating in extreme weakness, for which patient was sent to Salem Hospital, May 12. Also had prolapse of uterus. After being at hospital for two days her conversation became disconnected and she became restless. Auditory hallucinations appeared and she was given opiates to quiet her. Was very restless and noisy and had to be watched constantly. Imagined she was naked. Mistook strange people for her friends. Transferred to Danvers State Hospital. In hospital confused, restless and resistive on admission. Thought children were outside and tried to get to them. Had auditory hallucinations. Soon became quieter, clearer and more communicative, tidy, lacked spontaneity, confused. Memory fairly good for recent (except most recent) and remote events. Easily became tired and confused. At first disoriented, but later orientation improved. Fair knowledge of current events. Attention poor. Later had insight into hallucinations. Temperature went up, and she had a positive diphtheria culture. Again became confused and disoriented. Given antitoxin, but died.

Physical examination on admission: Well developed, poorly nourished, feeble. Skin dry and wrinkled. Arcus senilis, pupils irregular, would not react. Defects of hearing and vision. Reflexes normal. Tremor of tongue and hands. Some inco-ordination. Heart: Systolic murmur. Arteries thick and tortuous. Trace of albumin in urine.

Autopsy fourteen hours post-mortem by A. M. Barrett: Pulmonary hypostasis, hemorrhage into adrenal, endometritis, chronic fibrous pleuritis, localized at apex, chronic fibrous pericarditis, chronic fibrous endocarditis, mitral sclerosis, chronic diffuse nephritis, chronic leptomeningitis (slight), diphtheria bacilli in throat.

Brain weight, 1,110 gm.

Cause of death: Nephritis.

976. Nerve cells show nothing of note. There are regressive changes in the neuroglia, especially in the gray matter, most marked in the subpial region. A moderate number of satellite cells occur in all cell layers. The only vessel change is some increase in the adventitial pigment.

In the autopsy notes are mentioned chronic diffuse nephritis, chronic fibrous endocarditis and pericarditis. Although they may indicate a disturbance of nutrition, with a septicemia, these lesions are naturally not enough to place the case in the toxic group. The brain weight is very low, but no atrophy of convolutions was mentioned in the protocol. The case is provisionally placed in the functional group.

Clinically the case is one of collapse delirium resulting from the stomach trouble and worry. With the improvement of the physical condition in the hospital came an improvement of the mental symptoms, but when the tonsillitis developed, the mental symptoms became worse again. An erroneous idea of the case is gained from the autopsy findings taken alone. Although the nephritis may have played some part in causing mental symptoms, the principal factor, the stomach trouble, was not such as to be demonstrable at autopsy. The case, therefore, can be shifted to the third group.

Case VI. D. M., Path. No. 1013. Male, age fifty-seven years, laborer. Admitted to Danvers State Hospital May 18, 1905; died Oct. 24, 1905.

Uncle and cousins are insane in Ireland. Born in Ireland, came to this country when seventeen. Could read and write a little. Worked as a laborer and watchman in a factory. Married at twenty-seven years, had two children who died, one in infancy and one at ten years (fourteen years ago). Wife an invalid for two years. Used tobacco excessively, but never used alcohol until he became sick. Had not worked for twelve years. Became apprehensive and suspicious, thought people were mesmerizing him, had auditory hallucinations, would sit for hours in one position thinking. Gave himself up to the police because voices told him to kill somebody. Became worse the last year; memory good until a year ago when it failed considerably; was restless at night and confused. Once threatened wife. Had two sinking spells, one five years ago and one last winter, each lasting two weeks.

In hospital was confused, restless and noisy. Memory poor for recent and remote events. Disoriented, heard voices. Contradicted himself and fabricated. Sometimes euphoric, sometimes irritable. Tidy; once was in a stuporous condition for two days, was not rigid or resistive, was very weak. Explained it as a hypnotic state. Talks of the powers and God.

Physical examination on admission: Extremely well developed and well nourished, feeble. Heart negative. Pulse poor in volume and tension. Arteries not thickened; varicocele. Tremor of hands. Unsteady in Romberg position. Reflexes negative. Pupils equal, sluggish and irregular. Localization of sensation is poor and sensation is dulled.

Autopsy four hours post-mortem by L. Hoag: Pyopneumothorax, localized bronchopneumonia going to abscess formation, atelectasis of right lung, emaciation, fibrous pericarditis slight, arteriosclerosis slight, chronic fibrous pleuritis, old scar of left lung, relative insufficiency of tricuspid valve, chronic diffuse nephritis, slight pachymeningitis, chronic sulcal leptomeningitis, subpial edema, gyri narrowed, frontal slightly; atheroma of cerebral vessels.

Cause of death: Bronchopneumonia and abscess of lung, involutional psychosis.

No. 1013. Pyramidal cells show atrophic changes with increase of pigment. Neuroglia shows some activity. Considerable gliosis of white matter of one

frontal region. Neuroglia cells contain pigment. Satellitosis involving single cells excessively, but leaving most of them entirely free. No vessel changes of note. Adventitia contains an increased amount of pigment. These changes suggest only a senile condition. The narrowing of the gyri in the frontal region with the cortex changes point to a senile dementia. This is further confirmed by the finding of senile changes elsewhere, such as emaciation, arteriosclerosis and nephritis.

Clinically the case is undoubtedly one of katatonic dementia precox, with slight deteriorations until one year before admission. After that time the symptoms suggest senile changes. The case could then be considered as a dementia precox complicated in later life by senile deterioration.

The latter condition is shown in the morphology, but there is nothing to indicate dementia precox. The frontal atrophy and gliosis may have been upon a congenital basis, and, if found early in life, would have led to the correct diagnosis. But, occurring as it did in connection with senile changes elsewhere, there is nothing to distinguish it from the identical condition which is often found in senile dementia. This case shows how easily one may be misled in a study of senile dementia by finding lesions which were present before the onset of the mental trouble. The case is transferred to the functional group.

Case VII. R. Mc., Path. No. 1090. Female, age fifty-five years, no occupation. Admitted to Danvers State Hospital March 23, 1904; died Sept. 6, 1906.

Onset gradual. Patient said she was talking to the Lord. Romances, suspicious, afraid of being poisoned, restless and noisy at night. No further previous history obtained.

In hospital talked much, going into detail. Speech normal, orientation good, consciousness clear. School knowledge rather poor. Denied hallucinations; memory defective, better for recent than for remote events. Loquacious, almost a flight of ideas, had no definite delusions, somewhat suspicious. Untidy. Was fault-finding with nurses and physician, contradicted herself, emotional and irritable. Sometimes was troubled with dyspnea, fast pulse, edema and tendency to suppression of urine. Had bronchitis. In August, in one of these spells, had delusions and perhaps had hallucinations. Attacked other patients. Jan. 24, 1906, developed complete paralysis of right side, of gradual onset. Had a motor aphasia. March 6, 1906, "flaccid" paralysis had improved considerably. July 2, 1906: Convulsions, frothed at the mouth, stuporous for a day. Sept. 4, 1906, had a series of convulsions and died.

Physical examination on admission: Well nourished. Eczema of arms and legs, varicose ulcers. Joints enlarged, particularly those of left foot. Bronchitis in both lungs. Heart irregular, second pulmonic reduplicated, also a murmur not definitely located. Arteries thick. Very weak. Hearing and sight impaired. Reflexes normal. Pupils react sluggishly. Urine negative.

Autopsy forty-five hours post-mortem by E. E. Southard: Mural thrombosis of left auricle, early bronchopneumonia of lower left lobe, general arteriosclerosis moderate, chronic fibrous endocarditis, mitral sclerosis, fatty changes of myocardium, hypertrophy of heart, emphysema of lungs, chronic diffuse nephritis, infarct of kidney (?), chronic splenitis, cirrhosis of liver, chronic adhesive pleuritis (left), chronic perisplenitis, diplœ absent, cerebral softening of left cerebrum, semi-ovale and right sagittal ramus (cholesterin crystals), slight subpial hemorrhage in left fossa sylvii, chronic external adhesive pachymenigitis, atrophy (aplasia?) of right flocculus of cerebellum, right purulent otitis media. Cultures: B. coli and B. flavus in heart's blood, B. coli and M. pyogenes aureus in cerebrospinal fluid, B. coli communis and unidentified coccus in thrombus.

Cause of death: Cerebral hemorrhage, arteriosclerosis.

1090. Sections of the right frontal region show decrease of nerve cells of focal character and gliosis of the white matter. In other regions the nerve cells are not notable. Spider cells occur both in the gray and white matter and are very numerous in the subpial region. They contain pigment, especially in the gray matter. Satellitosis is marked. Vessels show no changes outside increase in adventitial pigment. Sections of orbital area show numerous compound granule cells. The findings might suggest a chronic intoxication of such a mild grade that no cell destruction resulted, but enough to stimulate the neuroglia to activity.

In the gross brain were found a cyst of softening of the right frontal region, and signs of hemorrhage in left centrum semi-ovale, which, however, was too recent to cause pyramidal degeneration or cell destruction. These lesions doubtless caused mental symptoms, but probably came subsequent to the first mental symptoms.

Other post-mortem findings are mural thrombosis of left auricle, infarct of kidney (?), chronic fibrous endocarditis, chronic splenitis, chronic pleuritis, cirrhosis of the liver and myocardial changes. B. coli with other bacteria were found in the thrombus, cerebrospinal fluid and heart's blood. The evidences of old infections in various regions and presence of bacteria in several regions post-mortem indicate that in this case there may have been a septicemia of long standing and mild grade. The evidence of septicemia with disturbance of elimination through the kidneys (chronic nephritis) indicate a chronic toxemia of sufficient severity to cause mental symptoms.

Clinically the case was left unclassified and evidently conforms to no clinical type. But the clinical symptoms are not inconsistent with the anatomical diagnosis of chronic toxic condition. The facts that the symptoms improved slightly after coming into the hospital, that they were very slight for a long time, but again increased during the attacks of heart and kidney trouble, show that the mental symptoms are closely allied to the physical condition. They may have been due more to the nephritis than to the septicemia, which may have developed secondarily as a result of the lowered vitality. In any case, there was a chronic intoxication, and it is reasonable to assume that the mental symptoms were due to this.

Case VIII. L. B., Path. No. 1095. Male, age twenty-eight, shoemaker. Admitted to Danvers State Hospital July 10, 1906; died Sept. 17, 1906.

History of intemperance and insanity. Brothers and sisters are healthy. Had a common school education, worked on a farm for three years, then worked at trade of shoemaker. Was good-natured, quiet and seclusive, used liquors moderately. Had diseases of childhood and probably syphilis four years ago. Two years ago

was operated on, probably for bubos; did not feel well after the operation. For the last three weeks before commitment was restless at night. Two days before admission began to sing, read aloud from the Bible and talked of religion, had crying and laughing spells, and was very active; was never violent or threatening.

On admission was restless, laughed and sang; had to be placed in strong room. Orientation rather poor. Admitted auditory and visual hallucinations of angels singing and God speaking; memory was fair, could give history of life. Was untidy and violent, laughed, sang and talked to God; at times mute and resistive and refused to move. Once was found on the floor, rigid, speechless and refused to move. Took nourishment poorly and grew emaciated. Physically on admission well nourished and well developed. Heart and lungs negative. Arteries slightly hardened. Some incoordination of movements. Reflexes normal. Pupils negative. Sensations normal.

Autopsy three hours post-mortem by E. E. Southard: Acute otitis media (left), distention of bladder, edema of brain substance (encephalitis?), chronic fibrous myocarditis, mitral sclerosis, chronic splenitis, slight sclerosis arch of aorta, chronic orchitis (right), chronic external adhesive pachymeningitis, marked arachnoidal villi, gliosis occipital white matter, heterotopia gray matter in occipital region, more marked than in left.

Note: Culture from heart's blood gave M. pyogenes albus; from middle ear, B. coli communis; from cerebrospinal fluid an unidentified coccus.

Cause of death: Septicemia from infection of hand.

1095. The cortex sections show little. The nerve cells are not notable. The glia is not altered except that in some regions there is a slight gliosis of the infrastellate cell layers. Vessels not altered.

In the autopsy findings there is mentioned a gliosis of occipital white matter and heterotopia of gray matter in the occipital region. These brain findings in the absence of disease indicate a congenital disturbance, and, with the gliosis of the infrastellate cell layer, point to dementia precox. The case is placed in the functional group since there is not sufficient evidence to inidcate anything else.

The diagnosis "dementia precox" was made in this case and agrees with the diagnosis from the morphology.

CASE IX. N. P. H., autopsy No. 1204. Male, age fifty-nine, accountant. Admitted to Danvers State Hospital Oct. 14, 1907; died the same day.

History by son: No heredity. Left school at fifteen years to work, conductor and auditor for a railroad, got along well. Married and had three healthy children. Had never used alcohol, used tobacco moderately. Always cheerful, had always been dyspeptic. Otherwise no history of illness.

Onset six months ago, when patient complained of loss of sleep and fatigue, but continued to work until three months ago, when he broke down and had to quit work. Often had difficulty in breathing and a doctor diagnosed Bright's disease. About a month ago motor aphasia came on; one week ago became apprehensive and suspicious, afraid wife was trying to poison him; said she had the "evil eye." Suffered from insomnia continuously. Never had any hallucinations, convulsions or dizzy spells. For the last day or two has been violent and tried to cut his throat with a razor. Patient died the day of admission, and no further records of the case were taken.

Autopsy four hours post-mortem by E. E. Southard, J. B. Ayer, Jr., and E. T. F. Richards: Superficial wound of neck (suicidal), slight edema of legs, bilateral multiple pulmonary thromboses with massive infarctions, thrombosis prostatic venous plexus (source of emboli), aortic sclerosis, ulceration in lumbar region, coronary, renal and pulmonary arteriosclerosis, bilateral hypertrophy of heart, chronic pericarditis (slight), chronic pericarditis (slight), chronic mitral, parietal, aortic endocarditis, chronic obliterative pleuritis (left), chronic splenitis and old infarct of spleen, slight chronic nephritis, chronic appendicitis and peri-appendicitis, chronic peripancreatitis, interstitial pancreatitis, chronic localized external adhesive pachymeningitis, chronic tympanitis (right), calvarium thick.

Brain weight, 1,230 gm.

Cause of death: Multiple thrombosis, nephritis.

No. 1204. Weigert preparations of the cord show prominent pyramidal degeneration on both sides; also suggest a cell degeneration in the upper cervical region. In the cortex there is slight focal atrophy of nerve cells in the superficial layers in the frontal region; also some decrease of cells in the deeper layers in the frontal and precentral regions. The Betz cells are greatly decreased in number. The neuroglia is increased in the subpial region and is pigmented in the gray matter. There is a slight satellitosis of the superficial cell layers, and a most intense satellitosis of the infra-stellate cell layer, particularly in the frontal and precentral regions, producing marked atrophy of the nerve cells; vessels not changed.

In the autopsy findings, besides the terminal condition, there are advanced arteriosclerosis, chronic endocarditis and pericarditis, appendicitis, nephritis and splenitis, conditions which indicate a septicemia at one time which may have influenced the mental symptoms in its acute stages, but which could hardly be thought of as producing chronic disturbances. The cortical changes are those of a senile brain, but the diagnosis of senile dementia cannot be made owing to the absence of vessel sclerosis and atrophy of convolutions. The decrease in number of Betz cells and pronounced infrastellate gliosis and degeneration of pyramidal tracts cannot be accounted for, because none of the regions of the brain intermediate were preserved. In the protocol it was mentioned that no changes were grossly visible. There is nothing in the cortex, however, to account for the decrease of nerve cells, so it may be inferred that this was secondary to the pyramidal changes. But whether the pyramidal degeneration was due to hemorrhages too slight for gross recognition, or was a primary affair, cannot be decided.

The clinical diagnosis was difficult because of the short time in the hospital, but was a question between senile dementia and arteriosclerotic insanity. From the morphological findings, arteriosclerosis may be excluded, and the absence of vessel changes and atrophy of convolutions excludes senile dementia, if these be proper criteria. The psychosis might be explained by the factor which produced the pyramidal tract degeneration (could this be determined), but with the data at hand, no diagnosis can be made.

CASE X. O. H., Path. No. 1269. Male, age fifty-three years, carpenter. Admitted to Danvers State Hospital July 29, 1908; died Aug. 31, 1908.

Said to be no insanity in the family. Born in Sweden,

came to the United States at twenty years. Married for ten years, no children, worked at trade of carpenter. No serious illnesses, used tobacco and alcohol moderately. Was considered queer for some time. Onset in February, 1908, when he complained of pain in the epigastrium; stayed in bed. One day climbed to the roof of the house and fell off, breaking some ribs. Was sent to the Boston City Hospital, where he remained four weeks. After leaving hospital acted queerly and was threatening. Thought people were talking about him and that police were looking for him; was noisy and excited. Sent to Danvers State Hospital two weeks later.

Knew date and year, but not the month or sort of place he was in. Education poor. Very weak and was put to bed. Complained of pain in epigastric region. Implored physician not to send him away as he had heard that he was to be taken away and killed. Admitted auditory hallucinations. Was quiet most of the time. Memory cloudy.

Physical examination on admission: Fairly nourished, well developed, anemic, bronchial breathing over left apex. Heart negative. Arteries hard, sways in Romberg position. Pupils negative. Reflexes normal. Albumin in urine.

Autopsy twenty-two hours post-mortem by E. T. F. Richards and M. M. Canavan: Unequal pupils, emaciation, acute peritonitis, enlarged mesenteric and retroperitoneal lymph nodes, injection of mesentery, purulent bronchitis, acute vegetative endocarditis, acute ulcerative colitis (healing), acute diffuse nephritis, chronic fibrous obliterative pleuritis, necrosis perinephric fat (?), chronic fibrous pericarditis, subacute perisplenitis, atrophy of stomach, fat replacement of pancreas, hypertrophy of prostate (slight), inequality of thyroid lobes, chronic leptomeningitis (sulcal), calvarium thin.

Brain weight, 1,530 gm.

Cause of death: Dysentery.

1269. The pyramidal cells show marked changes, but since they are not decreased in number, these may be regarded as terminal. All are prominently pigmented. There is a subpial gliosis and all glial cells contain pigment. The intima of the blood vessels is moderately thickened in places. The adventitial nuclei are increased in number and the amount of adventitial pigment is increased. The spinal cord is negative. These changes indicate a senile condition of a low grade.

In the gross autopsy findings, there is nothing outside the terminal condition which can be regarded as conclusive.

Clinically the case was diagnosed as involutional melancholia, and this agrees with the cortex findings, which indicate senile disturbances of some sort.

At autopsy, emaciation and atrophy of stomach were noted, and for some time before the onset of mental symptoms the patient complained of pains in the epigastrium. It may have been that there was some stomach disturbance that produced the cachexia and that this was a factor in producing the mental disturbance.

DISCUSSION.

Summarizing these data, it is found that none of these cases fall in the organic group. One (850) is a senile dementia case with rather slight changes in the brain and distinct visceral lesions; one diagnosed as senile paranoia (896) is accepted as such, since certain slight senile changes were found in the brain and other findings in the body which might indicate a disturbance of nutrition. Two diagnosed as involutional melancholia (969, 1269) were accepted as such because slight senile changes occurred in the brain, and some toxic disturbances were indicated in each. One diagnosed as collapse delirium (976) was accepted as such from the clinical history, although nothing was found in the morphology to confirm the diagnosis. One case left unclassified clinically (1090) was called toxic from the slight brain findings and the marked lesions found in the trunk viscera. One in which the clinical diagnosis was left open between senile dementia and arteriosclerotic insanity (1204) was placed on the unclassified list since both these conditions could safely be excluded, but no definite diagnosis was made because lesions were found in the nervous system which could not be explained from the material at hand. Two cases (1013, 1095) in which dementia precox was diagnosed were accepted as such because certain abnormal conditions in the brain, probably of congenital origin, were found in each case which were taken as possibly indicating hereditary defects. In one case in which dementia precox was clinically preferred (904), this condition was ruled out through absence of abnormal findings in the brain, and manic-depressive insanity given the preference by a process of exclusion.

In these ten cases the diagnoses made from the morphological findings were changed in two cases (976, 1013) after comparison with the clinical histories. One was due to the fact that the psychosis, a delirium, resulted from a functional stomach disorder that could not be recognized post mortem; the other was a case in which the brain of a dementia precox had undergone certain senile changes. Of the clinical diagnoses, on comparing with the morphological, one was corrected (1204), and two left unclassified were in a measure cleared up (1090, 904). Counting the unclassified as errors, there were three errors in the clinical diagnoses of these ten cases (1204, 1090, 904). Of these, one was due to the poor histories and inability to communicate with the patient; one was probably due to the fact that the patient died the same day that he was admitted; and one error was made because enough importance was not assigned to the disturbance of bodily functions as a causative factor in mental disease. Errors are liable to occur, then, in both the morphological and clinical diagnoses of a case, but when the two are compared it is believed that fairly accurate conclusions may be reached.

V.

A Study of the Senile Spinal Cord In Cases of Mental Disease.

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A certain degree of muscular enfeeblement in the aged has been recognized for many years, but in spite of abundance of clinical material it is only recently that the clinical and pathological features of this condition have been at all clearly pointed out, and even at this time the varying terms employed by different investigators leaves something of uncertainty as to the exact condition meant to be described.

In the *Centralblatt für Nervenkrankheiten* of 1890 Dr. W. R. Gowers called attention to a condition of weakness of the legs coming on in old people, and to it gave the name "senile paraplegia." In Gowers' words, "Its characteristic is simple weakness of the legs with some slowness of movement, but without wasting, sensory disturbances or reflex alteration. The knee jerk is normal and there is no foot clonus. The malady develops very gradually and is slowly progressive, although it seems seldom to attain such a degree as to prevent standing." Gowers states that this is the earliest description of the condition in literature and Allbutt, in his "System of Medicine," [1] calls attention to the same subject in a brief paragraph, reporting two cases, and gives Gowers the credit of the first description.

In 1875, however, von Leyden [2] in his "Klinik der Rückenmarkskrankheiten," had described a paralytic weakness coming on in old people as follows: "The decrease of muscular power and energy is a natural and regular result of progressing age. Sometimes, however, there develops such a high grade of weakness, and it comes so early and so quickly, that it must be regarded as paralytic. The weakness is shown most markedly in the gait, which is stiff, slow and dragging. The legs are scarcely raised, are dragged along the ground and the steps are small. On account of the increased uncertainty and lack of steadiness the patients are compelled to walk with a stick or crutch. It consists of an unequivocal high-grade paralytic weakness, which, however, only exceptionally reaches such a degree that the patient is unable to walk. Sensibility in the majority of cases is intact. The bladder is seldom involved (incontinence or retention); often there is constipation. The leg muscles are flabby; in many cases of good girth, but sometimes markedly atrophied. The upper extremities, though not taking part in the condition in so striking a manner, are, nevertheless, weak and atrophied, but they are not really paralyzed and their functions are not disturbed to the same surprising degree. The mental functions are sometimes quite unimpaired, though there may be disturbance in this sphere independent of the paralytic condition. In many cases there are simultaneous, wandering, tearing pains in the extremities, joints and muscles. The malady progresses gradually, seldom in acute exacerbations. It is seldom retrogressive, and only in rare cases remains stationary, though occasionally it may come to a standstill, or an improvement may even manifest itself."

Also, in 1862, Empis [3] gave a clear clinical description, evidently referring to the same condition, under the title "Progressive Muscular Enfeeblement of the Aged," but he failed to find any anatomical basis for the symptoms, thought they did not, properly speaking, constitute an organic malady, but were more closely allied to a group of neuroses, and pointed out particularly their resemblance to chlorosis and made use of the term "*chlorosis senilis.*" He stated that the entire muscular system was equally involved and that the condition was by no means hopeless.

Other authors of even earlier date have referred more or less clearly to the same subject, and excellent historical reviews can be found in Lhermitte's thesis on the "Paraplegias of the Aged," where the matter is carried back to Portal's article in 1804, and in Siemerling's article in Schmidt's "Lehrbuch der Greisenkrankheiten."

On the pathologic side, also, considerable work has been done, and though von Leyden's [2] article is probably the first which at all clearly sets forth the anatomical basis of the condition, there are frequent references in the literature for many years past to different pathologic conditions found in the spinal cord in old age. Thus Rokitansky [4] and Geist [5] describe atrophy of the cord and thickening and serous effusion in the meninges. Virchow [6] recognized that in old age the neuroglia tends to predominate over the nervous elements and becomes usually permeated by a greater or less number of amyloid bodies. Charcot [7] recognized atrophy and degeneration of cells and pigmentation and fatty changes as evidences of old age.

In the article already mentioned, von Leyden [2] described the relative absence of gross atrophy in the cord as compared with the brain; the presence of marked increase of corpora amylacea, especially around the central canal, about the vessels and in the periphery of the cord and in lesser numbers in the gray matter; atrophy and pigmentation of the ganglion cells; frequent severe changes in the vessels, especially of the small arteries, and the occasional finding of granule cells. He also described the very infrequent presence of degeneration of the white matter, especially in the posterior part of the lateral columns and in the columns of Goll.

Gowers [8] thought the cerebral cortex was the seat of the central disturbance. Allbutt [1] located it in the cord. Neither offered any anatomic evidence.

Durand-Fardel [9] insisted that the cord in this condition is more atrophied than the brain, but this does not reflect the views held either then or now.

Campbell [10] described in the spinal cords of the

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aged insane a destruction of nerve fibers, especially in the lateral and posterior columns; thickening of the walls of the blood vessels; dilatation of the perivascular spaces; abundance of corpora amylacea; hypertrophy of the ependyma of the central canal and pigmentation of the ganglion cells.

In 1899 Nonne [11] studied the cords of ten individuals from seventy-eight to eighty-six years of age and found increased neuroglia, atrophy of the nerve fibers of the posterior and lateral columns and thickening of the vessel walls without inflammatory change. In his opinion there was no correspondence between the grade of arteriosclerosis and the degree of change in the cord.

In 1900 Sander [12] described three forms of degeneration in the senile spinal cord: (1) A mild form with slight diffuse degeneration of the myelin sheath, slight secondary gliosis and a slight degeneration of the cells of the cord. This condition he considered merely a physiologic senile change. (2) A gross form with diffuse myelin-sheath degeneration, formation of foci of a high degree of sclerosis and a marked cellular degeneration. (3) A form, often pre-senile, with acute degeneration and multiple foci of arteriosclerotic degeneration of the spinal cord. All these are dependent on senile vascular changes, which in No. 2 are more or less universal and in No. 3 seem to be more localized. This senile degeneration affects, first, merely the margin of the cord, but the cerebellar and crossed pyramidal tracts are later also involved. The posterior columns are less affected than the lateral, but in some cases there is a loss of patellar reflexes. Bladder and rectal disturbances, when present, are due to a grave degeneration in the gray substance, especially in the ganglionic cells.

Naka,[13] in a study of 17 cases, all senile dementia, arrived at much the same conclusions as Sander. He found slight loss of light reflex in the pupils, tremor of the tongue and hands and arteriosclerosis in the temporal and radial arteries. The knee-jerks were present in all, in some active, and in one third of the cases a spastic condition could be demonstrated.

The gross strength in the lower extremities was greatly weakened. Sensibility could be tested only with difficulty, but no coarse defects were found. The gait was often affected and was then uncertain, slow and swaying, with short steps. The Romberg sign, as well as bladder and rectal trouble, was present at times.

Oppenheim [14] refers to a senile paraparesis in which there may be contractures and even sphincter and sensory disturbances.

Ferrio and Bossio [15] studied the superficial and deep reflexes in 150 males and 100 females, varying in age from sixty-five to ninety-three. None of them showed any specific diseases of the nervous system. The patellar reflex was increased in 32.2% and absent in 20.4%. Foot clonus was present in 19.2%. The abdominal reflex was absent in 56.8%; the plantas reflex was absent in 31.6% and the cremasteric in 58%. Spastic conditions were found more often in men than in women, and the abdominal reflex was absent in women more often than in men. Six cords were examined with the following findings: The white substance was deficient in white fibers, the neuroglia was increased and the ganglion cells were deficient in number and showed some degeneration.

In 1907 Lhermitte, in his thesis, "Paraplégies des Vieillards," contributed an elaborate study of the subject. He divides the cases into three groups: (*a*) Lacunar (cerebral), (*b*) myelopathic and (*c*) myopathic. Of the myelopathic he recognizes three types: (1) Perivascular sclerosis (type Demange), (2) marginal sclerosis, (3) combined senile sclerosis involving especially the lateral and posterior columns.

In this country there have been only a limited number of contributions. In 1896, Hunt,[16] in an article on the pathology of paralysis agitans, referred briefly to the similarity in the pathology of this condition to that of senility. Seven years later Hirsch [17] contributed an elaborate article on the clinical phase of the subject. He ascribed the condition wholly to an arteriosclerosis of the spinal cord, but offered no anatomic proof, except in one case, and even in this referred only to the condition of the blood vessels and the ganglion cells. The next year Collins and Zabriskie [18] set forth the same view, based on clinical evidence and one post-mortem study. Collins [19] has since written on the same subject.

During the summer of 1909, at the Danvers State Hospital for the Insane, at the suggestion of Dr. E. E. Southard, and with his aid and direction, I made a study of the accessible material bearing on the problem of the spinal cord changes in the aged insane. I wish to record my obligations to Dr. Myrtelle M. Canavan, as well as to Dr. Anna H. Peabody, of the Danvers staff, for their aid and courtesy.

At the outset I found the cords of 72 individuals, all of whom had died when seventy or more years of age, the oldest being ninety-four. In order to guard against the inclusion of pathological changes due to something other than old age, I rejected all cases in which the following conditions were present: Gross cerebral disease, such as hemorrhage or thrombosis, cases of brain tumor and epilepsy, and, finally, all cases where, at the autopsy, anything indicating gross and localized disturbance of the nervous system was found. With these restrictions applied there were 54 cases remaining in whom the changes might fairly be ascribed to old age and the conditions necessarily incident thereto. It is on the findings in these 54 cases that my paper is based.

In nearly all instances the mental condition of the patients had been that of senile or organic dementia. Examination as to the clinical condition of such cases is always difficult and more or less unsatisfactory. In a large majority of instances the patients were very resistive and, in addition, the mental weakness was usually so great as to interfere with the patient's answers, so that the records are often short and sometimes cannot be wholly relied upon.

In the following tables certain clinical features are given in tabular form.

TABLE I.

FORM OF MENTAL DISORDER.

	Cases.
Senile dementia,	36
Organic and arteriosclerotic dementia,	12
Terminal dementia (original diagnosis uncertain),	4
Delusional insanity,	1
Alcoholic insanity,	1

TABLE II.

DURATION OF MENTAL DISEASE.

	Cases.
33 years,	1
29 "	1
23 "	1
15 " and less than 20,	4
10 " " " " 15,	4
5 " " " " 10,	14
4 " " " " 5,	3
3 " " " " 4,	5
2 " " " " 3,	12
1 " " " " 2,	6
Less than one year,	3

TABLE III.

AGE AT DEATH.

	Cases.		Cases.
94 years,	1	80 years,	4
88 "	1	79 "	1
87 "	2	78 "	3
86 "	2	77 "	3
85 "	2	75 "	6
84 "	2	74 "	2
83 "	5	73 "	4
82 "	2	72 "	3
81 "	5	71 "	6

TABLE IV.

CAUSE OF DEATH.

	Cases.
Bronchopneumonia,	11
Lobar pneumonia,	10
Hypostatic pneumonia,	1
Pulmonary gangrene,	1
Pneumonia and erysipelas,	1
Bronchopneumonia and erysipelas,	1
Pneumonia and tuberculosis,	1
Pulmonary tuberculosis,	2
Acute bronchitis,	1
Nephritis,	4
Nephritis, acute and chronic,	1
Chronic myocarditis,	8
Acute endocarditis,	1
Acute endocarditis and erysipelas,	1
Aortic insufficiency,	1
Erysipelas,	1
Erysipelas and emphysema,	1
Septicemia,	1
Dysentery,	2
Tubercular enteritis,	1
Senile inanition,	2
Senile inanition and aortic thrombosis,	1

In practically all cases the usual manifestations of old age were present. The arms and legs were flabby, with dry, loose skin, but there were no instances where strictly localized atrophies were referable to any disorder of the nervous system. Muscular strength and control were much impaired, and, in some instances, this condition had reached a high degree. Usually the loss of strength came on very gradually. In the early stages the movements were awkward and unsteady. In walking the feet were spread wide apart and the individual often fell. The spastic, staggering gait became more and more feeble and tottering, with steps that were shuffling, until at last there was complete loss of power and the individual was constantly confined to bed.

Sensory ailments were much more difficult to demonstrate than motor disturbances. Several times there was clearly a diminution of sensibility for touch, pain, heat and cold in the feet and legs. Once a similar condition was mentioned in the hands and arms. In an even larger number of instances no disturbances whatever could be elicited in a fairly satisfactory examination, but in much the larger number of cases the result was very unsatisfactory on account of the mental condition.

The reflexes varied considerably and, as already mentioned, it was often difficult or impossible to obtain an accurate response. In 44 instances the knee jerks were normal 11 times, increased 24 times, diminished 7 times and not obtained twice. In 30 instances the Achilles jerk was normal 8 times, increased 10 times, diminished twice and not obtained 10 times. Ankle clonus was present twice and both times in one leg only. In 26 instances the deep arm reflexes were normal 6 times, increased 12 times, diminished 5 times and not obtained 3 times. In 26 instances the plantar reflexes were normal 13 times, increased 8 times, diminished 3 times and not obtained twice. The Babinsky phenomenon was found once. In 17 instances the abdominal reflex was normal 4 times, increased 3 times, diminished 4 times and not obtained 6 times. In 32 instances the pupillary reactions were normal 12 times, increased once, diminished 18 times and not obtained once. In 18 instances the pupils were equal 16 times and unequal twice.

Incontinence of urine and feces from organic trouble could not be differentiated from the same condition due to mental failure. In 31 instances, when reference to the condition was made, 15 individuals were tidy and 16 were untidy.

Tremor was frequently present. It was observed most often in the hands and tongue, but it was found also in other parts of the body and was occasionally worse on one side of the body than on the other, or was even strictly unilateral. Twice it was noted as absent, and, when its location was given, it was general once, once in the lips and tongue, twice in the hands, 4 times merely described as localized, 11 times in the tongue and hands and 5 times it was mentioned as coarse without reference to its location.

Albumen and casts were frequently found, the former almost always as a trace and the latter as hyaline.

At the post-mortem examination, gross changes in the cord were rather noteworthy for their absence. A moderate degree of atrophy was frequently present, but, so far as the records show, this never reached such a degree as is commonly found in the brains of old people. It would have been very difficult to determine the weights of

the cords, but the following brain weights are given as having an indirect bearing on the matter.

Brain weights.	Cases.
1,450–1,500 gm.,	1
1,400–1,450 "	2
1,350–1,400 "	5
1,300–1,350 "	4
1,250–1,300 "	8
1,200–1,250 "	4
1,150–1,200 "	3
1,100–1,150 "	7
1,050–1,100 "	2
1,000–1,050 "	4
950–1,000 "	5
900–950 "	0
850–900 "	2
Weight not given,	7

The pia-arachnoid and dura were found thickened, but rarely was the change great. In two instances cartilaginous-like plates were found in the pia-arachnoid. Rarely a relative condition of softening was observed in different parts of the cord. Ordinarily the cord substance was tough on section and paler than normal. Gross vascular changes would naturally be less easily demonstrated than in the brain, but so far as observed they were decidedly infrequent. Thus hemorrhage was found only twice in the 54 autopsies, and then only in very minute form. Arteriosclerosis elsewhere, however, was pronounced, as is seen in the following tables.

Arteriosclerosis in the brain.

	Cases.
Present,	45
Pronounced,	1
Slight,	1
Absent,	2
Not mentioned or questionable,	5

Arteriosclerosis in the other viscera.

	Cases.
Present,	45
Pronounced,	2
Slight,	2
Absent,	3
Not mentioned or questionable,	2

Three or more areas from each cord were studied and portions from each area were preserved in alcohol, formalin and Zenker's fluid. The Marchi, Nissl, Weigert myelin, Mallory's neuroglia, eosin and polychrome methylene-blue, Weigert elastic and Benda stains were employed.

Microscopic lesions in the cord were as common as gross lesions were rare. In not a single instance was it possible to say that the fiber tracts were normal, to say nothing of vascular changes, of the presence of abnormal quantities of pigment inside and outside the cells, of cell atrophy and of increase of neuroglia and corpora amylacea.

Marchi preparations invariably showed breaking down of the tissues. In the meninges occasional large black masses were seen, and small black droplets were almost constant. The former may have been artefacts, especially as intermediate forms between the large and small masses were not common. A golden-brown pigment entirely distinct in appearance from the black masses was also found. This occurred mostly as small granules of the same size and much the same distribution as the small black masses. Both were seen at times intracellular, but much more often free. In addition to the small brownish granules, there appeared in the meninges large spindle-shaped masses (Fig. I) of the same color, having very much the outline of adult connective tissue nuclei. In some cords they were very abundant; in others scarcely to be found. It was also noticeable that they appeared more often in the cervical cord than in the other parts, and much more often in the lateral regions of this part of the cord than in the dorsal and ventral aspects. There did not appear to be any relationship between the number of these spindles and the amount of pigment of other sorts. Both the black and the golden-brown pigments were seen in the walls of the vessels of the meninges and the cord, especially in the intima (Fig. II) and media, in varying amount. Large phagocytic cells were frequently found within the lumen containing both kinds of pigment. Small golden-brown spindles, similar to those of the pia-arachnoid, except smaller, were found in the media.

Within the cord substance the black pigment was also seen, both in the white and the gray matter, and about equally abundant in the two. Very commonly it was scattered diffusely through the cord, sometimes in very large amounts, much more often in small quantity, and in no instances was it entirely lacking. Frequently there was a line of this pigment along or around the vessels, within the neuroglia or connective tissue and not really connected with the myelin sheaths. This appearance was much more pronounced in the white than in the gray matter. As a rule, the black pigment was much more abundant in the posterior and lateral columns than other parts of the cord, but it was largely absent where Weigert preparations showed a well-marked, long-standing sclerosis. Thus, if in a portion of the posterior columns there was more or less complete absence of nerve fibers and the presence of an increased amount of neuroglia, there would be found in this area not many black granules, but in the portion of the posterior columns adjacent their number would be decidedly increased.

In addition to this more or less diffuse appearance of the granules in the large majority of cases, there were a few in which they were gathered in localized groups and appeared as much larger granules. They then appeared invariably in the direct and crossed pyramidal tracts, the direct cerebellar tracts and the posterior columns, giving very much the same appearance as is seen in the spinal cord degeneration so often found in pernicious anemia. In these cases, in the area specially involved, the balloon appearance of the myelin sheaths was also often found.

The Marchi preparations also showed an acute degeneration of the anterior and posterior root fibers (Fig. III), more marked in the latter than in the former, but very unequal in different cases, and even at different levels of the same cord.

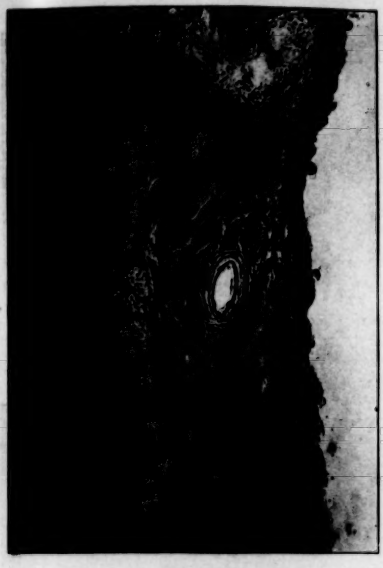


FIG. I.

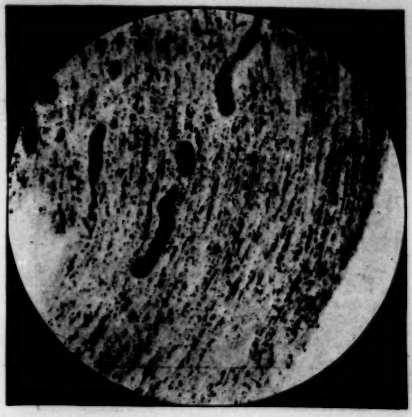


FIG. III.



FIG. IV.

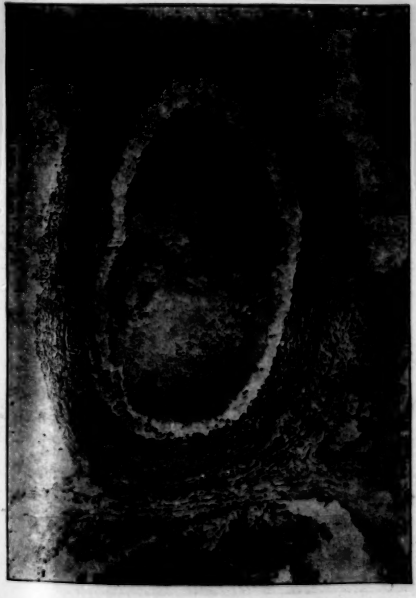


FIG. II.



FIG. V.



Fig. VI.

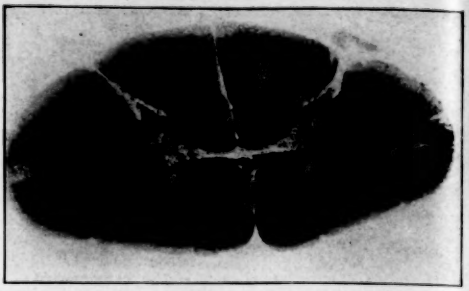


Fig. IX.



Fig. VII.



Fig. X.

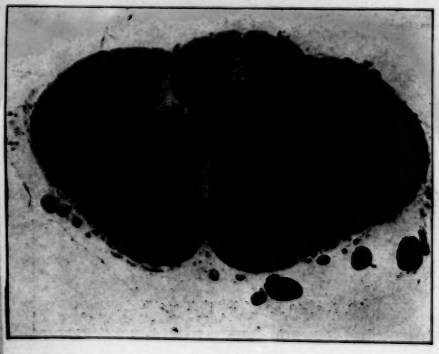


Fig. VIII.



Fig. XIX.

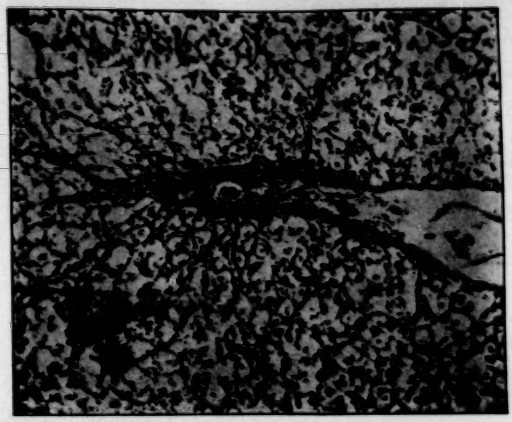


Fig. XX.



Fig. XXI.



Fig. XXII.

In every instance the ganglion cells contained large amounts of pigment (Fig IV), appearing, when prepared by the Marchi method, more like the golden-brown variety than the black masses. A similar appearance was found in the neuroglia cells, though to a much less degree, except in the neighborhood of the central canal, where the proliferated cells were about as deeply pigmented as the large ganglion cells.

In the sections stained by the Weigert method, and calculated to show more slowly progressive changes, the alteration was equally striking. The areas most involved were the direct and crossed pyramidal tracts, the direct cerebellar tracts and the posterior columns, and in not a single instance was it possible to say that all of these columns were normal. The peripheral sclerosis so much emphasized by Sander, Lhermitte and others was found, but apparently not in so high a degree as those authors insist upon. In a large proportion of the cases there was an outer circle of the cord, paler than the remaining portions, but very frequently sections from the same cord prepared by other methods failed to substantiate the presence of any marked sclerosis there, and the paler ring was doubtless in many instances merely an artefact. Naka [13] also notes the failure of the neuroglia-stains to confirm this peripheral sclerosis, but still insists on the presence of such a sclerosis and explains the lack of a neuroglia reaction by the recent development of the sclerosis. Aside from the more or less marked thickening of the peripheral ring of neuroglia, which was very common, three cords showed a well-marked marginal sclerosis, such as is seen in Fig. V. In these three instances the evidence of sclerosis was as marked in the neuroglia and Nissl preparations as in the Weigert preparation. In addition, more or less clearly defined wedge-shaped marginal sclerosis (Fig. VI) was fairly frequent. Whether this latter appearance conformed to the wedge-shaped areas so much emphasized by Sander, I cannot say. Certainly I could not connect them with definite vascular changes, as Sander was able to do. Aside from this marginal appearance, the most frequent sclerosis was in the posterior columns. In the lumbar region this area was diffusely sclerosed. (Fig. VI.) Higher up the change was better defined and more limited to the columns of Goll, but at all levels the dorsal part of the posterior columns was more likely to be involved than the ventral, and in many instances, especially where the change was slight, only a limited area of the posterior columns was affected, and this often of very irregular formation and of very variable position. (Figs. VII, VIII, IX, X.) Lhermitte [20] found the degeneration greater in the lumbar and lower thoracic regions than higher up in the cord. Sander [12] believes that the lateral columns are involved much earlier than the posterior. I found no evidence of this.

The next most frequent area involved was the lateral columns, and here the intensity of the process rarely exceeded or even equaled that in the posterior columns. The change also was more diffuse, but equally variable in its distribution, and the more or less localized sclerosis frequently seen in the posterior columns was almost never observed. In the following diagrams are indicated the outlines of the rather irregular areas involved in many cases. (Figs. XI–XVIII.)

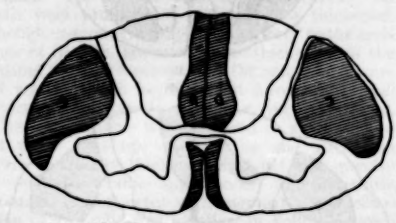


Fig. XI.



Fig. XII.

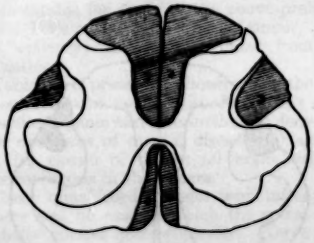


Fig. XIII.

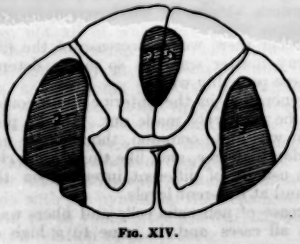


Fig. XIV.

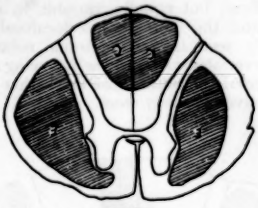


Fig. XV.

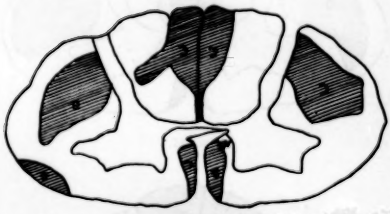


Fig. XVI.



Fig. XVII.



Fig. XVIII.

Whether there was a decrease of the fibers in the gray matter was not so easily determined, but there probably was.

Degeneration in the anterior roots could very rarely be positively made out. In the posterior roots it was quite common, though only in slight or moderate degree, and, like the Marchi changes, it was usually of different intensity on the two sides and at different levels.

Increase of neuroglia cells and fibers was present in all cases and in some to a high degree. Thus the glial ring at the periphery of the cord (Fig. XIX), already mentioned, was often greatly increased, and the glial framework of the cord was also often very prominent. Always, where a positive degeneration could be demonstrated by the Weigert method, there was found a marked increase of neuroglia. Occasionally large neuroglia cells with smaller processes were found throughout the cord. Perivascular increase of neuroglia (Fig. XX) was common.

As further evidence of senile neuroglia change, the central canal was commonly closed, and even more constant was the increase of ependymal cells about this region. Not infrequently, however, the central canal was surrounded by a distinct layer of columnar cells, and the canal appeared as if distended. Three times conditions justifying the term "hydromyelia" were found. (Fig. XXI.)

Corpora amylacea were observed in sections stained by all the methods employed, but they were brought out especially well by the stain for elastic tissue, and by Benda's stain. The variation in the numbers seen in the different cases, however, was so great that it seemed explicable only on the basis that in some cases the fixation, or staining, or both, were such as not to bring them out. In the examination of some cords, scarcely a single one could be seen. In other cords they were present in great numbers, even when all other pathological aspects of the two cords seemed about the same.

As a rule, the corpora amylacea were found in greatest abundance on the external aspect of the dorsal horn just after the root enters the cord and in the neighborhood of the substantia gelatinosa. They were seen next most frequently in the posterior columns, especially in their dorsal portions. They occurred with about equal frequency in the periphery of the cord, especially laterally, and around and in the neighborhood of the central canal. Much less commonly and in much smaller numbers they were found in other parts of the white matter. A considerable number were found in the gray matter, but not nearly so many, excepting in the substantia gelatinosa, as appeared in the white matter. There was also noticeable a special tendency for the corpora amylacea to appear in the peripheral glial ring (Fig. XXII) and in the bands which constitute the glial framework of the cord. In the latter relationship, therefore, they appear to follow along the vessels of the interior of the cord, as has been pointed out by von Leyden [2] and others, but it seems to me their essential relationship is with the glial band, and their connection with the vessel is merely accidental and dependent on the fact that these thick glial bands are found most often along the vessels. The tendency of the corpora amylacea to appear in the peripheral and perivascular glial bands, in both of which places they are entirely apart from the myelin sheaths, tends to support the view of Redlich [21], Obersteiner [22] and Nambu [23], that the corpora amylacea are derived from the neuroglia and not from the myelin sheaths or other elements

of the cord. I did not, however, find the transition stages between neuroglia cells and corpora amylacea, as pointed out by Nambu, though no special effort was made in this direction.

Von Leyden found the corpora amylacea most frequently about the central canal, in the substantia gelatinosa and along the vessels. Siemerling [24] thought they were most abundant about the central canal, and Nambu [23] found them most frequently about the periphery, at the anterior border of the posterior roots, in the posterior columns and in the neighborhood of the central canal.

It is apparent, therefore, that while the corpora amylacea occurred most commonly in those parts where degeneration of the nerve elements was greatest, it was by no means always true that in individual cases this connection could be made out.

In the ganglion cells of the cord, both large and small, stained by the Nissl method, there was a high degree of pigmentation and a marked tendency to the breaking up of the stainable material (Nissl bodies) and an atrophy of the cells, which, in some cases, led to their complete disappearance. It was remarkable, however, to see how large a portion of the cell could be taken up by the pigment and yet the remaining part contain a fairly normal-appearing nucleus and Nissl bodies.

In all the sections studied, scarcely a single ganglion cell which did not contain at least a considerable amount of this clear yellow pigment was seen. Ordinarily a portion of the cell was given over to pigment, the adjacent part contained stained fine granules, as if the Nissl bodies had been broken up, and another portion would contain nucleus and fairly normal-appearing Nissl granules. Some cells were occupied solely by pigment and stained fine granules, and in a few instances the cell body was made up of a diffusely stained material without evidence of granular formation. Not infrequently clumps of pigment were found, which apparently represented cells entirely replaced by pigment. Similar cell changes have been described by many authors and have been named by Nissl "sclerosis of the ganglion cell."

Rarely, but much more frequently in some cases than others, the degenerating ganglion cells were surrounded by neuroglia cells, somewhat similar in appearance to the satellite cells of the cortex. These, however, are by no means so commonly present or in such numbers as in the brain, and when found at all they are not necessarily around the most diseased cells. Moreover, the most diseased cells very frequently have no such neuroglia cells about them. Very rarely a small group of neuroglia cells is seen possibly representing the site of a former ganglion cell.

Cells showing the central neuritis change were occasionally encountered and, in a few cases, quite frequently.

Peripheral position of the nucleus was common. Vacuolization of cell bodies and the nucleus was infrequently observed. The cells of Clarke's column seemed more affected than the other groups of large ganglion cells.

Nearly all the vessels showed a thickening of the wall, and some showed a distinct lessening of the lumen. The vessels also appeared increased in numbers in the posterior and lateral regions of the cord, much less so in the anterior region. The intima was chiefly involved. Its cells were proliferated and the coat thickened, though unsymmetrically so. Contrary to the findings of Sander, however, great thickening of the intima was not common, and the complete closure of vessels, which he found not infrequently, was observed only rarely and in a very few cases. The elastic tissue was increased in amount, and at times split up. The media and adventitia were commonly thickened, and not infrequently presented a hyaline appearance. The adventitia contained phagocytes with pigment. Vacuolization of the cells and a yellow or yellowish-green pigment in the perivascular spaces was often seen. Perivascular nuclear increase was frequently noted, but this was usually due to neuroglia increase.

SUMMARY.

1. A review of the literature concerning the senile spinal cord demonstrates both clinical and anatomical uncertainty. It is uncertain how many separate clinical entities depend on senile spinal changes, whether physiological involution is responsible for the development of any spinal symptoms, and how far arteriosclerosis accounts for the anatomical changes found.

2. The protocols of 72 subjects dying at seventy or more years of age at the Danvers State Hospital, Massachusetts, have been examined. Eighteen cases showed a variety of conditions rendering them unsuitable for study of the above problems (cerebral hemorrhage, thrombosis, tumor, gross lesions, epilepsy) and were excluded from this investigation.

3. Tables are presented showing (*a*) the predominant forms of mental disorder in this series to be senile, organic and arteriosclerotic dementia; (*b*) the durations of mental disease; (*c*) ages at death; (*d*) causes of death; (*e*) brain weights; (*f*) arteriosclerosis in the viscera.

4. Gross spinal cord changes were infrequent, but there was no case in which the spinal cord was wholly normal microscopically. Nerve fiber alterations were constant. Vascular changes, pigmentation, nerve cell changes, neuroglia alterations and corpora amylacea were also studied.

5. Marchi preparations invariably showed alterations, not all of which are easily explained. When the blackenings were not diffuse they occurred preferably in the posterior and lateral columns, and in some instances a condition resembling the spinal cord appearances of pernicious anemia was closely approximated. In this latter group of cases, the lateral columns at appropriate levels showed changes in the direct cerebellar tracts adjacent to and apparently of like origin with the pyramidal tract changes. The peripheral nerve roots often showed blackenings of doubtful relation to the process.

6. Nerve cell and, to a lesser degree, neuroglia cell pigmentation was constant.

7. Weigert myelin sheath preparations invariably showed alterations in some region, preferring those mentioned in paragraph 5, again resembling the changes which accompany pernicious anemia. The posterior and postero-lateral columns formed the region of election for these chronic changes (excluding certain questionable conditions in the periphery), and posterior nerve root degeneration (of slight or moderate degree) was common.

8. Fibrillary gliosis was constant, but varying in degree from case to case, corresponding very closely with changes as demonstrated by the Weigert myelin sheath method. Mallory's phosphotungstic hematein method was used for this demonstration. Closure of the central canal and some instances of hydromyelia were found.

9. Corpora amylacea were most abundant external to the dorsal horns and in the neighborhood of the substantia gelatinosa. They were also common in the posterior columns and the periphery of the cord. The distribution of the corpora amylacea appeared consistent with the hypothesis of their derivation from the neuroglia.

10. The co-existence of marked pigmentation with relatively intact Nissl bodies in many ganglion cells was noteworthy. Many chronic changes were found. Satellitosis was occasionally displayed, as also axonal changes.

11. Vascular changes were frequent, but perhaps less marked than might have been expected.

12. Those in advanced years very frequently present a series of symptoms consisting in more or less marked impairment of muscular strength and control; a spastic, shuffling, tottering gait; a varying disturbance of the deep and superficial reflexes; tremor and sensory disturbance. These symptoms represent not merely conditions of general decay, because they may be present even when not associated with signs of decay in other parts of the body, and, on the other hand, may be absent even when such signs are present, but are constantly associated with a definite pathological change in the spinal cord, in many respects like that of pernicious anemia, and should not be interpreted as direct manifestations of arteriosclerosis.

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EXPLANATION OF PLATES.

FIG. I. Spindle-shaped masses of golden-brown pigment seen in the meninges. Marchi preparation.
FIG. II. Granules seen especially in the intima of an artery and portion of a vein, from the meninges, on the ventral aspect of the cord. In the lumen are several phagocytic cells. Marchi preparation.
FIG. III. Longitudinal sections of posterior root fibers. Marchi preparation.
FIG. IV. Large ganglion cells containing pigment. Marchi preparation.
FIG. V. Marginal and slight diffuse posterior sclerosis. Weigert preparation.
FIG. VI. Wedge-shaped marginal sclerosis. Weigert preparation.
FIGS. VII, VIII, IX, X. Weigert preparations showing sclerosis of the posterior columns. Note the varying areas involved.
FIGS. XI to XVIII. Diagrams representing lesions, variable in degree and location, shown by the Weigert method. *A.* Complete degeneration. *B.* Well-marked degeneration. *C.* Moderate degeneration. *D.* Slight degeneration. *E.* Very slight degeneration.
FIG. XIX. Increase of peripheral glial ring. Weigert preparation.
FIG. XX. Perivascular increase of neuroglia. Mallory's method.
FIG. XXI. Hydromyelia. Weigert preparation.
FIG. XXII. Corpora amylacea in the peripheral glial ring.

VI.

AN HISTOLOGICAL STUDY OF THE THYROID GLAND IN MENTAL DISEASE, WITH ESPECIAL RELATION TO CHRONIC THYROIDITIS.

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THE present study of the thyroid gland in cases of mental disease is mainly histological, but contains certain anatomical and clinical correlations. Such a study is appropriate both on account of the general trend of recent speculations concerning ductless glands and by reason of certain special claims concerning the value of partial thyroidectomy in dementia precox. It was Berkley's paper [1] on partial thyroidectomy, read at the Cincinnati meeting of the American Medico-Psychological Association, 1908, which directly occasioned this study, as it was hoped to show by a study of thyroids in dementia precox, controlled by the glands in other conditions, whether any differential conditions were obtained in dementia precox. Dock's chapter on "Diseases of the Thyroid Gland" in Osler's "Modern Medicine" [2] contains numerous references to nervous and mental states in exophthalmic goiter, and the subsequent chapter [3] describes such states in cretinism and myxedema. Similar statements appear in Ochsner and Thompson's recent book.[4]

Berkley's work, while very speculative, has the merit of not concealing the speculative character of any of his reasonings. Out of a large list of drugs employed to improve the condition of katatonics, only iodine had an effect upon the patients. Even a small dose (1-250 gr. iodine, as iodized starch) might wake the patients from their stupor, increase dermographia, heighten reflexes, increase hyperidrosis and quicken the pulse — all temporarily. Iodothyrin and desiccated thyroid also made the patients worse. Alternating treatment — thyroid, 1 or 2 gr. daily for a week, followed by alcoholic solution of lecithin daily for another week — secured some good results. Large quantities of milk were also given to these patients.

Partial ablation of the thyroid was then performed by Follis in a number of cases, with more or less rapid recovery in Cases I, II, III, IV, VIII; no results in V, VI, VII. The three unfavorable cases had been of longer duration, and Berkley

suggests that organic brain changes had set in in these cases.

Berkley's idea of the mechanism of the thyroid lobectomy procedure in procuring good results in katatonia is expressed by him as follows: "It is possible, from the symptoms, that in katatonia we have a perversion of the secretion of that organ and that partial thyroidectomy induces a return to the normal in the secretion of the remaining portion of the gland. The return to the natural state of the reflexes, the decrease of the mechanical muscular irritability, as well as of the dermographia, the loss of pigmentation, also of the doughy, pasty character of the skin (most noticeable in the prodromal and stage of mutism), and the later return to the normal both of the mental as well as physical state, are at least suggestive that partial ablation of the gland is a factor, and has something to do with the rapid recovery."

McCallum's histological results in some of the Berkley-Follis cases were as follows:

I. Female, nineteen, duration of katatonia two years nine months, partial thyroidectomy. "The alveoli are distended with homogeneous colloid, which, however, show some variations in its staining qualities. Some alveoli are filled with pale gray, others with pale pink, and others with bluish-pink color. For the most part they are larger than normal and their epithelial cells are very low and flat. In some places, however, the large alveoli are surrounded by very small ones. There is in most instances no distinct folding of the alveolar walls. In one or two alveoli, however, there is a remarkable scalloping of the epithelium by its being uplifted by capillaries."

II. Male, twenty-one, duration of katatonia about six months, partial thyroidectomy. "The thyroid is rather fibrous-looking; strands of connective tissue subdivide it into lobules. The alveoli are, for the most part, large, but very irregular in form, with buds and infoldings. The epithelium is cubical, distinctly higher than normal, but not as high as that seen in exophthalmic goiter. There are numerous small alveoli associated with these larger ones, and these also have high epithelium. There are some scattered patches of lymphoid tissue through the thyroid."

III. Female, twenty-eight, duration of katatonia about four months, partial thyroidectomy. "A part of the gland seems a little firmer than the rest and is more translucent. The gland in general is almost normal looking; it is reddish-gray and quite homogeneous. On section, rather translucent, with scattered points of yellowish opacity which are visible only on most careful inspection." "It is composed of uniform, rather small, alveoli, unusually rounded in form and showing no infolding of the epithelium. The alveoli are lined with a flattened epithelium, which is perfectly uniform and normal-looking throughout. The blood vessels show some evidences of calcification and hyaline degeneration in their media."

IV. Male, nineteen, duration of katatonia about eight months, partial thyroidectomy. "Portion of right thyroid removed, weighing 2.96 gm. Small mass of soft tissue, homogeneous and uniform in appearance throughout. On cut surface the tissue is moist and glutinous, grayish-red. No apparent excess of fibrous tissue, no nodules." "It is composed of alveoli of moderate size, very round and smooth in outline, and of fairly uniform size. They contain a good deal of homogeneous colloid. The alveoli are lined with flattened epithelium, which is entirely uniform in character. The connective tissue forms some quite coarse bundles throughout the gland, which carry abundant blood vessels, but on the whole it does not seem to be markedly increased in amount. There is an unfolding of the epithelial layer." "Second ablation, Jan. 17, 1908. Microscopically the alveoli are distended with colloid, which is thin and pale, staining sometimes lilac, sometimes pink. The alveolar walls are thin and the epithelium is low and flat. The alveoli in general are larger than in the first specimen. Some of them are surrounded by small columns of other alveoli of smaller size, but there is no direct evidence of infolding of the epithelium. The connective tissue is abundant."

Farrar examined the thyroid tissue from Case VIII.

VIII. Male, twenty-five, duration of katatonia about five months, partial thyroidectomy. Thyroid: "The only divergence from the normal was the distention of practically all the follicles with colloid material. The lining epithelial cells are obviously much flattened, there being nowhere any cylindrical cells. Many follicles were of considerable size and obviously represented confluences of several follicles. In many instances the distended follicles occupied the microscopic field, the interfollicular connective tissue fibers being reduced to a minimum. In themselves, the connective tissue and the blood vessels showed no pathological changes; also there was no evidence of any inflammatory process."

For the convenience of future workers, the results of thyroid examination in five cases of dementia precox autopsied at the Danvers State Hospital are here printed:

1034, 12756, male, thirty-five, dementia precox, two years; pulmonary gangrene, recent. There is no gross change in the thyroid. Microscopically, no increase is noted in either interlobular or interfollicular connective tissue. The blood vessels are normal. The follicles are uniformly small and regular in outline, the epithelium is usually flattened or low cuboidal. The colloid in the follicle is deeply evenly staining and retracted from the epithelium. No colloid is seen in the interstitial tissue.

1036, 11,317, male, twenty-seven, dementia precox, five years; multiple thrombi of heart, recent. Grossly nothing was noted at autopsy. Microscopically, the connective tissue, both interlobular and interfollicular, shows a slight increase and blood vessels are normal. The follicles are generally small, fairly regular in outline and the epithelium usually cuboidal. Colloid in the follicle is deeply but unevenly staining, in some cases retracted from the epithelium and containing crystals and vacuoles, in others filling the follicle, but unevenly staining. A small amount of colloid is noted in the interstitial tissue. There are occasionally clumps of cells.

1062, 7987, female, thirty-eight, dementia precox, eleven years; pulmonary tuberculosis, one + year. In gross appearance the thyroid is very thin. There is no increase of connective tissue and the vessels are normal in appearance. The follicles are of varying size, and in outline some are regular and others contain infoldings of epithelium several layers in thickness. The epithelium is in some instances flat and in others cuboidal and often reduplicated. There is a marked variation in the colloid, in some cases pale, containing many vacuoles, with epithelium and red blood cells, and in others the colloid is deeply and evenly staining, and in

most instances fills the follicle. There is a small amount of colloid in the interstitial tissue. Occasional clumps of cells are noted.

1310, 13582, female, twenty-eight, dementia precox, congenital factors; pulmonary tuberculosis, six months. Grossly the thyroid is small and the lateral lobes symmetrical. There is but a slight increase in connective tissue, and the vessels are not notable. The follicles are usually small, some of medium size, usually regular in outline, with epithelium, occasionally flattened, but usually cuboidal. Few follicles are empty, but most contain colloid, which in some instances is pale, but for the most part deeply and unevenly stained. Several contain colloid with deeply staining center surrounded by a pale ring. In such instances the epithelium is flat. No colloid is seen in the interstitial tissue.

1317, 12143, female, forty-four, dementia precox, twenty-one years' duration; carcinoma of breast, one year. The thyroid is larger than normal, not weighed, but is quite closely connected with the mediastinal tissue. There is a slight increase in both interlobular and interfollicular connective tissue. Blood vessels are normal, but increased in number. The follicles are small, usually regular in outline, but in some cases indented with reduplication of epithelium or by blood vessels between epithelium and basement membrane. The epithelium is flat or low cuboidal. Few follicles are empty, but many contain unevenly deeply staining colloid retracted from the epithelium. No colloid is noted in the interstitial tissue.

The sections were prepared from Zenker fixed material and stained with eosin methylene blue, Mallory's connective tissue stain and phosphotungstic acid hematein.

For the understanding of such data, it is obviously necessary to study the thyroid in other conditions than dementia precox. Ramadier and Marchand have made such a study [5] showing that microscopic changes are more frequent in the insane from goitrous regions. They find microscopic changes very frequently, as often in the sane as in the insane. Of 48 cases autopsied in the institution at Doir-et-Cher, there were

	Cases.
Normal,	8
Slight sclerosis,	18
In places sclerotic,	5
Diffuse atrophic sclerosis,	14
Inflammatory changes,	3

Reviews of this work have considered the results wholly negative, apparently on the ground that 8 normal thyroids among 48 from insane patients exclude any possible relation between thyroid disease and insanity. Such a view proceeds on the broken hypothesis that insanity is a unitary condition.

It has been thought worth while to follow Ramadier and Marchand with a similar analysis of 50 cases, coming from a non-goitrous region.

The general results are shown in the accompanying table:

	Cases.
Normal, microscopically,	11
Slight chronic fibrous thyroiditis,	16
Marked chronic fibrous thyroiditis,	11
Chronic interstitial thyroiditis (mononuclear cell deposits),	*1

* In a case of acromegaly published by Barrett.[4]

	Cases.
Epithelial infolding pronounced,	18
Colloid excess (interstitial),	8
Colloid excess (follicular),	8
Exophthalmic goiter,	1

The cases of macroscopic enlargement numbered 8.

905, 12046, female, sixty-five, organic dementia, two + years; bronchopneumonia, recent.

1058, 12162, female, sixty-one, senile dementia, ?; lobar pneumonia, recent.

1091, 11332, male, seventy-four, paralysis agitans, six years; septicemia, recent.

1139, 13004, female, seventy-seven, manic-depressive insanity, thirty-nine years; bronchopneumonia, recent.

1148, 13530, female, twenty-five, cerebral gliosis with exophthalmic goitre, one + year; bronchopneumonia, recent.

1162, 13576, female, fourteen, status epilepticus, five years; status epilepticus.

1227, 11984, female, thirty-seven, epilepsy, congenital; bronchopneumonia, recent.

1317, 12143, female, forty-four, dementia precox, twenty-one years; carcinoma, one year.

The cases of small thyroid numbered 6:

1054, 12897, male, fifty-one, general paresis, two years; bronchopneumonia, recent.

1062, 7987, female, thirty-eight, dementia precox, eleven years; pulmonary tuberculosis, one + year.

1064, 12988, male, eighty-seven, senile dementia, five years; bronchopneumonia, recent.

1182, 12824, female, seventy-two, organic dementia, eight years; myocarditis, recent.

1273, 14365, female, fifty-one, neurasthenia, thirty + years; dysentery, recent.

1310, 13582, female, twenty-eight, dementia precox, congenital factors; pulmonary tuberculosis, six months.

The cases of cystic thyroid numbered 4, and, besides 905 and 1091 (see list of enlargement cases), were as follows:

1053, 736, male, seventy-two, organic dementia; bronchopneumonia, recent.

1056, 13011, female, forty-one, toxic delirium, three weeks; cerebrospinal menigitis, recent.

There are 16 cases of slight chronic fibrous thyroiditis as follows:

1031, 12719, male, eight-five, organic dementia, five years; hypostatic pneumonia, recent.

1035, 12765, male, forty-five, imbecile, congenital; bronchopneumonia, recent.

1037, 12835, male, twenty-three, juvenile general paresis, five years; bronchopneumonia, recent.

1058, 12162, female, sixty-one, senile dementia; lobar pneumonia, recent.

1059, 12175, female, seventy-eight, senile dementia, seven + years; carcinoma, one + year.

1060, 12987, male, sixty-nine, senile dementia, two + years; thrombosis, recent.

1064, 12988, male, eighty-seven, senile dementia, five years; bronchopneumonia, recent.

1126, 10854, male, forty-seven, general paresis, six years; pulmonary tuberculosis.

1139, 13004, female, seventy-seven, manic-depressive, thirty-nine years; bronchopneumonia, recent.

1148, 13530, female, twenty-five, cerebral gliosis with exophthalmic goiter, one year; bronchopneumonia, recent.

		Gross Appearance.			Connective Tissue. Interfolli-cular.	Connective Tissue. Interlo-bular.	Follicles.				Epithelium.						Amount of Colloid in Follicle.			Amount of Colloid in Interstitial Tissue.		Blood Vessels.
	Total number.	Enlarged.	Small.	Cystic.	Increase.	Increase.	Small.	Medium.	Large.	Variable.	Flat.	Cuboidal.	Reduplicated.	Mixed.	Absent.		Small.	Medium.	Large.	Small.	Large.	Sclerosis.
Age																						
1–30	7	2	1	0	4	2	4	1	0	2	5	1	4	3	0		2	3	2	2	1	0
31–40	8	1	1	0	1	1	3	1	1	3	1	1	4	5	2		1	7	0	4	0	0
41–50	8	1	0	1	5	3	1	4	2	1	0	0	3	6	1		0	6	2	2	1	0
51–60	7	0	2	0	4	3	5	0	1	1	2	0	2	5	0		2	5	0	0	1	0
61–70	8	2	0	1	3	2	3	2	0	3	1	3	2	2	0		2	5	1	4	0	1
71–80	9	2	1	2	7	6	5	2	0	2	0	3	1	5	2		3	5	1	1	3	0
81–90	3	0	1	0	1	1	2	0	0	1	0	0	2	2	1		0	1	2	0	2	1
Sex																						
Male	25	1	2	2	11	9	12	7	2	4	2	4	11	12	2*		6	15	4	6	4	2
Female	25	7	4	2	14	9	11	3	2	9	2	4	7	16	4		4	17	4	7	4	0
Mental Disease																						
General paresis	10	0	1	0	4	3	6	4	0	0	2	0	4	6	1		3	6	1	3	1	0
Dementia precox	5	1	2	0	3	2	4	0	1	0	0	0	1	5	1		1	4	0	1	0	0
Manic-depressive	3	1	0	0	1	0	1	1	0	1	0	1	2	1	0		1	1	1	0	1	0
Organic dementia	9	1	1	1	4	4	5	1	0	3	2	2	2	3	1		0	8	1	3	1	2
Senile dementia	8	1	1	1	4	3	3	2	1	2	0	2	2	5	1		4	3	1	1	3	0
Epilepsy	3	2	0	0	1	1	1	0	0	2	0	2	0	1	0		1	1	1	1	0	0
Imbecility	3	0	0	0	1	1	0	0	1	2	0	0	3	0	0		0	3	0	2	0	0
Paralysis agitans	2	1	0	1	1	1	1	1	0	0	0	1	0	1	1		0	2	0	1	0	0
Special group *	7	1	1	1	5	3	2	1	1	3	0	0	4	5	1		0	4	3	1	2	0
Terminal Disease																						
Acute disease	36	6	4	4	18	14	17	8	2	9	3	7	15	18	4		7	23	6	11	7	1
Tuberculosis	7	0	2	0	3	2	3	2	1	1	0	0	2	6	1		1	5	1	1	0	1
Carcinoma	3	1	0	0	2	0	2	0	1	0	0	0	0	3	0		2	1	0	0	1	0
Epilepsy, brain tumor and cerebral hemorrhage	4	1	0	0	2	2	1	0	0	3	1	1	1	1	1		0	3	1	1	0	0

* Special group consists of toxic delirium, infection psychosis, central neuritis, neurasthenia and exophthalmic goiter.

1198, 6463, female, seventy-eight, paralysis agitans, sixteen years; nephritis.

1204, 13927, male, fifty-eight, infectious psychosis, one month; multiple thrombi.

1207, 13894, male, sixty-five, organic dementia, two + years; myocarditis, chronic.

1213, 13950, female, fifty-seven, senile dementia, six months; bronchopneumonia, recent.

1231, 13979, male, sixty-four, imbecile.

1317, 12143, female, forty-four, dementia precox, twenty-one years; carcinoma, one year.

The 11 cases of marked chronic fibrous thyroiditis are as follows:

901, 10798, female, fifty-three, brain tumor, three years; brain tumor, three years.

1036, 11317, male, twenty-seven, dementia precox, five years; multiple thrombi, recent.

1038, 12775, male, thirty-one, general paresis, one year; thrombosis, recent.

1056, 13011, female, forty-one, toxic delirium, three weeks; cerebrospinal meningitis, recent.

1063, 12239, female, seventy-seven, senile dementia; cerebral hemorrhage, recent.

1085, 11217, female, seventy-five, epilepsy; enterocolitis, recent.

1091, 11332, male, seventy-four, paralysis agitans, six years; septicemia, recent.*

1182, 12824, female, seventy-two, organic dementia, eight years; myocarditis, recent.

* There was marked sclerosis of the thyroid artery, while arteries of corresponding size elsewhere in the body showed little sclerosis.

1225, 13891, male, forty-one, general paresis, six months; purulent pleuritis, recent.

1273, 14365, female, fifty-one, neurasthenia, thirty + years; dysentery, recent.

1310, 13582, female, twenty-eight, dementia precox, congenital factors; pulmonary tuberculosis, six months.

The 18 cases showing epithelial infolding, with the exception of 1031, 1035, 1037, 1038, 1148, 1204, 1213, 1231 and 1310, given in above lists, are as follows:

984, 1750, male, thirty-eight, imbecile, congenital; bronchopneumonia, recent.

1033, 11385, male, forty-five, general paresis, four years; bronchopneumonia, recent.

1061, 6833, male, seventy-eight, senile dementia, twenty-three years; lobar pneumonia, recent.

1067, 9590, female, sixty-four, manic-depressive, seven years; multiple thrombosis, recent.

1109, 9073, male, eighty-three, delusional insanity (diabetic), fifteen years; bronchopneumonia, recent.

1112, 13262, female, forty, central neuritis, three years; central neuritis.

1212, 13955, female, thirty-seven, manic-depressive insanity, eight months; bronchopneumonia, recent.

1226, 13941, male, twenty-three, juvenile general paresis, three + years; Addison's disease, recent.

1229, 14013, female, forty-five, organic dementia, one year; brain tumor.

There are 8 cases of excess of colloid in follicles,

which, with the exception of the above listed 1056, 1064, 1109, 1126, 1139, are as follows:

1162, 13576, female, fourteen, status epilepticus, five years; status epilepticus.
1191, 13795, female, twenty-five, acute delirium, one month; acute delirium.
1207, 13894, male, sixty-five, organic dementia, two + years; chronic myocarditis.

Of the 8 cases showing excess of colloid in interstitial tissue, 7 have been previously listed, namely, 1031, 1056, 1059, 1061, 1064, 1139 and 1148; the remainder is as follows:

1054, 12897, male, fifty-one, general paresis, two years; bronchopneumonia, recent.

Thyroid in emaciation.	Total No.	Emaciation.
Normal,	11	7
Slight chronic fibrous thyroiditis,	16	5
Marked chronic fibrous thyroiditis,	11	0
Chronic interstitial thyroiditis (mononuclear cell deposits),	1	0
Epithelial infolding,	18	7
Colloid excess, follicular,	8	1
Colloid excess, interstitial,	8	1
Exophthalmic goiter,	1	0

or interstitial excess of colloid had become emaciated, so that the question arises whether such histological "excess" means excess or means defect in thyroid constituents in the body at large.

Though the pulse had not been intensively studied clinically in these cases, certain data are available. None of the "normal" thyroids had been associated with pulse-rates over 100 (75% under 90). Only 1 of 7 cases of marked chronic thyroiditis yielded a pulse over 90 (but that one over 120). The exophthalmic goiter case naturally gave a high pulse; the acromegaly case a low one. The hyperplastic and excess-colloid cases, as well as those of slight chronic thyroiditis, are variously distributed with respect to pulse.

Five descriptions of thyroid glands in dementia precox are added; three of these yielded both microscopic and macroscopic alterations (one enlarged, two small), which may or may not signify important alterations in the amount of thyroid products reaching the circulation. Two cases of briefer duration showed neither microscopic nor macroscopic alterations.

THE RELATION OF THYROID TO RECORDED PULSE-RATES IN CERTAIN CASES.

	Number of cases.	Pulse 61-70. (7 cases.)	Pulse 71-80. (7 cases.)	Pulse 81-90. (8 cases.)	Pulse 91-100. (4 cases.)	Pulse 100-120. (3 cases.)	Pulse 120-150. (2 cases.)
Normal,	8	2	2	2	2	0	0
Slight chronic fibrous thyroiditis,	11	2	2	2	2	1	2
Marked chronic fibrous thyroiditis,	7	2	2	2	0	0	1
Chronic interstitial thyroiditis (mononuclear cell),	1	1	0	0	0	0	0
Epithelial infoldings,	10	2	2	2	0	2	2
Colloid excess, follicular,	5	1	1	0	1	0	2
Colloid excess, interstitial,	6	1	1	1	0	1	2
Exophthalmic goiter,	1	0	0	0	0	0	1

SUMMARY AND CONCLUSIONS.

The favorable results of thyroid lobectomy (Berkley-Follis) in 5 out of 8 cases of katatonia rendered a histological examination of the thyroid gland in this and allied diseases desirable. This need was partially fulfilled by the work of Ramadier and Marchand, who found, in a study of the thyroid in 48 cases of mental disease, histological changes of some sort in over 80%. These French cases came from a goitrous region and the glands showed a great predominance of sclerotic changes (77%).

As a control for the French work, 50 Danvers cases have been examined. Excluding a case of exophthalmic goitre and a case of acromegaly, about 77% of the Danvers series show changes, but a far lower percentage of sclerotic changes (56%) than the French series. Since the milder degrees of sclerosis are hard to interpret, the percentages of more marked sclerosis are interesting: Ramadier and Marchand, 29%, Peabody, 23%.

A possible relation between the thyroid gland and the process of emaciation is seen in the fact that 64% of the subjects with "normal" thyroids (11) had become emaciated under hospital or other conditions, whereas none of the subjects with chronic thyroiditis (12) showed emaciation. Again only 13% of the subjects showing follicular

The absence of emaciation in chronic thyroiditis, unless accidental in this series, forms a problem in which the parallel study of the pituitary body and other glands would be of aid.

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VII.

INCIDENCE OF HEART DISEASE IN ACUTE PSYCHOSES, DANVERS STATE HOSPITAL, 1879-1909.

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THIS study of the incidence of heart lesions in acute psychoses at the Danvers State Hospital is based upon the protocols of cases autopsied at the Danvers State Hospital over a period of thirty years, namely, from 1879 to 1909. The

protocols are quite unselected, and are those of such autopsied cases as possessed clinical histories permitting the diagnosis of manic-depressive insanity or dementia precox. Many cases which before the Kraepelinian nomenclature was adopted were diagnosed as acute or chronic mania, acute or chronic melancholia, recurrent insanity, circular insanity, primary dementia and so forth have been reclassified as manic-depressive or dementia precox after careful study of their clinical histories. The total number of protocols answering the above requirements was manic-depressive, 176; dementia precox, 106. This study led to the formation of three tables.

TABLE 1.

	Manic-depressive.	Dementia precox.
Totals considered,	176	106
Hearts normal,	73–36%	24–23%
Hearts and arteries normal,	50–28%	19–18%
Hearts with minor lesions,	39–22%	34–32%
Hearts probably normal functionally,	112	58
Coronary arteriosclerosis,	18	12

From Table No. 1 it will be seen that, of 176 autopsied cases of manic-depressive insanity, 112 (or 65%) and, of 106 autopsied cases of dementia precox, 58 cases (or 55%) possessed hearts probably normal functionally.

This difference is consistent with the fact that cases of manic-depressive insanity are more likely to die earlier in the course of their disease than are cases of dementia precox. The duration of a given psychosis has a bearing on the heart lesions found, since, the longer a case lasts, the more likely are complicating features to appear.

TABLE 2.

	Manic-depressive.	Dementia precox.
Chronic valvular disease:		
Aortic,	26	18
Mitral,	23	28
Tricuspid,	6	6
Pulmonary,	1	2
*Valvular disease functionally serious,	16	30
Parietal disease:		
Fatty myocarditis,	15	15
Fibrous myocarditis,	4	1
Brown atrophy,	2	4
Hypertrophy of heart,	21	19
Dilatation of heart,	11	5
Hydropericardium,	12	18
Chronic pericarditis,	13	19
Chronic passive congestion,	11	10
Acute endocarditis,	5	9
Cardiac thrombi,	5	5
Rupture of heart,	1	0

On looking at the second table, one's attention is first attracted by the fact that of the manic-depressive series, only 16 cases (or 9%) show valvular disease that was functionally serious, whereas, of the dementia precox series, 30 cases (or 21%) were found at autopsy with valve lesions which had probably seriously interfered with the work of the heart. Of the parietal diseases, fibrous myocarditis and brown atrophy are dropped from consideration here on account of the paucity of cases exhibiting these lesions. This leaves us with fatty myocarditis, hypertrophy of heart, dilatation of heart, hydropericardium and chronic pericarditis for more detailed consideration.

*Judging by descriptions, occurrence of obvious cardiac complications in other organs, etc.

By comparing the incidence of the individual lesions in manic-depressive insanity with the corresponding lesions in dementia precox, every lesion is found more frequently in dementia precox than in manic-depressive insanity, with the exception of dilatation of the heart, which is much more frequent in manic-depressive insanity than in dementia precox. The relation of dilatation of the heart to attacks of maniacal excitement and attendant heart strain must be left in doubt.

It is of interest to compare the incidence of the parietal diseases of the heart in the acute psychoses with the incidence of these same diseases in all psychoses as set forth in the protocols available at the Danvers State Hospital. This comparison led to the compilation of Table 3.

TABLE 3.

	All psychoses. Per cent.	Manic-depressive. Per cent.	Dementia precox. Per cent.
Parietal diseases:			
Dilatation of heart,	2.4	6.2	4.7
Fatty myocarditis,	8	8.5	14
Hypertrophy of heart,	16	11.3	17.9
Hydropericardium,	5	6.8	17
Chronic pericarditis,	7.44	7.4	17.9

From this table two facts are apparent. The first is that the relative frequency of dilatation of heart, fatty myocarditis, hydropericardium and chronic pericarditis in the acute psychoses is above the average in all psychoses considered collectively. The second fact is that, while the relative frequency of hypertrophy of heart in manic-depressive insanity is below the average, in dementia precox the relative frequency of hypertrophied hearts is slightly above the average.

Finally, this study of the incidence of heart lesions in acute psychoses at Danvers State Hospital, 1879–1909, may be summarized by the following statements:

1. The percentage of hearts probably normal functionally is higher in manic-depressive insanity than in dementia precox.

2. Dilatation of heart occurs more frequently in manic-depressive insanity than in dementia precox.

3. Leaving out dilatation of heart, the incidence of every cardiac lesion in dementia precox is greater than the incidence of the corresponding lesion in manic-depressive insanity.

4. The incidence of individual heart lesions is relatively greater in the acute psychoses than in all psychoses combined, except that the relative frequency of hypertrophied hearts in manic-depressive insanity is below the average.

5. This study suggests the desirability of a close clinical study of hearts, pulse and blood tension in the group of acute psychoses.

VIII.

Bacterial Invasion of the Blood and the Cerebrospinal Fluid by way of Mesenteric Lymph Nodes: A Study of Fifty Cases of Mental Disease.

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Summary.

The interest which attaches to the *cultivation of bacteria from the blood post-mortem* is scarcely less than that which attaches to similar cultivations during life, since the post-mortem bacteriology can be controlled by anatomical and histological data. Although the question of post-mortem or agonal invasion of the blood is still a moot question, which no further accumulation of routine data seems likely to resolve, it has seemed possible to supplement the blood cultivations by parallel cultivations from other regions of the autopsied body and to draw important conclusions therefrom with respect to the spread of bacteria in the tissues, whether that spread takes place *post-mortem* or *ante-mortem*.

The chance that a *pure* culture from the blood is a true "contamination" in the sense in which bacteriologists use the term is at the outset slight. That improbability increases in the event that the same organism is grown in pure culture from other parts of the body, unless, indeed, the blood be so filled with a single organism that no organ or lesion is likely to escape invasion. In the latter event, viz., the event of a colossal invasion of the body by some organism which perhaps outgrows every other bacterium, the importance and pathogenenicity of the organism must be settled on other and general grounds with due reference to the histopathology of the organs and lesions of the case.

Special interest attaches to positive or negative *cultivations from the cerebrospinal fluid post-mortem*, and the accumulation of routine data from this source in autopsied material is still not rich enough for the purpose of that *control of similar cultivations from the living* which clinical pathology demands. The clinical pathologist has still to disregard various organisms cultivated from lumbar puncture fluids withdrawn during life, unless the organisms conform to well-known types generally regarded as pathogenic.

Since the results of the work of Gay and Southard, which preceded and occasioned the present work, are in the course of publication in the *Zentralblatt für Bakteriologie*, and may not be readily accessible to American readers, the conclusions of that work are here inserted:

1. The results of cultivations from the heart's blood and the cerebrospinal fluid post-mortem in 100 cases of mental disease have been correlated with the histopathological findings (Marchi impregnations of the spinal cord at three levels) and the clinical histories, having special reference to a history of terminal disease over or under four days' duration (regarded as a period in which typical Marchi alterations might ensue).

2. The bacteria were cultivated upon agar plates inoculated with 1 to 1.5 ccm. heart's blood and others with the same amount of cerebrospinal fluid. The cerebrospinal fluid was removed from the third ventricle through the infundibulum, severed at its origin.

3. Forty-one per cent of our heart's blood cultures remained sterile (cf. Gradwohl, 22%; Otten, 42%; Simmonds, 48%).

4. Twenty-eight per cent of the cerebrospinal fluid cultures remained sterile.

5. Under the conditions of our laboratory, the statistics show that there is no significant difference in the percentage of positive cultures from either source at varying hours post-mortem and that the danger of contamination must be limited to a brief interval after death.

6. Our findings point definitely, if indirectly, to the intravital significance of the bacteria found, despite the fact that in no particular instance is the chain of evidence complete.

7. Since the same bacteriolytic substances are found in blood serum both before and for some time after death, there is no reason for supposing that bacteria can grow better post-mortem.

8. We now show that bacteriolytic substances are absent in the cerebrospinal fluid, so that there appears to exist therein no extracellular mechanism for the disposal of bacteria.

9. The facts just stated (7 and 8) may account for the higher percentage of organisms in the cerebrospinal fluid.

10. Among the facts concerning the incidence of bacterial forms are these: Cocci were found in the blood in 26 cases, in the cerebrospinal fluid in 34 cases; streptococci, blood 8 times, cerebrospinal fluid twice; pneumococci, blood 3 times; B. coli-aerogenes group, blood 11 times, cerebrospinal fluid 25 times; B. proteus group, cerebrospinal fluid 7 times.

11. The absence of diphtheroid organisms from our series is remarkable, since in previous years cultivations at the Danvers Hospital had yielded such organisms in several cases.

12. Cultivations from 13 general paretics are listed. In the positive cases, cocci prevail.

13. Nine bacteriologically negative cases are listed.

Reasons are adduced for certain histopathological changes, possibly independent of bacteria, in these cases.

14. Ten cases which failed to show specified histopathological changes are listed, from which it appears that B. coli is not found associated with such cases unless the terminal disease happens to have been brief. On the other hand, cocci are frequent findings in this group.

15. Thirty-one cases which had terminal symptoms less than four days in duration are listed; 29% of these failed to show spinal cord degenerations by the Marchi method (as against 10% in the total series).

16. Of 10 cases selected as showing most numerous spinal fatty degenerations (diffusely scattered blackenings in white and gray matter), 9 showed B. coli communis either in heart's blood or in cerebrospinal fluid, or in both, and 8 in large numbers.

17. Of 18 cases yielding 40 or more colonies of B. coli communis from one or each source, 8 showed extreme degrees of Marchi degeneration, 5 relatively severe changes (intraspinal and intraradicular) and the 5 remaining cases showed considerable intraspinal change.

18. Of 13 cases showing generalized softening of brain tissue (general encephalomalacia), 10 yielded B. coli communis.

19. A definite relation must be assumed to exist between B. coli communis or its toxins and nerve fiber degeneration.

Our Danvers Hospital data concerning *parallel post-mortem cultivations from the blood and cerebrospinal fluid*, coupled with the modern suspicion that the blood is a frequent atrium of infection for the nervous system, led us to undertake further cultivations from the lymphatic system. We hoped to add evidence concerning the possible route of organisms toward the meninges.

We regarded those cases in which there are infective thrombi or other infective lesions opening directly into the blood system, and those cases in which generalized blood infections have been thoroughly demonstrated to occur (e.g., lobar pneumonia), as furnishing adequate data for the hypothesis of such atrium for infection of the meninges. But, barring such easily comprehensible methods of entry, certain current conceptions as to the part played by invasions from the intestinal tract seemed to give point to an investigation of the lymphatic apparatus lying between the intestines and the blood.

Of course, the invasion of the mesenteric lymph nodes or of the mesenteric lymph nodes and the blood by organisms from an injured or ulcerated mucosa almost goes without saying at the present day. Take *typhoid fever*, for example. Typhoid bacilli may be cultivated from the lumen of the intestine, from the intestinal wall, from the mesenteric lymph nodes, from the blood and from various organs. The well-known data concerning early positive blood cultures in typhoid fever in fact suggest that before the establishment of ulcerations typhoid bacilli may penetrate the mucosa and pass by way of the mesenteric lymph nodes into the blood.

Very early in our *systematic cultivations from the blood, cerebrospinal fluid, and mesenteric lymph nodes*, we came upon an interesting confirmation of the idea concerning typhoid fever just stated. As E. T. F. Richards and one of the writers have already communicated, we were able to cultivate from the mesenteric lymph nodes and cerebrospinal fluid of a case of general paresis the typhoid bacillus in pure culture. This was the more remarkable since the intestinal mucosa showed no ulceration or sign of acute lesion. All that the intestinal tract showed was a certain thinning out or atrophy, such as is not uncommonly found in general paresis, and which very probably would favor the passage of bacteria into the lymphatics. The mesenteric lymph nodes of the case showed some reaction to their infection, visible even in the gross. Now the blood contained no typhoid bacilli. The natural supposition is that, of those bacilli which passed into the blood, the majority were speedily killed, but that some effected lodgment in the meninges and there grew. The exudate which characterizes the meninges and the walls of the cortical vessels in general paresis offered a good soil for the growth of the bacilli. Just so, purulent or exudative lesions elsewhere may acquire the typhoid bacillus, which proceeds to grow abundantly and yield the impression of having caused the lesions *ab initio*. In the case in question, it was not difficult to separate histopathologically the lesions of general paresis from the polynuclear leucocytic exudation superimposed by the typhoid bacillus.

In certain other diseases, septicemia may rarely or never occur, as in bacillary dysentery, which may show Shiga bacilli in the intestinal lumen, in the intestinal wall, in the mesenteric lymph nodes and perhaps occasionally in the liver, but rarely or never in the blood or cerebrospinal fluid. Either these organisms do not find proper food in these latter loci, or, what is perhaps more likely, they are killed there by bacteriolytic substances.

Another route from the lymphatic apparatus to the meninges should be mentioned. There is a possibility that the lymphatics of the spinal column and of the spinal meninges may be directly invaded, through lymphatic intercommunications, from the mesenteric lymph nodes and thus from the intestinal lumen, but anatomical, histological and embryological knowledge of the regional lymphatics of the spinal cord is still quite inadequate to cope with this problem, even as an hypothesis. This field should, however, not be excluded from research. It should be observed, in passing, that many of the patients who have lain for long periods in the dorsal decubitus must surely have undergone very little massage of their lymphatics in this region, so that the spread of bacteria against the proper direction in these lymphatics cannot be excluded.

In order to pave the way for more intensive work as to lymphatic spread of organisms, we have undertaken to cultivate organisms from the blood, cerebrospinal fluid and mesenteric lymph nodes in a series of 50 unselected cases. The cases have not all been consecutive because the exigencies of other work in the Danvers Hospital laboratory have made it at times inconvenient to carry out this special work.

The cultivations have been made between November, 1907, and September, 1909, that is, during the pathological services of Drs. E. E. Southard (till May, 1909) and H. M. Adler. The bacteriological work was under the immediate care of Dr. E. T. F. Richards until September, 1908, and thereafter was done by Dr. Myrtelle M. Canavan and in part by Dr. Anna H. Peabody. The work has been almost uniform in method which was largely systematized for the institution during Dr. F. P. Gay's connection as bacteriologist (August, 1906, to September, 1907).

The detail of the methods employed for the blood and the cerebrospinal fluid has been described in a previous article. The cultures from the mesenteric lymph nodes have been made, after searing the surface and section with a sterile knife, by collection in a stiff platinum loop of one or more loopfuls of node material. (The dryer the node, the more loopfuls were taken.) *A priori*, it might not be supposed that a rich seeding of the agar plates would be procured by this method. A considerable proportion of positive cultures was obtained, as is described in detail below. But the evidence of bacterial content is qualitative rather than quantitative.

Growths of some sort were obtained on the plates as follows:

	Cases.
Heart's blood,	41
Cerebrospinal fluid,	43
Mesenteric lymph nodes,	39

Of these growths, a few were obvious contaminations, so that the table should better read as follows:

	Cases.
Heart's blood,	41 − 4 = 37
Cerebrospinal fluid,	43 − 2 = 41
Mesenteric lymph nodes,	39 − 1 = 38

It seems best to calculate the percentage of positive cultures, omitting the contaminated cases from the denominator, whereupon the table stands as follows:

	Per cent. positive.
Heart's blood,	80
Cerebrospinal fluid,	85
Mesenteric lymph nodes,	78

Growths from one region and not from the other two were obtained as follows (contaminations placed after minus sign and reckoned out of the denominators for percentages) —:

		Per cent.
Heart's blood,	1 − 0 = 1	2
Cerebrospinal fluid,	1 − 0 = 1	2
Mesenteric lymph nodes,		0

Growths from two regions and not from the other were obtained as follows (contaminations treated as above) —:

		Per cent.
Heart's blood and cerebrospinal fluid,	8 − 3 = 5	10
Heart's blood and mesenteric lymph node,	3	9
Cerebrospinal fluid and mesenteric lymph node,	8 − 1 = 7	17
Growths from all three regions,	29 − 5 = 24	55

These figures show the statistical chance of obtaining organisms from these regions with ordinary precautions. The most interesting theoretical matter which they seem to demonstrate is that, where cultures are taken from these chosen regions, the cerebrospinal fluid is the most likely to show organisms, and the blood and mesenteric lymph nodes area about equally likely to show them, though less often than the cerebrospinal fluid. The conditions, whatever they are, which permit invasion of these regions and maintenance of organisms there favor the cerebrospinal fluid and the lymph nodes as against the blood.

In the interpretation of these results, the number of hours post-mortem comes into question. The previous work in this laboratory had tended to show that, after an initial period of two hours post-mortem, there could not be demonstrated, statistically at least, any tendency to fresh invasions of the blood and cerebrospinal fluid.

TABLE I.

Percentage of Cases Giving Positive Cultures.

Hours post-mortem.	Number of cases.	Heart's blood Per cent.	Cerebrospinal fluid. Per cent.	Mesenteric Lymph Node. Per cent.
0−2	4	75	75	75
2−4	4	75	100	50
4−6	4	100	100	100
6−12	8	88	75	88
12−24	17	88	82	76
24−48	11	73	100	100
48+	2	100	50	50

The cultivations are so rich from all sources in this series that comparisons of the result of cultivation at varying intervals post-mortem are difficult. In any event, however, there are no significant differences according to the period after death, and the conclusion of the former paper (Gay and Southard) is maintained that. if the invasions are *post-mortem*, they must in the vast majority of instances occur in the first two hours or so after death, that is, when much of the body is histologically alive.

The organisms occurred in the proportions shown in Table II (page 205).

The cerebrospinal fluid leads the other sources in the proportion both of cocci and bacilli found. This fact is wholly consistent with former results and with the fact formerly adduced that the cerebrospinal fluid contains no bacteriolytic substance. With quite proportionate seeding, it is probable *a priori* that this relation will hold.

The same order (1, cerebrospinal fluid, 2, heart's blood, 3, mesenteric lymph node) holds for the general group of organisms found in pure culture (i. e., 1, 24; 2, 21; and 3, 16).

If we consider the cocci alone, however, the blood leads with 20 (cerebrospinal fluid, 17; mesenteric lymph node, 10). An inspection of the data shows that this predominance is largely due to the albus. Removing the albus from all three sources, we arrive at: Cerebrospinal fluid 10; blood, 10; and node, 6.

We must be cautious in drawing conclusions

TABLE II.

Cocci.	Heart's blood.	Cerebrospinal fluid.	Mesenteric lymph node.
Staphylococcus aureus,	5	4	2
Staphylococcus albus,	10	7	4
Staphylococcus aureus and albus,	0	2	1
Staphylococcus aureus, total,	5	6	3
Staphylococcus albus, total,	10	10*	6†
Streptococcus pyogenes,	2	1	0
Unidentified cocci, pure,	3	5	4
Unidentified cocci, with bacilli,	0	0	3
Cocci, total,	20	22	16
Cocci in pure culture,	20	17	10
Bacilli:			
Bacillus coli communis,	1	6‡	5
Bacillus coli communis and staphylococcus albus,	0	1	1
Bacillus coli communis, total,	1	7‡	6
Bacillus typhosus,	0	1	1
Bacilli unidentified and cocci,	0	0	3§
Bacilli, total,	1	8	10
Bacilli in pure culture,	1	7	6
Cocci or bacilli in pure culture,	21	24	16

* 9 + 1 mixed with B. coli. ‡ 1 case doubtful bacteriologically.
† 5 + 1 mixed with B. coli. § 1 case of a bacillus to be specially studied.

from these figures, not only because of their size, but because of uncontrollable variations in technic. It seems to us, however, that elaborations in our technic can do no more than swell the proportion of positive cultures[1] and, although the relations may be altered by further work, the general fact of frequent bacterial invasions of all these three sources must be accepted.

The occurrence of B. coli communis in 7 cerebrospinal fluids and 6 mesenteric lymph nodes as against only once in blood is surprising, although in general consistent with former results. On the basis of the older work, these cases of colibacillosis should show more effects in the nervous system than, for example, cases of staphylococcosis. The general features are as shown in Table III, page 206.

The analysis of these cases of colibacillosis reveals certain facts highly consistent with the hypothesis of B. coli infection of the blood through the lymph system and infection of the meninges by way of the blood. The single case of colibacillemia without cerebrospinal or mesenteric lymph node invasion most probably secured its infection from a cystitis. (A series of appropriate lymph-node cultures in such cases is being made.) Of the purely lymphnodal invasions, two were cases of bacillary dysentery, in which the atrium for lymph node invasion by B. coli is obvious, and the other case showed many fibromyomata of stomach and duodenum with hemorrhages and an acute hemorrhagic pancreatitis. Two of the three combined lymph node and cerebrospinal invasions yield obvious atria, but the third (1226) is less clear (bilateral adrenal tuberculosis). The purely cerebrospinal cases, showing cystitis, pyelonephritis and acute ileitis respectively, are consistent, save that the third case (1257) should apparently have shown B. coli in the slightly enlarged mesenteric lymph nodes.

[1] e.g. more pneumococci, B. influenzæ, etc.

A similar analysis of the cases of staphylococcus invasion has been made, but will not be presented in detail. Cases 1240 (abrasions), 1252 (decubitus), 1220 (septic hand), 1256 (bruises), already mentioned under colibacillosis, sufficiently illustrate the kind of atrium of infection which these cases show.

Of course, we do not wish to convey the impression that we regard all these instances of staphylococcosis as genuine instances of *infection*. Possibly staphylococcus albus lives in many loci for a time without noteworthy effect. The effect of bacillus coli communis is also problematical, although the paper of Gay and Southard presented certain evidence looking to its lytic effect upon nerve elements. These cultivations should be regarded, on present evidence, as *due to invasions, not necessarily to infections, of the loci tested.* The evidence for the truly parasitic nature of these bacteria is for the present no stronger than for their saprophytic character. The method of invasion by saprophytes may not be unlike the method of infection by parasites.

Entry into lymphatics, collection and destruction or survival in lymph nodes, entry of survivors into the blood stream, destruction or survival in the blood stream, lodgment of occasional bacteria in remote loci like the meninges, may be the frequent history of micro-organisms in the body. Bacteriolytic substances in lymph, lymphnode tissue, or blood stream tend to rid the body of the invaders. Those that effect entrance into the cerebrospinal fluid are apparently not ordinarily

TABLE III.

COLIBACILLOSIS.

Autopsy No.	Clinical No.	Sex.	Age.	Mental Disease with Duration.	Terminal Dis. with Duration.	Blood.	Fluid.	Node.
Colibacillemia, 1 case.								
1214	13546	M.	65	Organic dementia, five years.	Cystitis, of some duration.	+	0	0
Colibacillosis, cerebrospinal.								
1240	7687	M.	66	Dementia precox ? alcoholic, sixteen + years.	Abrasions recent, cystitis with calculi.	Albus.	+†	Bacillus?
1252	13876	M.	35	General paresis, three years.	Pneumonia,? days, pyelonephritis, decubitus.	Albus.	+	Albus and bacillus ?
1257	13832	M.	36	General paresis, five years.	Exhaustion, acute ileitis.	Bacillus?	+	0
Colibacillosis, lymphnodal.								
1256	14295	F.	53	Involution psychosis, two years.	Dysentery, eight days. Enlarged, soft mesenteric lymph nodes: many bruises.	Albus.	Aureus	+
1263	13100	F.	73	Senile dementia, six years.	Pneumonia. duration, ?; cystitis, diverticula of intestine, hemorrhagic pancreatitis, bruises.	Aureus.	Albus.	+
1265	14386	M.	82	Senile dementia, one year.	Dysentery, fourteen days.	0	Albus.	+
Colibacillosis, lymphnodal and cerebrospinal.								
1220	14004	M.	85	Organic dementia, duration, ?	Septic hand, acute enteritis.	Albus.	+	+ and albus.
1226	13941	M.	23	Juvenile general paresis.	Addison's disease.	Bacillus	+	+ and albus.
1285	13001	M.	20	Epilepsy, fifteen years.	Status. Hemorrhages in colon and stomach. Swollen and reddened mesenteric lymph nodes.	Coccus ?	+	+

† Doubtful bacteriologically.

subject to directly lytic action and, when they die, die of other causes

In attempting to solve the important *question as to the infectious versus the invasive character of the recovered organisms*, we must divest ourselves of preconceived notions as to the non-significance of certain organisms and the significance of others. To take but one example, staphylococcus albus is in some laboratories regarded forthwith as a contamination, especially when recovered from the blood in life or from the cerebrospinal fluid. The reason for so regarding this organism is grounded perhaps in distrust of technic and in established facts concerning the incapacity of the organism to kill or seriously injure laboratory animals. It seems to us that it might be wiser to accept such findings (with all due precautions concerning technic, repetition of cultivations, purity of cultures and post-mortem confirmation) as evidence of invasion at least, if not of infection. Such parallel cultivations as we have been making should lay a foundation for explaining these findings. Perhaps many otherwise normal and healthy persons may at times show bacteriemia or even cerebrospinal fluid invasions, due to penetration of bacteria beyond the lymph node defences. And in terminal exhaustions, such as we frequently find in the insane, it would seem that these invasions are almost the rule.

Besides those epidermal and intestinal atria which are due to actual molar solution of continuity in the tissues (trauma, hemorrhage, etc.), illustrated in Table III, we must also remember the reduction of lymphoid tissue in the intestinal mucosa seen in several kinds of insanity, as well as alterations possibly characteristic of lymphoid tissue generally in these cases.

There is, for example, a surprising reduction in the volume of spleen tissue in the great majority of our Danvers Hospital cases, which is fairly well indicated by the spleen weights. Thus, in the present series, only three spleens ran 200 gm. or over (1284, 200 gm. an aureus septicemia in a general paretic; 1239, 205 gm. an aureus septicemia in an arteriosclerotic dement of eighty-three years; and 1292, 260 gm. with blood and node cultures contaminated and cocci of unidentified character in cerebrospinal fluid, a general paretic with pyelonephritis). Even including these three cases, the average spleen weight for males (28 cases) was 111 gm, and the average for females (20 cases noted) was 84 gm. Thirteen of the male spleens and 15 of the female spleens ran 100 gm. or less.

The problem is certainly not confined to lymphoid tissue as the livers are also under weight (male average of 28 cases, 1247 gm.; female average of 20 cases, 1113 gm.). The hearts, meantime, average, male 277 gm. (29 cases); female 225 gm. (20 cases), or, with the elimination of 4 male cases having hearts weighing over 410 gm. the male average is 247 gm. (Female maximal heart weight was but 365 gm.) The kidney weights were: Male, average 242 gm. (29 cases); female, average 213 gm. (18 cases).

As far as statistics carry us, then, it would seem

that the lymphoid tissue is subjected to the greatest alteration in these cases; that the livers are also somewhat reduced in bulk.

The conditions in the intestinal tract deserve especial histological study and may explain the frequency of mesenteric lymph node invasions. Before undertaking this, however, it seems advisable that similar bacteriological studies to ours with insane hospital material should be carried out in some general hospital laboratory.

Our selection of mesenteric lymph nodes for special bacteriological study was governed not only by the general suspicion now entertained by pathologists as to the frequency of intoxication *via* the intestines, but also by the statistical frequency of mesenteric lymph node alterations in Danvers Hospital material. From the earliest Danvers records down, the mesenteric nodes have been more frequently noted as subject to lesion than have any other nodes, with the possible exception of the bronchial nodes (so frequently tuberculous).

In our series, enlargement, or enlargement with softening, or enlargement with infection, was noted in over half the cases. A remarkable feature of the findings was that very frequently only one or more nodes in a given group showed such microscopic effects. Such altered nodes were constantly chosen for culture. Moreover, if no palpable nodes could be found, cultures were omitted, so that doubtless our series is biased not a little in the direction of positive cultures.

The preponderance of cases in which isolated nodes and not the whole regionary system are involved leads to the conception of local penetration of bacteria through specially injured surfaces. Here again data from the general hospitals are needed. Multiple cultures from different lymph node systems, and from different nodes of the same system, will throw light on this problem, particularly if the surfaces and organs drained be carefully examined.

Thirty of the 50 cases gave signs of reaction on the part of the intestine, varying from local injections up to definite hemorrhagic and ulcerative conditions. Fifteen cases were, in fact, cases of our epidemic of dysentery. Scybala were found in many more, but without observable reaction thereto. Again, without intending it, we have doubtless biased the results in the direction of positive mesenteric lymph node cultures through the nature of the material. In the absence of the atria afforded by dysenteric ulcers, and in the absence of bias due to the selection of enlarged nodes for culture, a much lower percentage of positives might be obtained.

Bearing this bias of our material in mind, let us consider the cases in the light of the indication afforded by the previous hundred cases, viz., that colibacillosis tended to coexist with soft brains.

Colibacillosis of various distribution occurred in 9 cases (see table above for statistical data).

The case of cystitis with colibacillemia failed to show a soft brain. Two of the cases of purely cerebrospinal colibacillosis (1252 and 1257) showed generalized reduction of consistence of the brain, whereas the third case (doubtful bacteriologically) failed to show a soft brain.

The cases of combined lymphnodal and cerebrospinal colibacillosis were unsuitable for the display of "soft brain," since all three were extreme examples of sclerotic conditions of the central nerve substance which always mask the soft brain. No. 1220 was an organic dement of eighty-five years with cysts of softening and generalized gliosis. No. 1226 was a juvenile general paretic with generalized induration of the brain, emphasized focally by unusually hard gyri. No. 1285 was an epileptic idiot with congenital anomalies and probably some acquired induration of the brain.

One of the two cases of purely lymphnodal colibacillosis showed a brain slightly softer in some places than in others, frankly indurated portions. Another gave no sign of reduced consistence. A third showed soft brain (1265).

Analyzing from the other side, "soft brains" were described in 7 cases. 1252, 1257, 1265, have just been mentioned; 1264 showed a slight general reduction of consistence of the brain, and all three sources showed certain unidentified cocci.

No. 1278's brain resembled 1264's and showed infection of all three sources with a particular bacillus now being especially studied. No. 1336 showed variations in the consistence of different parts of the brain, and all three sources yielded another bacillus which is being especially studied. No. 1304 showed certain softer places in the cerebrum and a remarkable local softening of the spinal cord; blood and fluid were sterile, node contaminated.

The results of this study are in some respects confirmatory of the former study. Doubtless the "soft brain" can be produced in several ways. Bacillus coli communis is at least prominent among the bacteria associated with the condition. The relation in our total series is to be subjected to special study.

SUMMARY.

I. Following the same technic chosen by Gay and Southard for their study of the post-mortem bacteriology of the heart's blood and cerebrospinal fluid in 100 cases of mental disease, the writers have examined 50 further cases from the same source (Danvers State Hospital, Massachusetts), with the addition of cultivations from mesenteric lymph nodes.

II. The material was unselected, save (1) that cases without readily palpable nodes were not examined and (2) that 30 of the 50 cases gave macroscopic signs of intestinal disease of greater or less severity (15 from an epidemic of bacillary dysentery).

III. As in the former work, there were no detectable differences in the proportion of bacteria grown at different intervals post-mortem. (Table I.)

IV. Positive cultivations (excluding a few frank contaminations) were obtained in (*a*) cerebrospinal fluid, 85%; (*b*) blood, 80%, and (*c*) node, 78%.

Table I.

Endemic Dysentery at Danvers State Hospital, Massachusetts, December, 1908—June 1, 1910.

	Dec., 1908 Jan., 1909 Feb., 1909	1909. Weeks ending March 12	19	26	31	April 16	23	May 7	14	27	June 4	11	18	25	July 9	30	Aug. 6	13	20	27	Sept. 10	17	30	Oct. 8	15	Nov. 15	Dec. 1	28	1910. Jan.	Feb.	March	April	May
Ward A—1	No cases during above months.									1										2	4	1	1	1		1		1					
" 2									1			2	1	1	1			2		3	1					3		1					
" 3																																	
" B—1									*1														1							*1		
" 2		2				2	1										1	2	1	1	4											
" 3																				1	2											
" C—1																		1			1	1											
" 2															1			1	2														
" 3																		1				1											
" D—1																																	
" 2																																	
" 3																			1														
Front center																																	
Rear center																																	
Ward G—1																					1												
" 2									1																								
" 3								2											1														
" H—1					1																1												
" 2																	1								1								
" 3								1									1		3	1		1											
" I—1												1									1		1	1	1								
" 2																					2		1										
" 3														1			1		2	2	2		2			3					1	1	
" J—1				1												4	2	2			3		2					2				
" 2			1							1	3	*1			1	2	1	1	3	1	1				1	2		1	†2				
" 3																						1											
Male Tuberculosis Building																						1											
Female Tuberculosis Building																																	
Dayton Hall																		1															
Grove Hall																				1													
Middleton Colony																																	
Other residents, approximate																1																	
Total cases by months					5		3			8				10		10				44			37		8	9		3	2	0	1	1	1 Total 142
Total deaths by months					1		0			4				8		3				9			5		3	4		2	2	0	1	0	0 " 42

*Unsuspected during life. †One of these unsuspected during life.

V. Growths from all three regions were obtained in 55%.

VI. Growths from two out of the three regions were most frequently obtained in cerebrospinal fluid and lymph node (17%), a fact which may be interpreted as due to an effective bacteriolysis in the blood (compare previous article).

VII. Table II gives the incidence of various organisms found: *Cocci* in the blood, 20 cases; in the cerebrospinal fluid, 22 cases; and in the lymph node, 16 cases (staphylococcus aureus in these sources, 5, 6, and 3 cases respectively; streptococci, 2, 1 and 0 cases); *bacilli* in 1, 8 and 10 cases in the respective sources.

VIII. The colibacilloses are especially interesting in the light of the relation between colibacillosis and "soft brains" suggested by the results of Gay and Southard. Our one case of colibacillemia failed to show a "soft brain." Two of three cases of pure cerebrospinal colibacillosis yielded "soft brains," and the third (doubtful bacteriologically) was negative. The three combined lymphnodal and cerebrospinal invasions were unsuitable, being all three instances of extreme sclerosis. Two of the three pure lymphnodal colibacilloses showed "soft brains" (one only in non-sclerotic parts) and the third was negative. Thus four out of seven cases suitable for such display showed palpably soft brains in association with colibacillosis.

IX. Analyzing in the other direction, there were seven "soft brains" in the series, three of which showed colibacillosis; two, infection with special pathogenic bacilli (under special study); one, contamination of node; and one, generalized invasion with certain unidentified cocci.

X. Appropriate atria for the invasions and infections are demonstrable in the majority of instances.

XI. Our findings seem consistent with the hypothesis that in the terminal exhaustions of the insane bacterial invasions are almost the rule. Perhaps otherwise normal and quite healthy subjects may, more often than hitherto suspected, show bacteriemia or even cerebrospinal fluid invasions.

XII. The intestinal wall is a leading atrium, for such invasions, an atrium perhaps the more penetrable by reason of atrophic processes frequently displayed. The livers and especially the spleens are much underweight in the majority of our cases.

XIII. Mesenteric and bronchial lymph nodes lead the other nodes in proportion of diseases displayed in the total Danvers collection. Often only one or two of the lymph nodes in the group exhibited gross lesions.

IX.

Bacillary Dysentery at the Danvers State Hospital, Massachusetts, Subsequent to the Epidemic of 1908.

By Myrtelle M. Canavan, M.D.,
Assistant Bacteriologist, Danvers State Hospital.

The results of our study of bacillary dysentery at the Danvers State Hospital during 1908 brought out certain facts which made a study of post-epidemic, or (more accurately) *endemic*, conditions at the hospital imperative. The study of endemic conditions is peculiarly desirable since the experience of English Continental and American dysentery workers indicates that the importance of asylum dysentery is rarely recognized. The part it plays in the cause of death is often masked by other assigned causes, and institution men are still met with who take the summer incidence of more or less dysentery as a matter of course.

It will be remembered that in the former report we had a choice between a probable introduced carrier and the existence of intramural carriers as the origin of the epidemic. The present work demonstrates the persistence of cases virtually throughout the total period of eighteen months (see below).

The validity of several conclusions from the previous work depends upon the continuance of intensive work on the same lines as before, and the present report contains tables similar to the former ones.

The hospital was free from cases of dysentery four months of the eighteen here recorded, namely, December, 1908, January and February, 1909, and February, 1910. The first fatal case in 1909 was in March, E. H. No. 14015, on a male ward, J2; in the same month two cases occurred on B2, a female ward, widely apart from this, and one case each in wards J1 and H1, thus ushering in the continuous line of cases until February, 1910. During the early summer months the cases were frequent and the mortality high, but in the months of August and September reached epidemic numbers in morbidity, with a decrease in percentage mortality, fell again in October and November, and were absent in February, 1910. (See Fig. 1 and Table 1.)

The hospital during the entire summer was overcrowded, the census reading 1504–1515, with ostensible accommodations for only 1250. Cases of ward transmission by contact, always difficult to avoid, were, under these circumstances, more or less to be expected, according to Osler's dictum of "Food, Fingers and Flies" as agents of transmission in infectious diseases. Effort was made to screen a portion of the hospital at this time and no doubt prevented cases. In future, the efficacy of screens in kitchens, basements and halls, fireplaces, food-cars, etc., should be thoroughly tested.

Middleton Colony was relatively free from dysentery both during and after the 1908 epidemic. Here 250 women are segregated, none of whom had dysentery (1 of 5 male patients living there as helpers had an attack). The transfers from the

main hospital to this colony do not include disturbed, untidy or bed patients. The only possible point of contact with infected material is through the laundry, in this case not a nidus of infection. In the separate buildings where few patients were congregated, which are well ventilated and have individual dining rooms, the disease is limited to one or two cases in a season. On this point compare Table I, Tuberculosis Buildings,

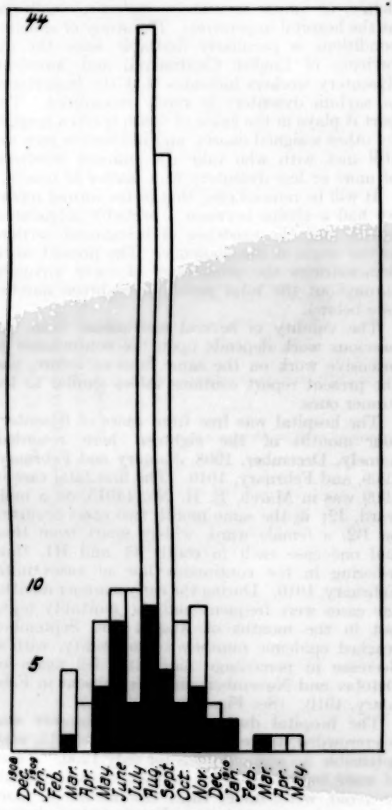


FIG I..

Middleton Colony, Grove Hall, Dayton Hall; but, where bed cases and untidy patients are closely associated, opposite conditions prevail; see wards A2 and B2, I3 and J3, Table I.

It cannot be too strongly emphasized that other infectious diseases need isolation, efficient care and open-air treatment as well as tuberculosis. Little thought is given to dysentery as a terminal disease. It is not required to be reported to the state boards of health, and it is accepted as an annual scourge and cause of death with no real effort at prophylaxis and variety of treatment, especially in hospitals and asylums.

DYSENTERY AT THE DANVERS STATE HOSPITAL, FROM DEC. 1, 1908, TO JUNE 1, 1910.

TABLE II.

	Approximate total.	Cases.	Deaths.	Per cent. Morbid.	Per cent. Morbid.
Patients, male,	605	84	24	13.8	28.5
Patients, female,	820	58	18	7.19	31.02
Physicians, officers, and assistants,	17	0	0	0	0
Nurses,	65	1	0	0	0
Attendants,	50	4	0	0	0
Servants, mechanics, etc.	130	0	0	0	0

TABLE III.

	Cases.	Deaths.	Per cent Mortality.
Bed cases,	32	22	68.75
Other patients,	110	20	19.3

TABLE IV.

	Approximate total.	Cases.	Per cent. Morbidity.
Eating Place.			
Congregate dining room,	565	38	6.7
Ward tables and beds, male,	194	56	28.8
Ward tables and beds, female,	222	44	19.8
Male tuberculosis building,	10	1	10.0
Female tuberculosis building,	17	0	0.
Dayton Hall,	10	1	10.
Grove Hall,	46	1	2.0
Middleton Colony,	246	1	0.4
Front center,	16	0	
Rear center,	40	0	
Supervisors' dining room,	14	0	

REMARKS AND CONCLUSIONS.

1. The post-epidemic conditions in bacillary dysentery at the Danvers State Hospital have been specially studied, and the disease shown to be virtually endemic there (no cases in four of the eighteen months studied).

2. As predicted in the former report, though flies may be responsible for extensive *epidemic* spread of dysentery, the maintenance of *endemic* dysentery is dependent upon another factor. This factor is presumably the bacillus-carrier. (see articles for corroborative evidence.)

3. The immunity of our colony of about 250 female patients (Middleton Colony) as compared with the hospital at large is even more striking in 1909–10 than in 1908, and emphasizes the fact that clothes infection *via* the common laundry can be excluded as an epidemiological factor. Water, milk and food, *except as secondarily infected* continue to be excluded as factors, as well as subsoil disturbances.

4. The peculiar May incidence of dysentery at the Danvers State Hospital, which was brought out strikingly in Ryder's report (Fig. IV, 1908

Report) on the basis of ten years' data is not found constantly, since in 1909 and 1910, May was exceeded by June in number of cases.

5. The data appear to offer a powerful argument for the pavilion or cottage system, as opposed to the massive block system of insane-hospital construction.

GENERAL STATISTICAL DATA.

	Epidemic 1908.	Endemic December, 1908-June, 1910.
Danvers State Hospital population (approximate)	1592	1687
Cases of dysentery	156	142
Percentage of morbidity	9.8	8.4
Fatal cases of dysentery	36	42
Percentage mortality in dysentery cases	23.1	29.5
Distribution by sex.		
Male patients in the hospital (approximate)	600.	605.
Male cases of dysentery	71.	84.
Percentage morbidity in male dysentery	11.8	12.2
Fatal male cases of dysentery	20	24
Percentage mortality, male	28.2	28.5
Distribution by sex.		
Female patients in the hospital (approximately)	800	820
Female cases of dysentery	73	58
Percentage morbidity in female dysentery	9.1	7.07
Fatal female cases of dysentery	16	18
Percentage mortality, female cases	21.9	31.02
Distribution by age		
Average age of all onset of dysentery	48	44
Average age of all male patients at onset of dysentery	49	44
Average age of all female patients at onset of dysentery	47	45
Average age at onset of fatal cases both male and female	58	52

Onset by Decades:

	MALE		FEMALE	
	Epidemic.	Endemic.	Epidemic.	Endemic.
Second	0	5(2 fatal)	2(0 fatal)	0
Third	12(2 fatal)	12(3 fatal)	5(0 fatal)	5(1 fatal)
Fourth	11(1 fatal)	17(1 fatal)	20(4 fatal)	19(4 fatal)
Fifth	13(1 fatal)	19(4 fatal)	16(3 fatal)	15(2 fatal)
Sixth	17(1 fatal)	14(6 fatal)	15(4 fatal)	11(4 fatal)
Seventh	8(5 fatal)	8(2 fatal)	8(3 fatal)	3(3 fatal)
Eighth	8(4 fatal)	8(5 fatal)	5(3 fatal)	2(2 fatal)
Ninth	1(1 fatal)	1(1 fatal)	1(1 fatal)	3(2 fatal)
Tenth	0	0	1(1 fatal)	0

	Epidemic.	Endemic.
Male cases over 50 at onset	35(17 fatal)	50(18 fatal)
Male cases under 50 at onset	36(4 fatal)	34(5 fatal)
Female cases over 50 at onset	30(11 fatal)	34(13 fatal)
Female cases under 50 at onset	43(4 fatal)	24(5 fatal)

Distribution of Mental Diseases.

	Epidemic 1908.	Endemic December, 1908-June, 1910.
General paralysis	10(3 fatal)	22(11 fatal)
Alcoholic insanity	12(1 fatal)	5(1 fatal)
Senile or organic dementia	21(13 fatal)	18(13 fatal)
Dementia precox	49(7 fatal)	40(7 fatal)
Manic-depressive insanity	26(7 fatal)	22(6 fatal)
Imbecility	12(12 fatal)	3(1 fatal)
Others and unclassified	16(3 fatal)	31(3 fatal)

Pathological Anatomy.

	1908 Epidemic.	1908-1910. Endemic
Cases considered,	16	18
Nutrition good,	8	5
Nutrition poor,	8	13
Decubitis,	7	4
Septicemia, (non dysenteric),	7	8
Paraneuraxial (non dysenteric),	6	10
Septicemia and paraneuraxial infection,	5	5

Intestinal Lesions.

Ulcerations,	8(11)?	16
Pseudomembrane,	5(6)?	16
Ulceration and pseudomembrane ulcers confined to large intestine,	4	0
Swelling and congestion,	6	14
Gross lesions of the heart,	15	15
Gross lesions of vessels,	15	13(14?)
Gross lesions of kidneys,	11	16
Gross lesions of liver,	8	14
Abscesses of liver,	0	0
Cholelithiasis,	8	2
Bronchopneumonia,	6	5
Abscesses of lungs,	0	2

Clinical and Anatomical Correlations.

	Epidemic.		Endemic.
Cases considered,	16		18
Dead from 6-8 days after onset,	7	2-8 days,	3
" " 11-16 " " "	6	9-19 "	6
" " 21-35 " " "	3	20 days to 2 years,	5
		Unknown,	4

X.

Organisms Recovered From Dysentery Cases Studied Bacteriologically December, 1908, to June 1910, at the Danvers State Hospital, Massachusetts.

BY MYRTELLE M. CANAVAN, M.D.

The total number of stools studied during this period was 55; scrapings from ulcers of autopsy material, 13. From the stools, the B. dysenteriæ was recovered in 29 instances; from the autopsies in 6; In 68 attempts, there were recoveries of B. dysenteriæ in 35 instances. A bacillus probably of the fowl cholera group was recovered 23 times. There were 10 failures (B. coli, cocci, etc.).[1]

Finding the dysentery bacillus in only 6 out of 13 autopsies is due to fewer (3 to 10) plates being employed, having no second specimen, overgrowth of the colon bacillus, number hours post-mortem, etc. Twenty-seven of the remaining 28 cases were atypical clinically, the attack ushered in by five or six bloody movements, with rapid recovery from the symptoms, and the stools submitted on the second and third day were frothy liquid. One case was typical and three stools were examined with no success in isolation of the B. dysenteriæ. One case was of twenty years' duration, a history so unusual that a brief note is here given.

M. B. No. 14423. A farmer lad living in Maine, aged twenty years, began suddenly to have diarrhea, which persisted despite treatment year

[1] Too many thanks cannot be expressed to Mr. N. Kinsman in appreciation of the faithful and unfailing uniformity in cleaning the multiplicity of tubes and plates used in this investigation.

after year, losing weight in the summer, when the symptoms were most marked, regaining in the winter when the diarrhea abated. After fourteen years of this alternation he began taking Squibb's diarrhea mixture in dram doses, three times each day, with gradual increase, until after six years he came as a voluntary patient to this hospital, fearing he was a morphine habituate. At this time he was consuming 4 oz. of the mixture in three days and still having six or seven movements, with tenesmus. The stool examined showed abundant colonies of a bacillus of the fowl cholera group, and his serum agglutinated stock organisms of the Shiga and Flexner types in dilutions of 1 — 300 and — 250 respectively.

TECHNIC.

The technic was essentially the same as used by Richards, Peabody and Canavan, in the "Report of an Epidemic or Bacillary Dysentery at the Danvers Hospital in 1908," as described by Duval in the "Studies from the Rockefeller Institute, 1904," with the adoption of Shorer's seven-plate method in a few cases, Hiss' semi-solid media for the simultaneous detection of motility and gas production and the inoculation with the organism recovered of the sugars, mannite, maltose, lactose, saccharose, galactose and dextrin (Hiss' litmus sugar serum water). This gave interesting results coupled with the agglutinations: Thirteen did not ferment any of the sugars, 8 fermented lactose alone; these agglutinated Shiga's antidysenteric serum in 1: 200 — 1: 2000 dilutions. The remainder of the organisms showed selective fermentation action in the sugars and somewhat higher agglutinative powers with the Flexner-Harris strain of anti-dysenteric serum.

In no case did the blood, the mesenteric lymph nodes or the cerebrospinal fluid from the autopsied cases show the B. dysenteriæ.

Danvers State Hospital case numbers from which B. dysenteriæ were recovered: 14884, 15102, 15004, 7965–14245, 10098–10580, 14974,14403, (1332), 14275, 15169, 14935, 13642, 13412, 14546, 14870, 14747, 12171–12692, 14695, 14899, 14071, (1326), 14989, 14668, 11023, nurse, 11591–11905, 14849, 13288–14845, 14349, attendant, 14291, 14253, (1332), 14248, 14724, (1341), 14989 (1342),14774, (1343), 14403.

Danvers State Hospital case numbers from which a bacillus of fowl cholera group was recovered: 13759, 14423, 14108, 14496, 15392, 14120, 14971, 12075, 13524, 14758, 15167, 14681, 10881, 7452, 14408, 14255, 14989, 8471, 14520, 14530, 14309, 14770, 14253.

CONCLUSIONS.

1. The endemic cases were of fermenting (14) and non-fermenting (21) types, whereas the epidemic cases of 1908 were mainly due to the Shiga type (13 as against 1 fermenting).

2. The scant fermenters (lactose only) are agglutinated by anti-Shiga serum as well as the non-fermenters.

3. Atypical cases contain an organism probably of the fowl cholera group.

4. The blood, cerebrospinal fluid and mesenteric lymph nodes did not contain the B. dysenteriæ.

XI.

The Persistence of Agglutinins for B. Dysenteriæ in Danvers Hospital Cases, together with a Series of Conglutination Tests.

BY MYRTELLE M. CANAVAN, M.D.

The agglutination reactions begun in 1908 were continued through this period and the results given in Table X. It will be noticed that Nos. 73, 90, 91, 99, 107 and 116 show continued reappearance of the reaction, with an interval of negative results: Transfer of type agglutinations occur in Nos. 73, 90 and 116. In no case did the patient suffer relapse.

As in two cases mentioned by Richards, Peabody and Canavan in the 1908 report (note under Table X) a hint of the pro-agglutinoid zone appears in the reactions of 63 and 116 against Shiga and Flexner respectively in April, 1910.

One case, 116, shows a tendency to periodic appearance of agglutinins (Flexner).

In 12 cases (see Table) the patients' sera were first used in the ordinary agglutination reaction, and later the conglutination reaction of Bordet and Streng was tried simultaneously, with a repetition of the agglutination with the Shiga, Flexner, and B. coli organisms. It was seen to be more delicate than the agglutination (see Nos. 9, 15, 17 Table) in some cases, especially for B. Flexner and B. coli, but curiously not for B. Shiga.

XII.

Mannite- and Non-mannite-fermenting Organisms in a Case of Dysentery, Complicated by Hemorrhagic Endometritis Probably due to a Third Organism.

BY MYRTELLE M. CANAVAN, M.D.

A woman, V. D. 14003, admitted to the Danvers State Hospital, July 10, 1908, sixty-one years of age, passed uninfected through the epidemic which was at its height shortly after her arrival and died on the twelfth day of passing bloody stools, in June, 1909.

She was thought to have had a cerebral hemorrhage two years before coming to this hospital, at the age of fifty-nine, and her father, a heavy drinker, had died of the same lesion at the age of sixty-nine, but her mother is still alive aged eighty-three or eighty-four years.

Typhoid fever was contracted at thirteen years, after which several abscesses over her back developed; beside this and severe headaches her previous personal history is negative.

She was married at twenty-two years and four children were born, three died young. The climacteric occurred at forty-six years. From the time her husband left her, at thirty-five years, until her illness at fifty-nine, she kept a boarding-house and worked very hard to provide a living, and after the "shock" was a threatening and irritable woman, with definite dementia and apprehensive ideas, growing more feeble, restless, noisy and untidy.

The terminal illness lasted twelve days, preceded by a simple diarrhea, during which time her serum did not agglutinate the stock cultures of B. Shiga and B. Flex-

TABLE X.

		Shiga type.			Flexner type.		
		1–20	1–40	1–80	1–20	1–40	1–80
No. 63	Sept., 1908	+	+	0	+	+	+
	Feb., 1909	+	+	0	0	0	0
	March, 1909	+	0	0	0	0	0
	Jan., 1910	0	0	0	+	0	0
	April, 1910	0	0	?	0	0	0
No. 73	Sept., 1908	+	+	+	+	+	0
	Feb., 1909	+	0	0	0	0	0
	March, 1909	+	+	0	0	0	0
	Nov., 1909	0	0	0	+	+	++++ (Colon bacillus)
No. 87	Oct., 1908	+	+	+	+	+	+
	Feb., 1909	0	0	0	+?	+?	0
	March, 1909	++	0	0	+	0	0
	Jan., 1910	+	0	0	0	0	0
	April, 1910	+	+	+	0	0	0
No. 90	Oct., 1908	+	0	0	+	+	+
	Feb., 1909	++	++	+	0	0	0
	March, 1909	+	+	0	0	0	0
	Jan., 1910	+	+	+	0	0	0
	April, 1910	+	+	+	0	0	0
No. 91	Oct., 1908	+	+	0	+	+	0
	Feb., 1909	0	0	0	+	0	0
	March, 1909	0	0	0	+	0	0
	Jan., 1910	+	0	0	0	0	0
	April, 1910	+	+	0	0	0	0
No. 92	Oct., 1908	+	+	+	+	+	+
	Feb., 1909	0	0	0	+	+	0
	March, 1909	0	0	0	0	0	0
	Jan., 1910	0	0	0	0	0	0
	April, 1910	0	0	0	0	0	0
No. 93	Oct., 1908	+	+	+	+	+	+
	Feb., 1909	0	0	0	0	0	0
	March, 1909	+	0	0	0	0	0
	Jan., 1910	0	0	0	0	0	0
	April, 1910	Refused to co-operate.					
No. 96	Oct., 1908	+	+	0	0	0	0
	Feb., 1909	0	0	0	+	+	+
	March, 1909	0	0	0	0	0	0
	Jan., 1910	+	0	0	0	0	0
	April, 1910	?	?	0	0	0	0
No. 99	Oct., 1908	++	++	++	0	0	0
	Feb., 1909	+	0	0	+	+	0
	March, 1909	++	0	0	+	0	0
	Jan., 1910	+	+	0	0	0	0
	April, 1910	+	+	+	0	0	0
No. 101	Oct., 1908	+	+	+	0	0	0
	Feb., 1909	0	0	0	+	+	0
	March, 1909	0	0	0	+	0	0
	Jan., 1910	0	0	0	0	0	0
	April, 1910	0	0	0	0	0	0
No. 107	Oct., 1908	0	0	0	0	0	0
	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	+	+	+
	Jan., 1910	0	0	0	0	0	0
No. 108	Oct., 1908	++	++	++	0	0	0
	Feb., 1909	0	0	0	0	0	0
	March, 1909	0	0	0	+	0	0
	Jan., 1910	0	0	0	+	0	0
	April, 1910	0	0	0	0	0	0
No. 116	Oct., 1908	0	0	0	0	0	0
	Feb., 1909	0	0	0	++	++	++
	March, 1909	0	0	0	0	0	0
	Jan., 1910	0	0	0	+	+	0
	April, 1910	+	+?	0	0	+?	0

TABLE XI.

Case	Days after onset.	Shiga.	Flexner.	Colon.
1	1	+ 1-20	+ 1-20	–
2*	6	0 1-20	0 1-20	–
3	28	0 1-20	0 1-20	–
4	8	+ 1-20	0 1-20	–
5	3 mo.	0 1-20	0 1-20	–
	5 mo.	0 1-20	+ 1-40	0 1-20
	5 mo., cgl.†	0 1-20	+ 1-80	+ 1-80
6	19	0 1-20	0 1-20	–
	70	0 1-20	+ 1-20	+ 1-80
	70, cgl.	0 1-20	0 1-20	+ 1-80
7	12	+ 1-40	0 1-20	–
	90	0 1-20	+ 1-40	+ 1-80
	90, cgl.	0 1-20	+ 1-60	+ 1-160
8	12	+ 1-80	+ 1-80	–
	70	0 1-20	+ 1-40	0 1-20
	70, cgl.	0 1-20	+ 1-80	+ 1-80
9	36	+ 1-80	0 1-20	
	3 mo.	+ 1-40	+ 1-80	+ 1-80
	3 mo., cgl.	0 1-20	+ 1-320	+ 1-320
10	13	+ 1-20	0 1-20	
	70	+ 1-20	+ 1-80	+ 1-80
	70, cgl.	0 1-20	+ 1-40	+ 1-320
11	5 mo.	0 1-20	0 1-20	
	7 mo.	0 1-20	+ 1-20	+ 1-20
	7 mo., cgl.	0 1-20	1-40	+ 1-80
12	36 days	+ 1-20	0 1-20	
	3 mo.	+ 1-20	+ 1-80	+ 1-80
	3 mo., cgl.	0 1-20	0 1-20	0 1-20
13	26 days	0 1-20	0 1-20	
	3 mo.	0 1-20	+ 1-80	+ 1-80
	3 mo., cgl.	0 1-20	+ 1-40	+ 1-320
15	6 mo.	+ 1-20	+ 1-20	
	8 mo.	0 1-20	+ 1-20	+ 1-20
	8 mo., cgl.	0 1-20	+ 1-320	+ 1-320
16	6 mo.	+ 1-80	0 1-20	
	8 mo.	0 1-20	+ 1-80	+ 1-80
	8 mo. cgl.,	0 1-20	+ 1-80	+ 1-320
17	12 days	+ 1-200	0 1-20	
	80 days	0 1-20	+ 1-40	+ 1-80
	70 days, cgl.	0 1-20	+ 1-160	+ 1-160

* Serum at autopsy.
† cgl. = conglutination.

ner. After the frequent bloody stools began it was difficult for her to take nourishment, and she succumbed from exhaustion and toxemia. A stool submitted for examination on the third day yielded two types of the B. dysenteriæ, a mannite-fermenting and a non-fermenting organism. The autopsy was performed by the writer fifteen hours after death and the protocol follows: Age sixty-one. Body of a very emaciated, slender, white female, 160 cm. in length. The left leg is in extreme degree of contraction and the body is in right lateral decubitus with semi-flexion of right leg. Bed sores over sacrum and right trochanter major. Rigor mortis present. Lividity present. Buttocks excoriated. No edema. No bruises. Right pupil, 2.5 mm.; left, 3.5 mm. Teeth: Incisors mere stumps; others seen are foul.

Ventral section: Panniculus scant and of deep orange color and dry. Muscles pink-red. Spleen free; appendix normal. No enlarged lymph nodes seen. Some bloody fluid in pelvis. Intestines injected, especially ileum. Omentum sparse in fat. Bladder distended. Uterus dark in color. Tubes inflamed. Diaphragm arches to fourth interspace on right; to fifth rib on left.

Thorax: Mammary arteries not unusual. The lungs meet in median line, are voluminous and anthracosed. Few adhesions at apices.

Heart: Weight, 195 gm. Cylindrical in shape. Epicardium not notable. Muscle rather softer than usual.

Measurements: T. V., 12.0 cm.; M. V., 8.0 cm.; L. V., 1.0 cm.; P. V., 6.0 cm.; A. V., 6.5 cm.; R. V., 0.3 cm.

Endocardium not notable except in ventricles, where it is slightly thickened. The arch of the aorta is curiously thickened in plaque-like arrangement and on two are recent fibrinous vegetations, 0.5–1.0 cm. in diameter. Aorta in its entire length sclerosed. A puriform thrombus occupies the entire right common iliac artery.

Lungs: Left lung weighs 440 gm. Nothing of note. Right lung weighs 550 gm. At apex a fibrotic and calcified nodule 2 cm. in diameter; no pus seen. The lower lobe is very irregularly firm to the touch. Section

shows a foul green-brown necrotic cavity measuring 2 x 2.5 cm. in center of the lobe. It contains nothing but detritus. Odor marked. In the surrounding tissue firm yellow-red areas are seen which exude pus on pressure. Section floats in water.

Abdominal cavity. — Spleen: Weight, 100 gm. Measures 12 x 9 x 3 cm. On its anterior capsular surface a distinct ridge 6 cm. long by 2 cm. wide is seen. It is somewhat firmer to the touch. On section it is pyramidal in shape; base at the periphery and extends into the organ 0.5 cm. and is easily differentiated from the surrounding tissue (firm and red) by its uniform resistance and light pink color. The upper pole of spleen seems much darker than the inferior. No Malpighian bodies seen. Accessory spleen 2 cm. in diameter attached to superior pole of kidney.

Adrenals: Nothing of note.

Kidneys: Weight 270 gm. They are small and fatty, capsule is stringy and brown. The fibrous capsule is not adherent, but the cortex wells over the capsule on section. The pyramids, deeply brown-blue, stand out sharply from the pale pink-yellow of the cortex, which is but slightly injected. Here and there is an area sometimes blending with the pyramid and of the same color, which area involves the cortex and is not raised or depressed at the periphery. Pelves normal in appearance.

Gastro-intestinal tract. — Esophagus: Is edematous and the mucosa is a dirty brown in color. The fundal end of the stomach is covered in only by the serous coat and on manipulation to remove it ruptured and spilled contents. In various places the muscularis has disappeared, leaving but the outer coat. The mucosa where present is gray and the content of the stomach black-brown and foul smelling. The blood supply appeared as delicate black tracery.

Duodenum: Normal. Much rich bile staining seen.

Jejunum: Normal.

Ileum: Is thin and deeply prune-colored, though no exudate seen until the cecum is neared, where some gelatinous mucus is seen. The cecum is deeply covered with black material (R, bismuth, gr. 5; q. 1 hr.) and only here and there is seen a red solitary follicle. This condition persists until the sigmoid is passed, where the bowel is then thickened; the mucosa is thrown into deep folds and the summits of the folds are hemorrhagic, with here and there a few frank ulcers not more than 0.5 cm. in diameter. These are shallow, with red edges and irregular contour. Rectum practically free below the valves.

Liver: Measures 22 x 23 x 8 cm. Nothing of note except edges are sharp. Weight, 1,250 gm. Section negative. *Gall bladder* negative.

Bladder is distended with deep dark-colored urine. The urethra measures 1.5 cm. in length. Trigone slightly inflamed.

Vagina: White and smooth. Cervix: Edematous and purple black. Os: Not discernible. Uterus is lined by heavy hemorrhagic mucus, with small polyp at fundal extremity. The right tube is red, convoluted, bent upon itself and attached to the broad ligament, near the horn of the uterus. The left is not as marked, but shows the influence of previous inflammation.

Thyroid: Normal on section.

Head: Hair fine, white and abundant. Scalp and periosteum not remarkable. Calvarium: Well supplied with diploe. Dura not adherent to the skull, but thickened along the middle meningeal vessels. Pia is irregularly thickened over atrophied convolutions in frontal and postcentral regions. The pia is very thin and delicate, but over sulci very milky-white. The pia is lifted from the brain cortex by clear fluid sometimes to the extent of 2 to 2½ cm. The consistency of the entire brain is firm. Pia over cerebellum is thickened. Basal vessels slightly and evenly sclerosed. Much excess of cerebrospinal fluid in fossæ.

Brain weight, 1050 gm.

Middle ears: Right normal. Left drum ruptured and dried. Some fresh hemorrhage around pituitary.

Cord: Pale and soft, welling up when cut.

Anatomical diagnosis. Emaciation, contractures of legs, decubitus, excoriation of buttocks, unequal pupils, teeth foul, slight hemorrhagic fluid in pelvis, distention of bladder, focal adhesive pleuritis, slight ventricular endocarditis, vegetations on sclerosed areas in arch of aorta, puriform thrombus, in right common iliac artery, fatty heart, healed tubercle of apex of right lung, chronic fetid bronchitis, gangrene of lung, infarcts of spleen, acute nephritis, fatty kidneys, thin gastric wall, acute ileitis, slight acute colitis, urethra long, acute cervicitis, endocervicitis, acute hemorrhagic endometritis with polyp, chronic perimetritis and salpingitis, diploe marked, atrophy of brain, especially frontal, pre- and postcentral and angular gyri, excess cerebrospinal fluid, basal arteries sclerosed, left ear drum ruptured, cord soft.

The most striking lesions accompanying the dysentery are the abscesses of the lungs, the infarct of the spleen, thrombus of the iliac artery and the acute hemorrhagic endometritis. From the fundus and cervix the third organism was present in abundance of colonies and is identical with the "organism to be especially studied," isolated from the blood and mesenteric lymph node in the case of "ulcerative vaginitis complicating a case of dysentery" (Epidemic, 1908), i.e., a Gram-negative bacillus, which does not produce gas, peptonizes milk, produces indol, is motile, liquefies getation and has a bleaching and coagulating action on the litmus sugar-serum-water of Hiss; is not agglutinated by antidysenteric serum.

The relation of this bacillus to hemorrhages, small and great, seems more than a coincidence, since it has been recovered from hemorrhagic cystitis, submucous hemorrhages in gastric and vaginal walls, in bloody mucus in the intestinal tract, etc.

No cultures were taken from the heart's blood, but from the cerebrospinal fluid and a mesenteric lymph node a coccus was recovered. Serum saved from the pericardial sac at autopsy failed to agglutinate the stains of B. dysenteriæ above mentioned.

XIII.

Primary Adrenal Tuberculosis in Juvenile General Paresis with Meningeal Infection (Bacillus Coli Communis).

BY E. T. F. RICHARDS, M.D., C.M.,

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(From the Laboratory of the Danvers State Hospital, Hathorne, Mass.)

INTRODUCTION.

The following case presents so many features of interest that it has seemed worthy of being placed permanently on record.

Tuberculosis of the adrenal glands is a rare

pathological finding even in autopsies showing advanced tuberculosis of other organs. Its occurrence primarily and solely in the adrenals is limited to only a few authentic cases. In the present instance it will be noted that both glands were extensively diseased, but minute search failed to reveal any evidences of tuberculosis elsewhere.

Considered clinically, many of the classical features described by Addison were present, viz., marked asthenia and apathy; severe and frequent gastro-intestinal symptoms (the disease probably commencing with the attack of so-called "acute indigestion" six years prior to patient's death); attacks of extreme cardiac weakness with the characteristic small, low-pressure pulse. On the other hand, pigmentation of the skin (usually the most striking clinical feature) was limited to the external genitalia (these being colored a deep brown).

It is of interest that the thymus gland was present and fully developed, as its persistence has already been observed in a few cases of Addison's disease. That it plays any part in the symptomatology of the condition is a matter of doubt.

Viewed from the neurological aspect, we have a well-marked train of clinical symptoms confirmed by findings at autopsy, pointing to the diagnosis of dementia paralytica, occurring in a youth and in one in whom no history of syphilis or likely possible opportunity for infection existed. Many puzzling features of the clinical course (at variance with the ordinary symptoms of general paresis) are at once made clear by the findings at autopsy of the remarkable combination of advanced adrenal disease and well-marked chronic meningoencephalitis.

Bacteriologically, the cultivation of bacillus coli communis from the cerebrospinal fluid and from the mesenteric lymph nodes is in accord with findings previously reported from this laboratory, and suggests a probable mode of entrance of many of the late (frequently slight and often apparently unimportant) meningeal infections brought to light in the course of routine autopsy bacteriology.

The details of the case are as follows:

CLINICAL SUMMARY.

Patient is a white male, aged twenty-three years; is quite unable to give any facts relative to his illness, and the following information is furnished by his parents:

After an apparently normal early childhood, he began at the age of eleven to experience difficulty in carrying out his every day school tasks. From then on his mental capacity slowly but progressively deteriorated. Not only in his school work was this deficiency evident, but, in addition, he became dishonest and untrustworthy and developed untidy, uncleanly habits. "At the age of sixteen," his parents state, "he acted and behaved as a child of six."

In his seventeenth year he was taken with a severe attack of so-called "acute indigestion." This seemed to be the starting point of a generalized gradual paresis, as from then on, it is stated, he began to slowly lose the use of his limbs. By the time he had attained the age of twenty-one his writing had become illegible and his limbs so weak that he was unable to get into or out of a carriage. In his twenty-second year he was committed to the Danvers State Hospital.

Notes on admission indicate that the patient appeared from eight to ten years younger than the age given (twenty-two). Subcutaneous fat excessive, muscular development fair. Marked tremor of the extremities and tongue, accentuated by voluntary movements. The left eye diverged outward, and the left pupil was smaller than the right. The skin of the genitalia and groins showed an excess of pigment, but the axillæ, areolæ of nipples and mucous mumbrane of mouth were free. Genitalia undeveloped. No palpably enlarged glands. *Heart, lungs* and *abdomen* negative. Temperature, pulse and respiration normal. The neurological data contained much of interest. There was a generalized muscular weakness, but no actual paralysis. The patient was unable to walk in a straight line, and Romberg's position could not be maintained. Marked tremor was present in the hands and lips. There was bilateral impairment of vision and nystagmus. Reflexes and sensations normal. Speech was markedly affected, all syllables being very much slurred. School knowledge and memory for both recent and remote events very poor. The patient's habits were very untidy. He was very emotional, easily made to laugh or cry; and in behavior, extremely childish.

Two months after his admission to hospital, the weakness suddenly became extreme. He was constantly nauseated, refusing food. The face and hands were cyanosed and the heart's action rapid, weak and irregular. This attack lasted for a week and was followed by a period of improvement, during which, however, he still remained very weak and apathetic.

One month later he again became so feeble that he was unable to raise himself in bed. He complained persistently of feeling very "sick." His temperature was elevated and there occurred the same train of circulatory symptoms observed previously, viz., rapid and tumultuous action of the heart, with cyanosis of face and extremeties. He soon became unconscious, remaining so until his death, which occurred on the seventh day of the acute attack.

Autopsy Report. Head, E. E. Southard; trunk, E. T. F. Richards; cord, M. M. Canavan.

Body of an extremely well-nourished white male, aged twenty-three years. Absence of hair on face and in axillæ. Pubic hair abundant. Body length, 143 cm. Rigor mortis present. Marked lividity of dependent parts. Pupils slightly irregular in outline and slightly unequal in size; right, 6 mm.; left, 5 mm. Over the lower end of right radius, 2 cm. above tip of styloid process, is an old irregular scar firmly binding skin to subjacent bone. On inner aspect of lower third of right leg the epidermis is raised by a collection of clear serum for about a distance of 3 cm. A similar

serous collection is present over the external malleolus of left leg. The skin of the genitalia and groins is of a dark brown color. No abnormal pigmentation of remainder of skin surface is to be made out.

Peritoneal cavity: Fat in abdominal wall 5 cm. deep. No free fluid. Omentum excessively fatty. Appendix retrocecal, 10 cm. long. Mesenteric lymph nodes not enlarged.

Pericardeal cavity: Normal.

Pleural cavities: Firm adhesions bind lower half of left lung to chest wall.

Heart: Weight, 260 gm. All valves healthy. Myocardium somewhat pale, but of normal consistency. Coronary arteries normal.

Measurements: Left ventricle, 1.5; right ventricle, 0.2; mitral valve, 9.5; triscupid valve, 11; aortic valve, 6.5; pulmonic valve, 7.5.

Lungs: Weight: Left, 320 gm.; right, 375 gm. Right lung is perfectly divided into four distinct lobes; upper and lower, and two central or middle lobes.

The posterior portions of the lower lobes of both lungs are very dark, and on section moist and frothy. Both lungs are crepitant throughout. Apices negative.

Liver: Weight, 1345 gm. Edge sharp. Cut surface somewhat greasy and pale. Substance of normal consistency.

Spleen: Weight, 120 gm. Not remarkable.

Kidneys: Weight, 290 gm. In both, capsule strips readily, leaving a smooth surface. Cortex, 5 to 8 mm. Glomeruli visible but not prominent. Cut surface somewhat pale.

Adrenals: Both are enlarged to about twice their normal size and are extremely firm. On section the ordinary dark soft tissue of the medullæ is completely replaced by numerous firm yellowish areas. These are in the form of circumscribed nodules, of uniform consistency throughout (nowhere showing any breaking down) and of similar appearance and distribution in both organs. The cortices appear normal.

Gastro-intestinal tract: Rugæ of stomach present but poorly marked. Intestines negative.

Bladder: Negative.

Testicles: Not remarkable.

Organs of the neck: Lying in front of and upon the arch of the aorta and the great vessels is a gland-like structure which, when traced upward, is seen to divide into two distinct lobes. These extend, one on each side of the trachea, up to the lower border of the thyroid, where they terminate. The structure from above down measures 7 cm.; laterally, 5 cm.; and in depth, 0.5 cm. Its cut surface is pinkish in appearance.

The *thyroid gland* is smaller than usual, measuring from left to right 5 cm.; while each lobe from above down is 2.5 cm.

Trachea: Mucosa thickened and reddened.

Head: Hair abundant, dark. Scalp normal. Calvarium, weight 435 gm., transparent in bregmatic region only, elsewhere thick and dense. The average thickness of the vertical plate of the frontal bone is 7 mm. The frontal bone shows a moderate thickening and hardening of the inner table with obliteration of diploe. Dura mater moderately adherent to bregmatic region of calvarium. Arachnoidal villi moderately developed. Sinuses not remarkable. Pia mater shows a moderate focal thickening with opacity, especially along sulci. Vessels well injected. *Brain:* Weight, 1,200 gm. The brain shows marked focal variations in sulcation and consistence. Spread on a board, the right hemisphere is obviously somewhat bigger than the left. There is a difference of only 0.5 to 0.75 cm. on measurement of the greatest circumference of the cerebrum, taken from the median line superiorly to the median line inferiorly, but the right hemisphere is throughout slightly more convex than the left. Both *postcentral* gyri are much narrowed in their superior portions, and the sulci posterior thereto are deeper than the other sulci of the hemispheres. The sulci of the orbital surfaces are asymmetrical and, on the left side, show a tendency to microgyria. The cerebral hemispheres as a whole show a remarkable tendency to slight protrusion of the border gyri; thus the gyri of the two poles, of the free edges along the great fissure, and most strikingly the gyri at the boundary line between the inferior and lateral surfaces. This *marginal prominence* is slight but obvious and is emphasized by a slightly paler color in some regions. The cerebrum shows a general induration which is greatest in the frontal tips and along the inferior borders of the lateral surfaces of the hemispheres, especially right. The orbital surfaces are firm, especially anteriorly and externally (prefrontal); the tips of the temporal lobes are firm, and the superior temporal gyri are firmer than adjacent gyri. The postcentral gyri are indurated more than the other gyri of the superior surface. The hippocampal gyri are likewise firmer than adjacent gyri.

Cerebellum and pons: Weight, 145 gm. The inequality of the two hemispheres is more marked than in the case of the cerebrum.

Greatest lateral diameter; Left, 4.5 cm.; right, 5.5 cm.

Anteroposterior diameter adjacent to notch: Left, 5.8 cm.; right, 5.5 cm.

There is no appreciable difference in depth. The diminution in volume appears to be chiefly at the expense of the *right clivus*. The inferior surface is firmer than the superior. The laminæ adjacent to the horizontal fissure are firmer than the remainder of the cerebellum. The *pons* is small.

Middle ears not remarkable.

Retinæ show no gross lesions.

Spine: There is a sharp right lateral curvature in the lower cervical region. The bony canal is narrowed in its entire length. Dura adherent to pia-arachnoid. Cervical portion of cord much softer than normal.

Anatomical diagnoses: Bilateral adrenal tuberculosis, persistent thymus, hypostatic congestion of lungs, tracheitis, chronic adhesive pleuritis, four lobes in right lung, chronic gastritis, obesity, small thyroid, irregular and unequal pupils, pigmentation of genitalia and groins, dense calvarium, chronic osteitis (frontal bone), chronic external adhesive pachymeningitis, chronic sulcal leptomeningitis, right hemisphere larger than left, atrophy of superior portions of postcentral gyri, asymmetry of orbital gyri, microgyri (orbital) of left side. Marginal prominence of cerebral gyri with gliosis, general cerebral gliosis, especially frontal, temporal, orbital, postcentral and hippocampal gyri, atrophy of right clivus, gliosis of inferior cerebellar surface, gliosis along horizontal fissure, pons small, lateral curvature of spinal column, adhesions between spinal dura and pia mater, cervical cord soft.

Autopsy bacteriology. — The bacillus coli communis was isolated in pure culture from the mesenteric lymph nodes and from the cerebrospinal fluid in cultures taken at the autopsy table. The heart's blood contained a Gram-positive, non gas-producing bacillus.

Guinea pigs inoculated intradurally with cultures of the colon bacillus obtained from the cerebrospinal fluid and subsequently killed, showed patchy meningeal exudates made up of lympho-

cytes with occasional polynuclear leucocytes and eosinophiles.

Microscopical examination. — Adrenals: The central portions are in their entire extent converted into a diffuse homogeneous material, which stains poorly. Beneath the capsule there is an extensive heaping up of lymphocytes with an occasional scattered polynuclear leucocyte. Only in one or two small isolated areas does the normal columnar grouping of cells remain. In many places along the edge of the homogeneous caseating center there are well-preserved giant cells. Toward the extremity of the organ there are several small areas which show necrosis and giant cells with surrounding lymphocytic infiltration and beyond this newly formed connective tissue. Scrapings from the cut surfaces of the glands contain many tubercle bacilli.

Lungs: Sections from the posterior portions show the alveoli filled with red blood cells in various stages of degeneration, scattered leucocytes and occasional epithelia cells. The capillaries are much congested and in many places broken through into the alveoli. Sections from the apices and elsewhere reveal only normal lung tissue.

Heart muscle: Normal.

Kidneys: Lining epithelium of the tubules well preserved. Glomeruli not unduly congested. No connective tissue overgrowth.

Thymus gland: Cellular elements for the most part collected into compact areas of considerable size, the intervening substance being made up of fat and connective tissue. Hassall's corpuscles numerous and well preserved.

Pancreas: Negative.

Spleen: Negative.

Thyroid gland: Not remarkable.

Lymph nodes: Not remarkable.

Cerebral cortex: The diagnosis can readily be made of general paresis in the sense of a chronic meningo-encephalitis showing lymphocyte and plasma-cell infiltration of the vessel walls, irregular nerve cell destruction and corresponding gliosis. The picture in the frontal region is especially characteristic. The plexiform layer contains an excess of neuroglia cells.

XIV.

A Case of Autochthonous Sinus Thrombosis.

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THE following is a study of a case of extensive sinus thrombosis of the cerebral sinuses. It is of interest because of the extent of the thrombus and the slowness of its development; also because of the probable origin in a focus of sclerotic vessels in one of the lateral sinuses.

The present history has been condensed from notes taken during the service of the writer at the Danvers State Hospital. The case was studied while on the wards of Dr. H. W. Mitchell.

Clinical history. — The patient was a merchant, forty-nine years of age. His family history was good. He had been a rugged healthy man, having had but one illness, an attack of tonsillitis six years previous, but during the last year he had suffered frequently from headaches, at times severe, though not so as to interfere with his business. He smoked excessively, but did not use alcohol. Syphilis and gonorrhea were denied.

On April 1, 1905, after attempting to suppress a sneeze, he complained of a sensation of something having given way in the left side of his head. A few minutes later a very severe headache developed. This headache was chiefly on the left side of the head and was accompanied shortly by nausea and excessive vomiting. Vomiting, pain in the head and epigastrium, persisted for twelve hours before any relief was obtained.

The second day he appeared dazed and confused, his speech was thick and difficult to understand, probably at times incoherent and periods of semi-consciousness developed when he could scarcely be aroused. There was very little change in this condition for four weeks. His temperature during this time varied from 97° to 99°.

In the fifth week a gradual change developed. He grew emotional, frequently crying when he attempted to speak with friends. He was also very restless and irritable. Visual hallucinations became prominent and in reaction to these he made vicious attacks on his nurses. It became difficult to restrain him and he was committed to the Danvers Insane Hospital on May 6.

When admitted he was in a stuporous state, lying with eyes closed, quiet or mumbling to himself and could not be aroused to answer questions with intelligence.

Physical examination. — Patient was a man of large frame, exceptionally well developed and nourished. The lungs showed moderate dulness and a few râles at both bases. The heart sounds were faint. The radial and temporal arteries were soft. The pulse was regular but showed very poor tension; rate, 96. The tongue was dry and heavily coated. The urine was concentrated, showing a trace of albumin, but no renal elements were found.

Neurological examination. — The patient had little general muscular strength and all movements were feeble and uncertain. There were no paralyses, but weakness was more evident on the right side. The cranial nerves in general, as far as could be tested with patient's lack of co-operation, were unaffected. The tongue protruded in the median line, but was turned to the left with difficulty. There was no marked difference in the labio-nasal folds.

Reflexes. — Knee jerks, right very lively; left, sluggish. The Achilles tendon reflexes were obtained on both sides. Ankle clonus and Babinsky reflex were absent. The right elbow jerk was more lively than the left. The pupils were equal and regular and reacted promptly to light and accommodation.

Sensations. — The right leg and foot were much cooler to the touch than the left. Reaction to pin pricks appeared equal on both sides and response was fairly prompt and active. Temperature, variable, 98° to 100.8°.

Note. May 9, 1905. The condition of the patient has been variable; for the most part he has been restless and active, pulling at the bedclothes and attempting to climb out of bed. He occasionally calls out for somebody in a loud voice. In reaction to an hallucination he made an attack on an attendant, accusing him of killing some one. He became quiet with small doses of veronal. At intervals he makes intelligent response to questions, showing a fair orientation for time,

but is confused for place and persons. His speech is very difficult to understand, remaining thick and paraphasic. Tests show both motor and sensory aphasia and a disturbance of the stereognostic sense, objects being fairly well recognized in the right hand, but not in the left. Hallucinations are constant, particularly visual. Pulls and searches the bedclothes, makes diving and dodging motions and sees relations sitting beside him. On being examined by physician he showed partial insight into his condition and made some attempt to follow out directions. Cries frequently when mention is made of his condition and also without any apparent cause. Occasionally flinches and cries out as if in pain when being moved, though no tenderness can be elicited. Takes nourishment only upon urging. Temperature not above 99.2°. Blood examination shows hemoglobin 95%, red count 6,400,000, white count 8,000.

May 13. Much weaker and less restless. Lies in a stupor most of the time, with head and eyes turned to the right. Pupils are small. Reflexes are lively throughout, right side possibly more so than left. The left arm is apparently spastic on motion. No Babinsky reflex or ankle clonus are present. When disturbed he cries out and becomes quite resistive.

May 17. Breathing has become stertorous and it has become difficult to arouse him from stupor. He rarely moves his extremities. The right arm and leg are flaccid on passive motion. Yesterday a Babinsky reflex was obtained on the right, otherwise there is no change in reflexes. Fundus examination shows marked injection of vessels, but was otherwise negative. A cough has developed and symptoms of bronchopneumonia. Temperature varies from 99.4° to 101°. Coma became deeper and he died on the afternoon of this date.

Clinical summary. — A rugged, healthy man of forty-nine, with history of frequent severe headaches for a year, has an attack of sudden onset, with violent headache and vomiting lasting over twelve hours. Periods of somnolence, aphasia and increasing weakness of the right side follow, with temperature chiefly subnormal. Later hallucinations, delirium, hemiplegia, deepening stupor and coma, death at the end of six weeks.

Autopsy eight hours post-mortem by Dr. A. M. Barrett showed an acute purulent bronchitis and pulmonary hypostasis with areas of consolidation. Cultures from the heart's blood and spleen were negative, but from the liver the streptococcus pyogenes and a colon-like bacillus were obtained.

The brain weighed 1460 gm. The diploe in the lateral parts of the calvarium were moderately congested. The dura was lightly adherent over the frontal region. The left sigmoid and transverse sinus was filled with a mixed red and gray clot, apparently filling the entire lumen and intimately adherent to the dura. This continued into the longitudinal sinus, but here the clot was narrower, only partially filling the lumen; it was more reddish than gray and less adherent than lower down. Save for slight congestion of the cancellous tissue, the temporal bone was not notable. The pia mater was clear except for a few small hazy flakes along the course of the larger vessels. The vessels of the pia were moderately congested. The basal arteries were free from gross changes. The brain was of good consistency. The ependyma of the fourth ventricle was finely uneven. Save for a general pinkish coloration of the cortex and slight congestion of the vessels of the white substance, the brain was not notable.

Microscopical examination. Sections from the thrombus show a fairly well-organized blood clot, with numerous new formed blood vessels and many phagocytes filled with coarse brownish-yellow granules. Areas of fresh hemorrhage appear in the sinus wall as well as in the thrombus. Leucocytes do not appear in any numbers. In the sinus wall are a few small arteries with quite marked arteriosclerotic changes, some of which show a proliferation of the endothelium almost obliterating the lumen.

Cortex (superior, frontal, precentral, temporal, calcarine, regions studied, E. E. 8.). — The blood vessels of the cortex are dilated and much congested everywhere. No marked sclerotic changes are observed either in the larger arteries of the white matter or the small cortical vessels.

Study of the neuroglia and nerve cells show chronic and acute changes. There is a mild degree of cellular gliosis of the white matter, also a mild fibrillary gliosis forming the extreme outer shell of the subpial layer (Heidenhain stain). Of the more acute changes, the best examples are found in the layer of large external pyramidal cells and in the substellate layer were numerous cells more or less replaced by satellites. This later change seems to be focally more severe.

Nissl preparations demonstrate cell bodies of a spongy yellowish appearance due to a form of pigment scattered diffusely through the cell body. This pigment was especially studied in Heidenhain preparations, which demonstrate varying degrees of change. This pigment appears in varying amounts in and around many of the blood vessels. The same regions which exhibit the most marked satellitosis tend to show in Heidenhain preparations the most marked intracellular pigmentation, i.e., the layer of large external pyramids and the substellate region.

The nuclei are only occasionally destroyed. Very few definite examples of axonal reaction are shown. For example, in the motor area the large motor cells show great variation in staining quality, size, appearance of nuclei and Nissl bodies, but axonal reactions are almost never in evidence.

Anatomical summary. — Bronchopneumonia, a well-organized thrombus filling the left sigmoid and transverse sinus and extending into the longitudinal sinus. Moderate congestion of the vessels of the cerebrum. Focal sclerotic changes occurring in the walls of the affected sinus.

Chronic cellular and fibrillary gliosis in the cortex, chronic perivascular cell pigmentation, acute changes in the nerve cells with general intracellular pigmentation and satellitosis. The layer of large external pyramids and the substellate regions in general exhibit the most severe changes.

Discussion. — The case was clinically doubtful. The most likely diagnoses made in life were brain tumor, apoplexy and meningitis. Upon review of the complete history, it seems that brain abscess, encephalitis and sinus thrombosis might well be considered in similar cases. The true diagnosis of sinus thrombosis was not seriously thought of by any of the physicians dealing with the case in life.

Considering these possible diagnoses more fully, we had in favor of brain tumor the subacute course with stupor, gradually developing weakness and aphasia. On the other hand, the sudden onset with headache and vomiting more severe at first, while later disappearing; and also the absence of optic neuritis were strongly against this disease. The same considerations applied largely to brain abscess. The majority of cases of brain abscess occur by extension from some purulent or destruc-

tive process, most commonly otitic in origin. No primary focus of infection was evident in the examination of this case. The character of the pulse might have helped in deciding against brain abscess. As in the latter condition, the pulse is generally slow. This case had rapid pulse.

Encephalitis may run a very similar course, particularly the acute hemorrhagic encephalitis (Strümpell type). An acute onset without prodromal symptoms is the rule, though generally the course is short, fulminating and characterized by high temperature. Also this condition is rare in adults.

The evidence for meningitis was slight in the absence of the common phenomena of muscular rigidity and contractures. Also important was the absence of pyrexia until late in the course of this disease (explainable by pulmonary complication).

Apoplexy was not likely with the history of this case unless one considered the onset of severe headache and vomiting in the light of prodromal symptoms, followed later by periods of semiconsciousness due to hemorrhage. The aphasia and hemiparesis, as well as the mental disturbance, were consistent with such a diagnosis. But strongly against the diagnosis of apoplexy was the markedly low tension pulse.

In this case the symptom most characteristic of sinus thrombosis was missing, i.e., congestion of the veins of the cranium and face. Oppenheim states that, in the absence of this symptom, no positive diagnosis can be made.

Bertier distinguishes between surgical thrombosis, which is usually due to some local cause, suppurative in nature and limited in extent, and medical thrombosis, which arises from general blood states or causes acting from a distance and which is non-suppurative and widespread in character. He says in adults chlorosis acts as the most important predisposing factor for medical thrombosis. Many authorities agree that a lesion of the endothelial lining of a vein is essential to the formation of a thrombus. In most cases this is undoubtedly of organismal origin, but one cannot affirm that all are due to an infective agent. In this case no focus of infection was found and the microscopic appearance of the thrombus does not favor it.

Talley and Wimmer each report very similar cases. Talley's case was of a woman of forty-six who had constant headaches for two years. Headaches became rapidly worse and were accompanied by nausea and vomiting. There was extreme distention of the veins of the head and neck. The arteries were hard, pulse was slow, 40–60. Her temperature varied between 96° and 99° throughout. The persistent headache gave way only to begin coma. Death occurred three weeks after the acute onset. An extensive partially organized sinus thrombus was found at autopsy. No seat of infection was discovered.

Wimmer's case was a man of fifty-two, suddenly seized at work with paralysis of the right arm and general trembling, followed by weakness in the right leg and the same evening twitching in the right side of the face. There was no loss of consciousness during the first day. Convulsive attacks beginning in the right arm, followed by a condition of coma, lasting half an hour, developed and recurred at frequent intervals, death in four days. There was found thrombosis of all the large sinuses, of the minute pial veins and small hemorrhages. The cortical arteries were unaffected.

Sinus thrombosis in adults is productive of quite complex symptoms. According to Bertier, violent headache, followed at varying intervals by cerebral vomiting, vertigo, epileptic seizures, paralyses, delirium and coma, would constitue a typical case resulting from severe chlorosis. Hyperpyrexia may occur two or three days before the disease is fatal. Organization of the clot, with consequent hydrocephalus or paralyses, may occur. It is certain from a study of this case that absorption of the thrombus with complete recovery may occasionally take place.

The arteriosclerotic vessels in the sinus wall suggests a probable cause. A weak vessel gave way under the increased blood pressure and a small hemorrhage occurred. This led to other hemorrhages, starting a vicious circle similar to the condition found in internal hemorrhagic pachymeningitis. The fresh hemorrhages in the thrombus help to confirm this idea.

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XV.

The Diagnosis of Fractured Skull Aided by the Finding of Brain Tissue in the Vomitus.

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The following case illustrates a curiosity in the diagnosis of skull fracture, based on the finding of brain material in the gastric contents.

An electric car conductor, thirty-five, sustained a fracture of the skull from collision with a telegraph-post while on the running-board of his car. On removal to the Lawrence General Hospital, two hours after the accident, the patient showed an obvious depressed fracture of the right frontal bone, and while on the accident table began to vomit bloody fluid. The vomiting was extensive (1 to 6 oz.) and lasted eight hours. At the third or fourth attack of vomiting, a bit of material was observed on the blanket which macroscopically suggested fresh brain tissue. This suggestion was later microscopically confirmed. The patient died sixty-five hours after the accident. The patient spoke no words while in the hospital, but was restless, spontaneously arising from bed, was without paralysis and

would resist attempts at examination (such as gagging of mouth or lifting of eyelids) by inco-ordinate movements of arms and legs. On gagging the patient uttered long, loud, ah sounds. Later the patient groaned, habitually breathed through the mouth and a few hours before death became cyanotic.

The temperature in axilla, 101.2° nine hours after accident, rose to 102° eight hours later. Operation (removal of a fragment of the frontal bone by Dr. Durant, of Haverhill) was followed by temperature of 100° next morning. The temperature then rose steadily to 102.6° before death.

There was no systematic examination of reflexes. The knee-jerks were neither markedly decreased nor increased. The pupils were moderately and equally dilated.

The details follow:

Personal history: H. L. W., aged thirty-five, married. Conductor on the Boston & Northern Street Railway.

Accident: On June 8, 1907, 11 P.M., patient stepped from the rear platform onto the running-board of the car, which was going very fast and around a curve, where fares are not generally collected on account of closeness of the car to the trees and posts. He was immediately struck on the head by a telegraph-post which was leaning toward the track. Patient was knocked off the car and taken to a drug store and thence to the Lawrence General Hospital, where he arrived at about 1 A.M. June 9, 1907.

Examination: In the admitting room patient remained quietly in a dorsal decubitus. Pulse 88, good volume and tension, slightly irregular. Respirations, 40. Eyelids greatly swollen and closed and were with difficulty opened. Pupils moderately and equally dilated and did not react to light. Over the left frontal bone there was seen a deformity, apparently that of a depressed fracture. Palpation confirmed this view. Patient began to vomit blood and stomach contents, the greater part of which were received in a basin. Once, however, the patient vomited so suddenly that some of the vomitus went onto the blanket on the table on which patient lay, and it was in this specimen of vomitus that a bit of tissue was seen, about 1.5 cm. by 0.5 cm. in size. On first inspection this looked like brain tissue. A section was made and this idea still further strengthened by seeing what was taken to be white and gray matter. Specimen was placed in alcohol. A mouth gag was then inserted which was very actively resisted by the patient, who yelled loudly. Blood was seen oozing from the nasopharynx, and this was spattered over physician by patient's screaming. Palpation of the pharynx and nasopharynx was tried, but examination was unsuccessful.

Subsequent history: Patient was then sent to the ward and continued to vomit bloody fluid for the next eight hours; he grew very restless and noisy and had to be held in bed. At 8 A.M., June 9, 1907, pulse was 72, respiration 32, temperature 100.2° by axilla. Patient was less restless at this hour, 8 A.M., unable to take nourishment and voided urine involuntarily. At 2 P.M., June 9, 1907, patient tossed his head about, groaned considerably. At 4 P.M., pulse 82; respiration 34; temperature, 102° F. and quite restless. At 6.30 P.M., pulse 110; respiration, 34. At 9 P.M., June 9, 1907, ether was given and patient operated on. An ugly depressed fracture of the right frontal bone was found, from which lines of fracture ran in different directions, one downwards towards the anterior fossa; the right frontal bone was quite movable. A piece of bone 3 cm. by 2 cm. was removed and patient sent back to ward at 10.15 P.M. Pulse, 90; respiration, 26. At 11.45 P.M., June 9, 1907, respirations were slightly irregular and patient again became quite restless and had to be held. Voided at this hour involuntarily. At 4 A.M., June 10, 1907, pulse, 72; respiration 30; patient still restless. At 8 A.M., same date, pulse became irregular and varied from 80 to 120; temperature 100° F.; respiration, 30. At this hour he took ounces of liquid nourishment with difficulty, which he continued to take every three hours until 12, noon. June 11, 1907, with increasing difficulty. June 10, 1907, 4 P.M., pulse, 110; respiration, 38; temperature, 102.2°; both pulse and respirations irregular. At 8 P.M., same date, respirations became Cheyne-Stokes in type and patient had become quiet and remained so until death. June 11, 1907, 4 P.M., pulse 140, very irregular and weak; respiration, 72; expelling brown-colored froth with each expiration and patient cyanotic. June 11, 1907, 12 P.M., pulse, 140+, weak and irregular; respirations 70 and irregular; temperature, 102.6° F. June 12, 1907, 4 P.M., patient died.

Autopsy: A partial autopsy was performed by Dr. Dow, medical examiner. The diagnosis of skull fracture was confirmed. From notes of this autopsy it is gathered that there was an extensive stellate fracture of the right frontal bone. A small portion of bone was found loose in the extradural space at the locus of fracture; this piece had not been removed at operation. Beside this remaining fragment of bone, there was an extradural clot, presumably largely an effect of operation. After removal of the brain, a fracture of the right orbital plate was found, continuous with the edge of the pre-operative depressed fracture and the whole cribriform plate had been subject to a comminuted fracture, among the fragments of which the posterior portion of the orbital plate had been imbedded. The orbital and lateral surfaces of the frontal lobe were subject to extensive laceration. No accurate mapping of the dislocated areas was made. It seems likely that the posterior fragment of the orbital plate had been driven inward, slightly forward and upward, so as to override the anterior fragment. The possibility of this is indicated by the mobility of the broken frontal bone, when grasped by the free edge anterior to the depressed fracture, as demonstrated at operation. Such an injury might conceivably have clipped off a portion of the orbital cortex, which may then have been carried into the nose. It is unfortunately now impossible to localize or describe this mechanism more closely.

Microscopic examination. — Microscopic examination quite confirmed the anatomical diagnosis of brain tissue. Moreover, it seems possible to localize the original site of the vomited tissue as from some portion of cerebral substance having the intermediate precentral type of cell arrangement. And, if the surgical and autopsy data are also considered, it seems highly probable that the fragment was derived from that very small tongue of tissue having the intermediate precentral type which is prolonged from the flank of the hemisphere to the orbital surface. [1, 2]

The intermediate precentral cortex closely resembles the precentral or motor cortex proper in point both of fibers and of cells. The intermediate precentral cortex is somewhat less rich in nerve fibers than the precentral. The cell-picture in the outer five layers (plexiform, small pyramid, medium-sized pyramid, external large pyramid, stellate cell layers, according to the nomenclature adopted by Campbell) can scarcely be used in differentiating the two types, precentral and intermediate precentral. In fact, the most prominent differentiating feature is the absence of the large Betz or motor cells from the intermediate precentral area.

The area to which the vomited tissue probably belongs is accordingly of the general precentral or motor type and is distinguished, by its lack of Betz cells, as of intermediate precentral type.

On anatomical grounds one might assume a possible confusion with several other cerebral tissues, as olfactory bulb, frontal tissue, prefrontal tissue and perhaps temporal and hippocampal tissues. The olfactory bulb tissue and hypocampal tissue can be excluded by reason of very obvious absence in the specimen of the somewhat striking stratifications of those structures. The absence of a stellate layer of well-defined character in the specimen makes it difficult to conceive the tissue as of temporal origin and throws some doubt on the likelihood of frontal origin. The marked development of the internal layer of large pyramids in the specimen seems to eliminate the possibility of the prefrontal nature of the tissue.

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[1] Campbell: Histological Studies on the Localisation of Cerebral Function, 1905, p. 209–229; Plate I, p. 292, 3; and Plate XXI, p. 332, 3.

[2] Brodmann: Beiträge zur histologischen Lokalisation der Grosshirnrinde vi, mittheilung. Die Cortexgliederung des Menschen. Jour. für Psychol. und Neurol., x, 6, 1907, s. 240, 241; Fig. 5, s. 236.

XVI.

Note Concerning Brain and Other Visceral Weights in Sixty-six Subjects Showing Carcinoma and Sarcoma.

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The general emaciation occurring in cases of carcinoma and sarcoma has suggested a comparison of the brain weights in such cases with existing data as to normal weights for corresponding ages, and also of certain visceral weights. Furthermore, experimentation has shown that the effects of starvation upon animals are such that the heart and brain suffer comparatively little tissue loss, whereas the kidney and liver are affected to a great degree.[1]

The object in view is to learn:

1. How much variation, if any, there is between the affected and normal brain weights.

2. How much variation, if any, there is between the affected and normal visceral weights.

3. The comparison of ratios of variation between (1) and (2). The data are taken from the autopsy records of the Danvers Insane Hospital, by permission of Dr. E. E. Southard; the Massachusetts General Hospital, by permission of Dr. James Homer Wright; and the Boston City Hospital, by permission of Dr. F. B. Mallory. All cases indexed under carcinoma and sarcoma were taken, without particular consideration for this first study as to the degree of emaciation, duration of disease or terminal infection. A number of cases were necessarily eliminated owing to lack of data.

The data used as standard denominators in computing the ratios are from Vierordt's Daten u. Tabellen, p. 40. The visceral weights are in most cases the combined weight of heart, liver and kidney. Wherever the tumor involved either primarily or secondarily, one of these organs the weight of the remaining two, or even one, is taken.

[1] American Text Book of Physiology, vol. i, p. 363, Voit's table.

As there is probably a certain amount of error in the determination of brain weights at autopsy, allowance for such is made as follows:

	Gm.
Scales error,	5
Cervical cord length error,	5
Pia mater tearing error,	5
Withdrawn for culture,	10
Total error in one direction,	25
Total error in both directions,	50

On the basis of 1358 gm. as a normal brain weight 50 gm. would cause a variation in ratio of 4%. Accordingly, ratios from 0.98 to 1.02 inclusive may be considered normal on the ground that they show no significant variation in brain or visceral weights from normal.

The ratio of the affected brain weight (*numerator*) to the normal brain weight (*denominator*) is the criterion which determines in which of the three groups that case should belong.

The three groups are:

1. Those cases with brains showing ratios of variation below 0.98. 2. Those cases with brains showing ratios of variation above 1.02. 3. Those cases with brains showing ratios of variation between 0.98 and 1.02 inclusive.

Group I. — Underweight Brains (Below 0.98.)

Danvers Insane Hospital.	Brain.	Triviseral.
1222 M., 70	$\frac{1260}{1323} = 0.87$	$\frac{1880}{1852} = 1.01$
1134 F., 66	$\frac{980}{1210} = 0.81$	$\frac{1465}{1740} = 0.86$
1211 M., 36	$\frac{1305}{1365} = 0.95$	$\frac{1745}{2124} = 0.82$
1059 F., 77	$\frac{920}{1170} = 0.79$	$\frac{1690}{1562} = 1.02$
920 M., 20	$\frac{1240}{1396} = 0.80$	$\frac{2100}{2125} = 0.98$
870 M., 58	$\frac{1220}{1352} = 0.91$	$\frac{1590}{2191} = 0.76$
486 F., 62	$\frac{1145}{1210} = 0.94$	$\frac{493}{520} = 0.94$
407 M., 83	$\frac{1260}{1284} = 0.90$	$\frac{1725}{1830} = 0.94$
386 F., 63	$\frac{930}{1208} = 0.77$	$\frac{1560}{1808} = 0.86$
289 F., 55	$\frac{1140}{1208} = 0.94$	$\frac{1590}{1808} = 0.82$
50 F., 39	$\frac{1080}{1220} = 0.88$	$\frac{1637}{1853} = 0.88$

Boston City Hospital.	Brain.	Trivisceral.
02.23 M., 63	1240/1340 = 0.92	2010/1920 = 1.04
02.98 F., 46	1050/1236 = 0.83	1975/1833 = 1.07
03.176 M., 69	1120/1323 = 0.84	2060/1852 = 1.10
05.170 M., 51	1165/1358 = 0.86	1470/1810 = 0.81
05.14 M., 52	1170/1358 = 0.86	1820/1810 = 1.01
04.186 M., 60	1225/1340 = 0.91	461/360 = 1.29
08.106 M., 65	1230/1340 = 0.91	740/500 = 1.48
01.97 F., 48	1255/1335 = 0.93	1910/1827 = 1.04
06.87 F., 50	1110/1220 = 0.91	1810/1825 = 0.98
06.96 M., 55	1250/1352 = 0.92	540/623 = 0.87
04.44 M., 65	1280/1328 = 0.96	2080/1860 = 1.12
Massachusetts General Hospital.		
1795 M., 75	1210/1290 = 0.94	2606/1924 = 1.35
1682 M., 52	1234/1352 = 0.91	572/693 = 0.82
2044 M., 54	1190/1390 = 0.88	2368/1805 = 1.31
2019 M., 61	1235/1340 = 0.92	2364/1920 = 1.12
2155 F., 60	1017/1215 = 0.83	404/420 = 0.96
668 M., 63	1277/1340 = 0.95	350/338 = 1.03
1952 F., 50	1075/1220 = 0.95	440/505 = 0.95
2192 F., 50	1083/1220 = 0.95	404/505 = 0.80
30 cases	26.74	30.04

GROUP II. — OVERWEIGHT BRAINS. (Above 1.02.)

Danvers Insane Hospital.	Brain.	Trivisceral.
1053 M., 72	1440/1290 = 1.11	1825/1916 = 0.96
1107 F., 40	1265/1225 = 1.03	1225/1613 = 0.76
810 F., 82	1200/1127 = 1.06	670/447 = 1.49 –
833 F., 57	1330/1225 = 1.08	1500/1818 = 0.83
Massachusetts General Hospital.		
1950 F., 74	1280/1170 = 1.09	1531/1562 = 0.98
1600 F., 32	1500/1225 = 1.10	433/293 = 1.47 –
1506 M., 74	1350/1290 = 1.04	2430/1916 = 1.27
1950 F., 74	1280/1170 = 1.09	1531/1562 = 0.98
1296 M., 59	1655/1345 = 1.23	636/588 = 1.08 –
1990 M., 64	1394/1340 = 1.04	2374/1920 = 1.23
Boston City Hospital.		
02.129 F., 44	1270/1236 = 1.03	2525/1833 = 1.43
03.84 M., 77	1320/1282 = 1.03	410/312 = 1.31 –
06.65 F., 51	1300/1210 = 1.07	420/488 = 0.85 –
04.107 M., 43	1480/1356 = 1.08	730/624 = 1.17 –
08.57 M., 55	1440/1345 = 1.07	630/360 = 1.75 –
04.84 F., 43	1320/1225 = 1.08	552/293 = 1.20 –
08.74 M., 42	1500/1358 = 1.10	2170/2100 = 1.03
07.238 M., 58	1600/1345 = 1.19	1805/1920 = 0.93
06.73 F., 52	1393/1215 = 1.14	1855/1820 = 1.02
05.4 F., 35	1270/1225 = 1.04	465/293 = 1.58 –
05.156 M., 60	1392/1340 = 1.03	804/360 = 2.24 –
01.146 M., 47	1410/1358 = 1.04	1420/1810 = 0.78
08.11 M., 56	1400/1345 = 1.04	2640/1920 = 1.38

Boston City Hospital.	Brain.	Trivisceral.
06.52 F., 75	$\frac{1240}{1170} = 1.06$	$\frac{520}{510} = 1.02-$
(06.73) F., 52	$\frac{1393}{1215} = (1.14)$	$\frac{1855}{1820} = 1.02$
24 cases		

GROUP III. — BRAINS OF APPROXIMATELY NORMAL WEIGHT. (Between 0.98–1.02).

Boston City Hospital.	Brain.	Trivisceral.
02.79 M., 33	$\frac{1340}{1366} = 0.98$	$\frac{2160}{2122} = 1.02$
02.143 M., 56	$\frac{1360}{1352} = 1.00$	$\frac{610}{623} = 0.98-$
03.101 M., 71	$\frac{1340}{1323} = 1.01$	$\frac{1825}{1852} = 0.98$
Danvers Insane Hospital.		
660 F., 65	$\frac{1210}{1208} = 1.00$	$\frac{370}{508} = 0.74$
1249 M., 79	$\frac{1290}{1290} = 1.00$	$\frac{2090}{1924} = 1.04$
113 F., 64	$\frac{1210}{1200} = 1.01$	$\frac{245}{285} = 0.88-$
1078 M., 54	$\frac{1370}{1352} = 1.01$	$\frac{670}{693} = 0.97-$
210 F., 49	$\frac{1215}{1236} = 0.99$	$\frac{1920}{1853} = 1.03$
184 F., 60	$\frac{1230}{1208} = 1.02$	$\frac{1707}{1808} = 0.94$
596 F., 64	$\frac{1215}{1208} = 1.00$	$\frac{461}{508} = 0.91-$
Massachusetts General Hospital.		
1940 M., 68	$\frac{1305}{1323} = 0.98$	$\frac{1910}{1602} = 1.25$
1441 F., 50	$\frac{1225}{1210} = 1.01$	$\frac{2002}{1808} = 1.11$
12 cases	12.01	11.85

SUMMARY.

Forty-six per cent. of the cases arrange themselves under Group I (underweight). Thirty-six per cent. of the cases arrange themselves under Group II (overweight). Eighteen per cent. of the cases arrange themselves under Group III (of approximately normal weight).

The fact that almost half these cases of malignant disease (carcinoma and sarcoma), drawn from general and insane hospital material, possessed underweight brains (98% or less of the normal assigned brain weights for their respective ages) leads to the question whether, after all, the nerve tissues may not lose weight much like other organs under certain circumstances.

Let us first see under what circumstances the brain weight is maintained at normal weight or even exceeds normal weight. There are 12 normal and 24 supernormal brain weights, i.e., 36 (or 54% in the series which may reasonably be supposed to have at least held their own with respect to weight. Obviously, if malignant disease is determining emaciation, it should, and frequently does exert an effect upon various trunk viscera by reducing their weights. Numerous examples of this effect are given in the above tables. If the brain were spared the weight-reducing process which malignant disease is known to exert, there should be numerous examples in Groups II and III of underweight trunk viscera alongside brains with maintained weight. Adopting the same normal standards for the trunk viscera as for the brain (0.98 to 1.02), we find in Group II but 6 cases in which the trunk viscera are differentially reduced (25% of the overweight brain series), and in Group III, 5 cases (42%). That is, only 11 cases in 36 show trunk-visceral weight-loss in the presence of maintained brain weight (30%). Moreover, removing 11 cases from Group II and 5 cases from Group III on the ground that weights from all three chosen trunk viscera were not used (being affected with tumors or otherwise not available), we find that Group II shows 4 cases and Group III only 1 case of trunk-visceral weight-loss with maintained brain-weight (25% of the series, now reduced to 20).

It must be conceded, however, that this argument looks both ways. We cannot consider every loss in brain weight as here due to malignant disease, if it turns out that the trunk viscera are meanwhile maintaining their weights. In Group I, in fact, we find 16 cases (or a little over half) which present this curious relation of maintained or excessive trivisceral weights in the presence of lowered brain weight.

We must recognize at once that there are many cases in which malignant disease, for one reason or other, fails to reduce the brain weight (54%).

In many cases, also, malignant disease fails to reduce the weight of the organs at large (62%), at least as indicated by our chosen viscera. Statistically, therefore, there seems at this point to be actually more likelihood of brain weight loss than of trunk-visceral weight-loss in malignant disease.

How far do the brain-weight loss and the trunk-visceral weight-loss coincide? Twenty-one per cent. of the total series show such general loss.

In case neither the brain nor the trunk viscera exhibit loss in weight, we may well suppose that the weight-reducing factors in malignant disease either did not exist in those particular instances or did not have time to operate. *Either* brain weight loss *or* trivisceral weight loss, *or* both, supervened in 71% of the series, or 47 cases. Adopting these 47 cases as the basis of calculation, we find:

Thirty cases show brain weight loss, 64%; 25 cases show "trivisceral" weight loss, 53%; 14

cases show brain and "trivisceral" weight loss, 30%. So far, then, as these data go, there is at least as much evidence for brain-weight-reducing factors as for (heart-liver-kidney)-weight-reducing factors in malignant disease, a result somewhat unexpected in view of current physiological views.

XVII.

Some Effects of Over-Feeding with Fats in Certain Cases of Insanity.

By Herman M. Adler.

It is a well-known fact that aged or insane persons generally have a lowered resistance to infection. This observation, which is a familiar one in all institutions for insanity, is supported by the findings at autopsy. In a large number of cases of insanity, the lymphatic system, lymph nodes, spleen and lymphoid tissue which are chiefly concerned in resisting the invading agent, show at autopsy a reaction to infection which is visibly less than occurs in the average individual. An investigation of this point which is being carried out at this laboratory has disclosed in numerous cases a morphological basis for this lowering in resistance, namely, an atrophic condition of the lymphoid tissue. This is particularly striking in the spleen which as a rule is reduced in size, the weight varying from 150 gm. to as low as 7 gm. The mesenteric lymph nodes as well as the lymphoid tissue of the intestine are involved in this general deterioration. This is demonstrated in part by the condition found in the gut and mesenteric lymph nodes, especially in the autopsies of cases of dysentery.

It has recently been pointed out [1] that the lymphoid apparatus is concerned not alone in the management of toxic agents that have passed the outer epithelial barriers of the body, but with the transport and disposition of the large class of fatty substances of which the toxins form only a group.

Stheeman concludes that the lymph glands are organs which prepare the fats derived both from the food and from the fat depots for the internal metabolism of the tissues.

Fat on entering the intestinal lumen is split up into fatty acid and glycerin. In the form of fatty acid combined with bases as soaps it is absorbed by the epithelium. It has repeatedly been shown that on emerging from the intestinal walls into the lacteals it is again in the form of neutral fat. Somewhere in its passage through the intestinal wall the fatty acid has been reunited to glycerin. It has not been shown where this change occurs, but it is assumed that the epithelium of the intestine is responsible for it. The glycerin is not necessarily derived from the original neutral fat, but may be supplied in the wall itself, as has been proved by the experiments of Munk.[2] Munk fed fasting dogs with fatty acids and observed that no fatty acid appeared in the lacteals, so that the glycerin which converted the fatty acid to neutral fat could not have arisen from the food. Faust and Tallquist [3] have pointed out this fact in connection with their experiments on pernicious anemia due to Bothriocephalus toxin. This toxin they proved to be oleic acid, which is capable of producing intense hemolysis, while the fatty acids of the other two most common fats, stearic and palmitic acids, do not produce any hemolysis. Since, then, the hemolytic agent in Bothriocephalus anemia is oleic acid, and since the ordinary food fats taken in considerable quantities at each meal are split up by the digestive ferments into fatty acids of which a large part is oleic acid, the question arises why any one should be able to resist the oleic acid hemolysis. Faust and Tallquist are forced to the assumption that possibly a factor in the Bothriocephalus anemia is the inability of the intestinal wall to supply glycerin. By feeding very large doses of oleic acid to dogs, Faust has been able to induce a certain degree of anemia, by no means, however, comparable to the pernicious type. I have myself become convinced, after long-continued subcutaneous injection of oleic acid into rabbits, that only a slight anemia can be produced in this way. The slight degree of anemia is quite out of proportion to the intensity of the reaction when red blood corpuscles are brought into contact with oleic acid in the test tube.

In view of these facts, the idea suggested itself that possibly the condition of the intestinal lymphoid tissue might be responsible for the extent to which the fatty acids were converted into neutral fats. Judging by the autopsy protocols, it seemed not unlikely that certain cases of insanity that gave evidence of lymphoid atrophy should react differently to the introduction of fats, in larger quantites, than the normal healthy person. Since the lymphoid tissues are not comprised in one organ, but are diffusely placed all through the body, it is not a certain or an easy matter to determine its condition in a given individual. It was decided, for want of a better index, and in spite of several objections that might be raised, to be guided by the size of the spleen. A number of patients were examined, but finally only a few, namely, those in whom it was impossible to detect the presence of the spleen, either by percussion or by palpation, were selected. The sera of these cases were then examined for hemolytic properties. None showed hemolytic properties either to their own corpuscles or to those of other individuals. The patients were then given a diet consisting only of milk, and serum was obtained at intervals of a half hour during digestion. In a number of cases autohemolysis was observed, which continued during the period of milk diet. The amount of milk given varied. In a few of the patients, autohemolysis appeared after two or three glasses of milk had been given. In others the milk feeding had to be continued for twenty-four hours and the quantity increased to several quarts a day before autohemolysis appeared. In all these

[1] Poulsin: Étude de la graisse dans le ganglion lymphatique normal et pathologique. Autoref. Revue mensuelle du mal de l'enfant, 1902. Stheeman: Histologische Untersuchungen über die Beziehung des Fettes zu den Lymphdrüsen. Beiträge z. Path. Anat u z. Allg. Path., vol. xlviii, 1910.

[2] Munk: Virchow's Arch. vol. xcv, 1, Munk and Rosenstein; *Ibid.* vol. cxxiii.

[3] Faust and Tallquist: Arch. für exp. Path. und Pharm., 1908.

cases autohemolysis disappeared on the withdrawal of milk and butter from the food, to reappear again on the renewal of a fat diet. In the remainder of the cases observed in this connection, no autohemolysis could be detected even after large meals of milk and butter.

The cases which showed the autohemolytic reaction after fat feeding were all more or less emaciated and slightly anemic. The blood examination in no case showed a severe degree of anemia. The hemoglobin was never below 80 by the Tallquist scale. The red count was four million or over. No nucleated red cells or poikilocytosis were observed. Leucocytes were not increased, and no abnormal forms were seen. While these observations are relatively few, and much is left for further study, it appears on account of the very definite nature of the reaction when it occurs that a consideration of the possibilities involved may not be out of place.

tissue, a large number of cases picked at random, including some of the laboratory staff, were examined under ordinary dietary conditions, and after taking a large amount of fats. In no case was the serum hemolytic.

While chance is not entirely ruled out by the small number of positive observations, the regularity of the occurrence of hemolysis after fat feeding, and its absence after fat-free diet, makes the relation of the one to the other highly probable. Another factor that is of importance in obtaining a positive reaction is the time after a meal that the blood is obtained. The specimen must be obtained during digestion, that is, while the fat is present in the circulation.

Suggestive as these results are, it is the large number of negative results in patients presenting outwardly no differences from the positive cases that attract attention. Evidently the body possesses means of defense against the introduction

Patient H. J. 2.

Date.	Diet.	Blood collected.	Test.	Hemolysis.
April 12.	1 qt. milk, 2 eggs.	12 hours later	Patient's serum + normal corpuscles	0
			Patient's serum + patient's corpuscles	0
			Normal serum + normal corpuscles	0
			Normal serum + patient's corpuscles	0
April 13.	1 qt. milk, 2 eggs	20 minutes later	Patient's serum + normal corpuscles	++
			Normal serum + normal corpuscles	0
			Normal saline + normal corpuscles	0
April 14.	1 qt. milk	3 hours later	Patient's serum + normal corpuscles	+
			Normal serum + normal corpuscles	0
	1 qt. milk	20 minutes later	Patient's serum + normal corpuscles	+
			Patient's serum (1 part) + normal saline (6 parts) + normal corpuscles	0
			Normal serum + normal corpuscles	0
April 18.	1 qt. milk.	6 hours later	Patient's serum + normal corpuscles	0
			Patient's serum + patient's corpuscles	0
			Normal serum + normal corpuscles	0
April 21.	1 qt. milk,	1 hour later	Patient's serum + normal corpuscles	++
			Normal serum + normal corpuscles	0

Patient P. A. 2.

Date.	Diet.	Blood collected.	Test.	Hemolysis.
April 15.	1 qt. milk.	1 hour later	Patient's serum + normal corpuscles	+
			Normal serum + normal corpuscles	0
April 18.	Tea and toast.	1-2 hour later	Patient's serum + normal corpuscles.	0
			Patient's serum + patient's corpuscles	0
			Normal serum + normal corpuscles	0
April 19.	1 qt. milk with butter	1 hour later	Patient's serum + patient's corpuscles	++
			Normal serum + normal corpuscles	0
April 20.	Tea, toast, 1-2 egg.	2 hours later	Patient's serum + normal corpuscles	0
	(Diet continued fat-free 24 hours.)		Normal serum + normal corpuscles	0
April 21.	Tea, toast, cereal.	1 1-2 hours later	Patient's serum + normal corpuscles	0
			Normal serum + normal corpuscles	0
April 22.	1 qt. milk, bread, butter	1 hour later	Patient's serum + normal corpuscles	++
			Normal serum + normal corpuscles	0

The accompanying extracts from the protocols show the results in three cases in which a positive hemolytic reaction was obtained.[4] Out of ten selected cases examined, 4 showed hemolytic properties. In these 4 the serum lost its hemolyzing properties during a period of fat-free diet, to regain it after the patient was again on a generous fat diet. As the total number of cases in which the spleen could not be located by physical examination was small, and as it seemed possible that this reaction need not necessarily be associated with a small spleen, or even have any relation to the lymphoid

of free fatty acid aside from its power of forming neutral fats from them. In order to investigate this point, the following experiment was performed.

One grain of sodium oleate was dissolved in 100 ccm. of 0.9% NaCl solution and the same quantity of sodium oleate was dissolved in 100 ccm. of a solution of salts resembling the constitution and concentration of the blood.[5]

This solution contains, besides Na, also K, Ca and Na in combination with HCl, H_3PO_4 and H_2CO_3 in an equilibrium identical with that of serum.

[4] The writer is indebted to Dr. A. M. Burgess, laboratory interne 1910, for aid in these determinations.

[5] Adler, H. M.: Experiments toward a Physiologically Isotonic Solution of Salts. Jour. Am. Med. Asso., vol. li, 1908.

These two solutions, containing sodium oleate in equal strength, were tested as regards their hemolytic properties. It was found that the sodium chloride solution was intensely hemolytic, while the second solution showed no hemolytic properties in any proportions, even after twenty-four hours in the thermostat. The explanation of this phenomenon is to be found in the fact that the calcium and magnesium soaps of oleic acid are insoluble in water, while the sodium and potassium soaps are readily soluble. When the sodium oleate was dissolved in the second of these solutions it was precipitated as calcium and magnesium soaps. The precipitate rises to the surface and is quite apparent to the eye. The experiment was next repeated, using oleic acid instead of the sodium oleates. After shaking the solution for fifteen minutes, no oil was to be observed floating on the surface, but the soaps formed had been partially dissolved. A test set up at this time showed hemolysis. After standing an hour in the thermostat, a layer of soap was seen floating on the surface of the solution, and a test showed no hemolytic property. Clearly, then, one of the things that may occur if free fatty acid is introduced into the body fluids, is the binding of calcium and magnesium and the withdrawal of these bases from the circulation. Calcium and magnesium may be considered thus as secondary defenses of the body in resisting the effects of free fatty acid. The bearing of these considerations upon such conditions as anemia and fat metabolism in general, including that of the central nervous system, is evident.

SUMMARY.

1. The organism has provision normally for converting the fatty acid products of digestion into neutral fats.
2. This power may be diminished under certain circumstances.
3. In those cases in which fatty acid is not entirely converted into neutral fats, the toxic effects of the fatty acids are neutralized in other ways.
4. One of the methods by which free fatty acid is neutralized is by conversion into insoluble soap.
5. When this occurs, the body suffers a depletion in its calcium and magnesium content.

Book Reviews.

The Care of the Child. By Mrs. Burton Chance. Pp. 242. Philadelphia: The Penn Publishing Company. 1909.

This little book according to the preface "is not intended in any way to take the place of medical advice, nor does it presume to give suggestions upon any more vital questions than those pertaining to the practical care of the normal child. It is designed with the hope that it may help the average mother to solve her daily problems."

The first half of the book, which is devoted to the care and feeding of the baby and child, is about up to the average of such books and only reasonably satisfactory. The second half of the book, on the bringing up of children, is remarkably good. We would call attention especially to the emphasis laid on the importance of example, the necessity and the methods of developing obedience, the control of bad habits, the importance of sympathy, the recognition of the large part which imagination plays in childhood, and the importance of paying due regard to the rights of the child's personality. There is no mother, or father, either, for that matter, that will not be benefited by the careful perusal and consideration of the last four chapters.

An Index of Symptoms. With Diagnostic Methods. By Ralph Winnington Leftwich, M.D. Fourth edition. New York: William Wood & Co. 1910.

That this book should have reached a fourth edition is probable evidence that it has met a considerable demand among practitioners. It is intended less as a manual of diagnosis than as an index for reference, and contains a quantity of miscellaneous information marshalled under various captions into a fantastically ingenious congeries. Perhaps the most interesting part is the introduction, in which patients are classified as pessimistic, optimistic, complaisant, or mendacious, and in which the nine fallacies of diagnosis are stated and described as those of suggestion, antecedent disease, concurrent disease, obsession, perspective, variations within the normal, personal equation, transferred pain, and malingering. It is to be feared that diagnoses made solely in accordance with the methods of this volume would be subject to the still further fallacy of myopia.

The Diseases of the Thyroid Gland, Myxedema and Cretinism. By Dr. C. A. Ewald. Second edition, completely revised. Vienna and Leipzig: Alfred Hölder. 1909.

Since the appearance of the first edition of this work in 1895, great advances have been made in the knowledge of thyroid disease. The present volume, in classic form and with praiseworthy and characteristic German thoroughness, sums up and incorporates the details and results of this progress with the admirable original material. The book now includes careful consideration of thyroid anatomy and physiology, of acute thyroiditis, malignant struma, echinococcus, actinomycosis, syphilis and tuberculosis of the thyroid, goiter, cretinism, myxedema and cachexia strumipriva. Though sparsely illustrated, it deserves its position as a standard monograph on the subject. It contains also a valuable bibliography of recent literature on all affections of the thyroid gland, with the exception of Basedow's disease, which the author regards of such importance as to demand separate consideration.

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DEATH AN EXPENSIVE CUSTOM.

THE *American Magazine* for July of this year states that a committee appointed by the City Club of Chicago has been collecting facts in demonstration of the high cost of dying in that city. It is declared that undertakers are wont to take advantage of people who, in affliction, have neither time nor disposition for business considerations. As a result of a recent suit, an undertaker's bill was reduced from $552.50 to $302.50; and the defense for such extortion from a bereaved family was based upon the following reasons: The infrequency of funerals and the consequent period of idleness between cases; the large percentage of bad debts, coupled with the disadvantage that many such bills must go through probate; the ever-present danger of infection and of the loss of life in embalming. We shall not here dwell upon the puerility of such reasons, which are given as justifying the extortion of from 100 to 200% profit from human beings in the most melancholy circumstances they can experience. We do, however, emphasize (as our colleagues in hospital service have noted) the pathetic extravagence of the very poor in incurring funeral expenses in honor of their dead — how they spend money recklessly and without question for flowers, carriages and even bands of music.

But extortion from the survivors in a family does not seem to be confined entirely to these United States, if we may judge from the case of a Wisconsin gentleman who died recently of a heart lesion in a hotel near Naples. The landlord, it is reported, demanded from his widow 3,500 francs — 2,000 as damages because her husband had died in his hotel and 1,500 on account of the undertaker. The luggage of the most distressed and unfortunate lady was seized for the claim, and only after an appeal to the American consul was the matter settled by the payment of 500 francs, one seventh of the original claim.

Such extortion is, it seems, frequently attempted, especially in Southern Europe, on the ghoulish principle that the grief-stricken, in a strange land and under crushing stress of emotion, will let themselves be plundered without resistance. It is especially sought to victimize American travelers, on the often gratuitous assumption that they have more money than anybody else; perhaps, also, that they can be bullied with unusual ease.

Another case occurred several years ago in a small Italian town where an American gentleman, known to be very rich, died, also of a heart affection. The "*boniface*" demanded 25,000 francs for the "injury" done his hotel by the fact of the death having occurred there, besides 5,000 to "refurnish" the room the deceased had occupied; and the local physician, whose brother was the local apothecary, united in a claim for at least 2,000 francs more. Through the fortunate accident that an American who knew how to proceed in these premises, and how invoke the consular authorities in a way to be comprehended of the natives, was a resident of that place, the widow was saved more sorrow and trouble than she ever actually knew anything about and was enabled to take the body of her husband away upon the payment of something like a thousand dollars. In another case it is said to have cost the family of an American who died in Jerusaleum more than five thousand dollars to get him out of that country.

In many European countries the law of almost immediate burial is peremptory, by reason of the rapid decomposition of dead bodies in hot weather. And the New York *Evening Sun* observes that this requisite is likely to be taken unscrupulous advantage of. "When anything of oriental ingenuity is added to the overbearing quality too often inherent in the petty municipal officers, the situation of surviving relatives is serious particularly if no American or English consul not a native of the country can be reached immediately." It appears, however, that the oriental is not alone blameworthy; it seems, as we have seen, that he is equalled in our occidental civilization.

INFANT MORTALITY IN NEW YORK.

In view of the continued high infant mortality in New York, Health Commissioner Lederle has issued a statement to the effect that the responsibility for this is largely due to the ignorance or inattention of mothers. With babies dying at the weekly rate of 85 for every thousand in Manhattan and of 86 for every thousand in Brooklyn (the figures for the week ending July 23), he says that the great task of the Department of Health is to instruct mothers how to care for their infants, and (what is far more difficult) to get them to follow instructions. That the present high death-rate, notwithstanding the great heat of the summer, is unneccessary is shown by the results of a recent investigation by Dr. Guilfoy, the registrar of vital statistics. The latter has made a study of the conditions in a considerable territory in the middle west side of the city, where the people are intelligent and sufficiently well-to-do to give their infants proper attention, and finds that in three summers, in the district investigated, there was not a single death from infantile diarrhea. This result confirms the assertion of Dr. Joseph E. Winters, Professor of Diseases of Children in Cornell University Medical College, in a paper on Intestinal Infections in Children at the May meeting of the Medical Association of the Greater City of New York, to the effect that, with proper feeding and care, there is no more danger from this form of disease in summer than in winter. Dr. Guilfoy finds that the mortality has been highest among the negro babies, and ascribes this to neglect, racial rather than intentional, on the part of the mothers. Next in amount is the death-rate among the Italians, and then come the Russians and other foreign nationalities, in all of which the mortality far exceeds that among the native Americans.

In the meanwhile the Bureau of Child Hygiene, under the direction of Dr. Baker, with 150 medical inspectors, and as many nurses, is putting forth the most strenuous efforts in looking after the infants in the tenements and instructing mothers in proper methods of care. The mothers are supplied with simple rules for feeding and general care, and, in addition, with cards containing the location of the various milk depots where pure milk, kept at proper temperature, can be obtained at nominal prices, or free in cases of great poverty. They are also told to send for a physician or to notify the Health Department, (the telephone numbers of the branches of which are given) the moment that a child shows the first symptoms of illness. The statistics of the department show that while thus far the death-rate of the summer from infantile diarrhea has been considerably higher than in the corresponding period of last year, the mortality from this cause compares favorably with that of previous years in which the greatest mortality has occurred in the month of July. In 1909 this was unusually small. This year a much larger number of recreation piers and public playgrounds are in operation than ever before.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.—For the week ending at noon, August 2, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 30, typhoid fever 18, measles 23, smallpox 0, tuberculosis 78.

The death-rate of the reported deaths for the week ending July 26, 1910, was 15.81.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, July 30, 1910, was 216, against 202 the corresponding week of last year, showing an increase of 14 deaths and making the death-rate for the week 17.88. Of this number 122 were males and 94 were females; 213 were white and 3 colored; 145 were born in the United States, 64 in foreign countries and 7 unknown; 49 were of American parentage, 134 of foreign parentage and 33 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 34 cases and 2 deaths; scarlatina, 34 cases and 1 death; typhoid fever, 10 cases and 1 death; measles, 23 cases and 2 deaths; tuberculosis, 74 cases and 15 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 9, whooping cough 2, heart disease 22, bronchitis 1. There were 20 deaths from violent causes. The number of children who died under one year was 52; the number under five years, 72. The number of persons who died over sixty years of age was 59. The deaths in public institutions were 95.

Cerebrospinal meningitis, 1 case.

Of the above infectious diseases the following were non-residents: Diphtheria, 2 cases. Scarlet fever, 2 cases. Consumption, 6 cases and 1 death.

Deducting deaths of non-residents, the total is 189 and the death-rate is then 15.65.

BEQUESTS. —Through the will of the late George Dexter of Beverly and Boston the Free Hospital for Women in Brookline, Mass., receives $8000 and the Massachusetts General Hospital, $10,000.

By the will of Mrs. Julia M. Champlin of Brookline public bequests amounting to nearly $200,000 are made. Among the beneficiaries are the Home for Aged Men, Boston, $10,000; the Winchester Home for Aged Women, $10,000; the New England Peabody Home for Crippled Children, $5000. Other institutions likewise benefit after the death of certain beneficiaries.

A LOVING CUP FOR DR. RICHARD C. CABOT. — At the conclusion of a summer course given by Dr. Richard C. Cabot at the Massachusetts General Hospital during July a loving cup was presented him by his students who numbered forty. Dr. James C. Donohue, Dr. Cabot's assistant, also received a cup.

THE PRENDERGAST CAMP FOR TUBERCULOSIS. — The Boston Association for the Relief and Control of Tuberculosis conducts the Prendergast Camp. The object of the undertaking is to offer to men, whose tubercular process has been arrested, a place where they may live under the most favorable conditions, and so prevent, if possible, a relapse. The camp is near Mattapan, close to an electric car line and within the five cent fare limit. The men sleep in a "shack" open on the south side. There are proper bathing facilities, a living room, both of which are heated in cold weather, and a kitchen. The food is abundant and well cooked. The rate of board is $6.00 a week, in exceptional cases a lower rate will be accepted. It is not intended that this camp shall make a profit, nor that it shall be a charity, but it is intended that eventually it will be self supporting. The camp is primarily for men who are working, but this is not necessary. For those who are not there at dinner time, a dinner is put up which they can take with them to their work. The committee in charge has decided to admit some cases of tuberculosis that are not yet arrested, quiescent cases with a little cough or sputum, and who understand the need and methods of preventing the infection of others. Also incipient cases awaiting admission to sanatoria will be received. Preference will be given to men who are working, in the belief that many cases improve while at work, if they can spend half their time under proper sanatorium conditions. There will be no medical supervision, the patients remaining under the care of their own doctor. Arrangement has been made for calling a neighboring doctor, however, in case of an emergency.

Application should be made to the Secretary of this Association, Mr. Seymour H. Stone, accompanied by a medical statement of the present condition of the case.

NEW YORK.

BEQUESTS FOR CHARITY. — By the will of the late Henry Dexter, of New York, former president of the American News Company, more than a million dollars is left to religious and philanthropic objects, although most of the bequests do not go into effect until after the death of his daughter, Clarissa Treadwill Dexter. Among the bequests are $20,000 to the New York Association for Improving the Condition of the Poor, $10,000 each to St. John's Guild and the Charity Organization Society, and $1,000 to the New York Christian Home for Intemperate Men at Mount Vernon, N. Y. Charles S. Ward, of New York, who died recently, left the bulk of an estate of $160,000 in the form of trust bequests to relatives, with the provision that on their deaths the property shall be devoted to charity. Among the ultimate beneficiaries is the Presbyterian Hospital, which is to receive $10,000, besides a share in the residuary estate. Among the charitable bequests in the will of Mrs. Miles Standish Bromley, of New York, a sister of the late Mrs. William H. Vanderbilt, who died on July 4, is $3,000 to the Mothers' and Babies' Hospital.

Current Literature.

MEDICAL RECORD.

JULY 23, 1910.

1. MACDONALD, C. F. *The Ethical Aspects of Expert Testimony in Relation to the Plea of Insanity as a Defense to an Indictment for Crime.*
2. GOULD, G. M., AND DURAND, A. C. *The Anomalies of Ocular Dominance.*
3. ROBINSON, D. M. O. *The Noguchi Method of Serum Diagnosis of Syphilis; Its Practical Value.*
4. SCHIPTURE, E. W. *Some Remarks on Deafmutism.*
5. ELY, L. W. *Further Observations on the Pathology of Joint Tuberculosis, and Practical Deductions Therefrom.*
6. LEONARD, C. L. *Lupus — Its Treatment by the Roentgen Rays.*
7. KRONENBERG, I. B. *Obesity: Its Relation to Other Diseases and Its Significance. Also Some Observations on Prophylaxis.*
8. GOODMAN, E. H. *An Historical Note on the So-Called Ludwig's Angle or the Angle of Louis.*

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1. GARRISON, F. H. *The Bone Called "Luz."*
2. LITTERER, W. *The Clinical Value of the Serodiagnostic Methods in the Diagnosis of Syphilis*

3. Phelps, W. M. *The Noguchi Reaction in Serodiagnosis.*
4. Miller, J. A. *The Tuberculin Treatment of Pulmonary Tuberculosis in Office and Dispensary Practice.*
5. King, H. M. *Vaccine Therapy in Tuberculosis.*
6. Phillips, W. L. *The Lachrymal Duct as a Portal of Infection in Blennorrhea Neonatorum and Its Prevention.*
7. *Faught, F. A. *The Status of the Blood-Pressure Observation in Life Insurance Examinations.*
8. Cyrian, E. F., and Cyriax, A. K. *The Manual Treatment of the Abdominal Sympathetic.*

7. Faught finds on investigation that observation of the blood pressure is far from universal in life insurance examinations. The chief reason given by companies is their lack of confidence in the ability of the average examiner to accurately observe and correctly interpret the reading. There are many factors which may cause material variation in pulse tension, e. g., posture, digestion, exercise, fatigue, mental excitement, alcohol. In spite of these sources of error the writer believes that the sphygmomanometer deserves a much wider application in life insurance work. [L. D. C.]

The Journal of the American Medical Association.

July 23, 1910.

1. *Weeks, J. E. *The Status of Vaccine Therapy in Ophthalmology.*
2. Wood, C. M. *The Surgical Treatment of Separation of the Retina.*
3. *Hultgen, J. F. *Alcohol and Nephritis. A Clinical Study of Four Hundred and Sixty Cases of Chronic Alcoholism.*
4. Hyndman, H. F. *The Influence of Magnesium Sulphate on the Motor Cells of the Cerebral Cortex.*
5. *Bernheim, B. M. *The Relation of the Blood Vessel Walls to the Coagulation of the Blood.*
6. *Barton, W. M. *Pharmacologic Fetishisms. A Second Contribution.*
7. Savage, G. C. *Cataract-in-Capsule Extraction by a New Means and New Method.*
8. Thompson, J. L. *My Experience in the Operation for Cataract.*
9. *Matthews, S. A. *One of the Functions of the Duodenum.*
10. Hall, H. J. *Manual Work in the Treatment of Nervous Diseases.*
11. Sneve, H. *Gymnastics and Massage in the Treatment of Nervous Diseases.*
12. *Church, A. *Nervous and Mental Disturbances of the Male Climacteric.*
13. Lewis, F. P. *The Prevention of Blindness.*
14. *Pitzman, M. *Fallacies in the Understanding of Antiseptics and Germicides with special Reference to Mercuric Chlorid.*
15. Ricketts, H. T., and Wilder, R. M. *Further Investigations Regarding the Etiology of Tabardillo, Mexican Typhus Fever.*
16. Herzfeld, A. *The Value of Combinations of Narcotics and Antipyretics.*
17. *Claypool, J. R., Vance, B. M., Robertson, P. R., and Field, C. W. *A Study on the Prevention of Adhesions.*

1. A brief summary of Weeks' views would be about as follows: In tuberculosis, benefit may be derived by use of the proper vaccine. Gonococcic vaccine is of undoubted value in chronic infections, but of no value in the acute stages. In streptococcic cases some cases are modified, but none cured; with staphylococcus the prognosis is good. Coley's toxin showed only one recovery, a case reported by Coley himself. With serums, the results are as follows: Diphtheria antitoxin is of undoubted value. Gonococcic serum is about equally effective with the vaccine. With streptococcic serum the results are variable. Tetanus cases are benefited if injected early. Cystogenic serums have been somewhat disappointing.

3. Hultgen, observing 460 cases of chronic alcoholism, concludes: (1) Alcohol when taken daily, as it is by chronic inebriates, dipsomaniacs or drinkers, is not an irritant to the kidneys. (2) When nephritis occurs in a chronic alcoholic, it is probably due to some other concomitant toxic agent, and not to alcohol. (3) Overeating, acute intoxicants, exposure to colds, auto-intoxications, infections either manifest or latent, and some metabolic disorders as yet unknown are the real causative factors of nephritis. (4) Alcohol when taken by drinkers as food or stimulant, such as we see in chronic alcoholism, is a diuretic. (5) Those tissues which eliminate alcohol are least affected by it. This applies to the lungs and especially to the kidneys. (6) Alcohol, while an intoxicant, is also a detoxicant, ridding the body of various deletorious catabolic products.

5. Bernheim, experimenting with extracts made from the thin coats of blood vessels, finds that there is seemingly in the blood-vessel wall itself a substance, which once the vessel is injured, probably aids in the formation of a clot.

6. Barton in his second contribution exposes more pharmacologic fallacies. He points out that lead and opium washes have no soothing value in sprains; that aconite taken internally does not quiet neuralgia; that spartein as a heart tonic has no value as a substitute for digitalis; that nitrohydrochloric acid has no value in diseases of the liver and jaundice; and that physiologic salt solution is not a heart stimulant *per se*. Calomel is not a cholagogue; ammonium chlorid, not an expectorant. All these may have some effect, but do not act *per se* as we are taught to suppose.

9. Matthews, as also Maury previously, has discovered in experimental work on dogs, that the duodenum exerts some influence, probably through the agency of a secretion, the removal of which from the body is incompatible with life.

12. Church finds in the monthly occurrence in nearly all males of various disturbances of mentality, digestion, sexual function, etc., evidence of a true climacteric in the male.

14. Pitzman maintains that bichlorid of mercury does not exert its reputed antiseptic action on the bacteria in the tissues for the following reasons: (1) It would have to exist in the tissues as excess free bichlorid, which is scientifically hardly conceivable. (2) If it existed as free bichlorid, it would destroy the body cells as well as the bacteria. (3) It is ordinarily not absorbed from a dressing.

17. These authors, experimenting on dogs, conclude that olive oil does seem to prevent the formation of adhesions in dogs and is worthy of a thorough trial in human surgery. Liquid petrolatum has but slight value for such a purpose. [E. H. R.]

The Lancet.

July 2, 1910.

1. *Mott, F. W. *The Oliver-Sharpey Lectures on the Cerebrospinal Fluid. Lecture I. The Physiology of the Cerebrospinal Fluid.*
2. *Andrews, F. W. *The Croonian Lectures on the Behavior of the Leucocytes in Infection and Immunity. Lecture II.*
3. Sinclair, W. J. *The Pelvic Conditions Resulting from the Slighter Forms of Puerperal Sepsis and their Treatment.*
4. *Philip, R. W. *The Tuberculous Gland: Its Significance and Treatment.*
5. Faulder, T. J. *The Administration of the Public Health and Education Acts in Relation to the Prevention and Cure of Diseases of the Throat and Nose.*
6. Buck, A. H. *Points in Favor of Early Operation in Appendicitis.*
7. Shaw, E. A. *A Note on the Distribution of Triponema Pallidum in Congenital Gummata.*
8. Broadway, T. B. *Notes on Some Obscure Cases of Extra-Uterine Gestation.*
9. Greenwood, M. *Poor-Law Medical Reform: What It Should Aim At.*
10. Hirsch, C. T. W. *Motoring Notes.*

1. In the first of the Oliver-Sharpey Lectures, Mott gives some historical remarks on the study of the cerebrospinal fluid, and then briefly describes its physical and chemical properties. He discusses the distribution, function and mechanical effects of this fluid.

2. In the second Croonian Lecture, Andrews discusses the functions of the polynuclear leucocytes and their dis-

tribution. He devotes the rest of the lecture to a consideration of leucopenia and the various conditions when this may exist, the mechanism of leucopenia and the constitutional symptoms associated with it.

4. Philip describes the changing point of view in regard to the wisdom of operating on all cases of tuberculous glands; twenty years ago this was considered the only treatment; to-day it is not so. Suppuration in a gland is relatively uncommon as compared with the occurrence of infiltration; in the greater number of cases it is but an incident which oftener than not does not take place. He describes what he considers to be the usual course of infection from the throat to the glands of the neck and thence, in many cases, to the thoracic lymphatics and to the lungs. As infection so frequently occurs in childhood he urges that children be taught to care for their teeth and throats in a most careful way. He discusses the limitations of operative treatment and the great value of vaccine therapy, with remarks on procedure and dosage. He concludes: (1) Watch for the earliest indication of involvement of lymphatic glands in young children and regard such as certainly of a tuberculous nature. (2) Treat the throat and mouth locally and in general by tuberculin. (3) If there be suppuration, evacuate it in simple fashion, but continue the use of tuberculin. [J. B. H.]

JULY 9, 1910.

1. *MOTT, F. W. *The Oliver-Sharpey Lectures on the Cerebrospinal Fluid. Lecture II. The Pathology of the Cerebrospinal Fluid.*
2. *ANDREWES, F. W. *The Croonian Lectures on the Behavior of the Leucocytes in Infection and Immunity. Lecture III.*
3. TAWSE, H. B. *Submucous Resection of the Nasal Septum, with a Review of One Hundred and Twenty Cases.*
4. *KRAUS, C. *The Examination of Feces in Medical Practice.*
5. FAULDER, T. J. *The Administration of the Public Health and Education Acts in Relation to the Prevention and Cure of Diseases of the Throat and Nose.*

1. In the second of the Oliver-Sharpey Lectures, Mott discusses the pathology of the cerebrospinal fluid and its chemical alterations in disease and the varieties of abnormal changes which the fluid may undergo. He especially dwells on those changes occurring in sleeping sickness, syphilis and parasyphilis, with remarks on the value and technic of the Wassermann reaction.

2. In the third of the Croonian Lectures, Andrews describes a series of animal experiments of infective conditions produced by intravenous inoculation. He discusses the relationship of leucopenia and anaphylaxis, the nature of anaphylaxis, with observations on immunity in the anaphylactic animal. He then discusses those conditions in which the leucocytes are increased, and the various types of leucocytes.

4. Kraus describes the development of scientific examination of the feces as an essential factor in rational treatment of disorders of the stomach and intestines. Before examination of the feces in any given case he puts his patient on a trial diet for forty-eight hours, which must include milk, eggs, meat, farinaceous food, green vegetables, stewed fruit and fat. He goes on to describe the various tests, microscopic, macroscopic and chemical, which should be made in every case. [J. B. H.]

BRITISH MEDICAL JOURNAL.

JULY 2, 1910.

1. *HERRINGHAM, W. P. *An Address on the Treatment of Chronic Bright's Disease.*
2. *RUSSELL, W., *The "Pancreatic Reaction" in Abdominal Disease.*
3. *CAMMIDGE, P. J. *On the Results of the "Pancreatic Reaction" and on the Diagnostic Value of an Analysis of the Feces in Diseases of the Pancreas.*
4. SALTER, C. E. *Gallstones: Acute Pancreatitis: Recovery.*
5. FOTHERGILL, C. F. *Case of Impacted Gallstones in Cystic Duct. Operation: Recovery.*
6. ADAMSON, R. O. *A Case of Dermatitis Artifacta and its Sequel.*

1. Herringham, in a general article in which he gives numerous illustrative cases, describes the treatment of various forms of chronic nephritis by drugs, diet, baths, etc., and the treatment of various complications.

2. Russell has done the so-called "pancreatic reaction" in 78 representative cases of abdominal disease. Among these cases he found the reaction positive in so many instances where there was found to be no disease of the pancreas as to throw grave doubts on the value of this reaction.

3. Cammidge presents a large number of cases in which the pancreatic reaction was present and in many of which pancreatic disease was found to be present either at operation or at autopsy. [J. B. H.]

JULY 9, 1910.

1. WATERHOUSE, H. F. *An Address on Certain Subjects of Surgical Interest.*
2. *STARR, F. N. G. *Modern Treatment of Fractures.*
3. *WARD, B. J. *Accuracy in the Diagnosis of Urinary Disease.*
4. *FULLERTON, A. *On the Early Diagnosis and Treatment of Tuberculous Kidney.*
5. PIKE, J. B. *Suprapubic Drainage of the Bladder as an Alternative to Prostatectomy and a Relief Operation.*
6. *HAMBURGER, F. *The Incidence of Tuberculosis in Childhood.*
7. MACNAUGHTON-JONES, H. *Address on the Prevention of Mortality from Pelvic Operation.*
8. PAVY, F. W., AND BIGWATERS, H. W. *On the Presence of Sugar in Healthy Urine as a Source of the Osazone Reaction.*

2. Starr quotes figures from the Massachusetts General Hospital and elsewhere which show that the present state of the treatment of fractures is in anything but a satisfactory condition. Especially in fractures of the femur and in both bones of the leg, in at least 30% the result was unsatisfactory, some paramount deformity resulting. He urges a more frequent resort to the open operation by which the broken bones can be accurately set and then plated.

3. Ward discusses the difficulty in accurate diagnosis of urinary disease under three headings: (1) The similarity of symptoms in disease of different parts of the tract; (2) reflex or transferred symptoms; (3) absence of any localizing symptoms. Among the methods of accurate diagnosis he discusses the use and value of the cystoscope, catheterization of the ureters, radiography and others.

4. Fullerton gives the details of 24 cases of renal tuberculosis whose subsequent history he has followed up. He discusses these cases as regards early diagnosis and treatment.

6. Hamburger, in a brief article, gives statistics based on a study of 532 patients suffering with scarlatina or diphtheria, with a view to the incidence of tuberculosis in those children. He concludes: (1) The majority of persons become infected with tuberculosis in childhood. (2) The frequency of such infection increases from year to year, while tuberculous morbidity, the frequency of manifest tuberculous disease, decreases. (3) Tuberculosis is very commonly latent, producing no symptoms. (4) The older the person is at the time of first infection, the better is the prognosis. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 26.

JUNE 30, 1910.

1. BIBERFELD, J. *Recent and Latest Additions to List of Medicines.*
2. NEISSER. *The New Arsenic Preparation of Ehrlich.*
3. *SLEESWIJK, J. G. *Noguchi's Serum Diagnosis of Syphilis.*
4. ASCOLI, ALBERTO. *"Anallergische Sera." An Attempt to Prevent Serum Sickness.*
5. SCHERESCHEWSKY, J. *Vaccination Investigations with Recurrent Typhoid.*
6. SCHAUMAN, O. *What Rôle is Played by the General Condition in the Pathogenesis of Bothriocephalus Anemia?*

7. *Mendel, F. *Intravenous Use of Tuberculin.*
8. Kümmell, H. *How Can we Diminish the Mortality in Appendicitis and Avoid Abscess and Peritonitis?* (To be Concluded.)
9. Hoffman, A. *Cause of Spasm of the Abdominal Wall.*
10. Kafemann. *The Possible Importance of the Use of Electrolysis in the Upper Air Passages in Connection with a Healed Case of Epithelioma of the Base of the Skull.*
11. Schemel. *A Case of Paralysis of the Musculo-Cutaneous Nerve.*
12. Elschnig. *Firm Serum Bouillon for Streptococcus Cultures.*
13. Lang. *Postscript to the Article by Professor Lang on Lupus in the Preceding Number of this Journal.*

3. Sleeswijk, in trying the Noguchi test for syphilis, concludes that in cases of undoubted syphilis this test is as accurate as the Wassermann reaction. In certain cases of fever, and doubtful cases, the Noguchi reaction was positive when the Wassermann reaction was not. He concludes, therefore, that the Noguchi reaction is no improvement on the Wassermann because it is not as reliable.

7. Mendel has been using tuberculin intravenously now for over one thousand doses and has never seen any ill effects. The constitutional symptoms after its use are roughly the same as after subcutaneous inoculation. As a diagnostic means he considers it as effective as any of the other methods. From a therapeutic standpoint he considers it more effective, especially if given in combination with atoxyl in intravenous injections. [C. F., Jr.]

Berliner Klinische Wochenschrift. No. 25.

June 20, 1910.

1. Finkelstein, H., and Meyer, L. F. *"Albumin-Milk" as a Food for Infants with Gastro-Enteric Disorders.*
2. Uhlenhuth and Mulzer. *Experimental Syphilis in Rabbits and Apes.*
3. Hörtel, F. *Suction Drainage of the Pleural Cavity.*
4. Dietlen, H., and Knierim, G. *Hernia Diaphragmatica Dextra.*
5. *Bönniger, M. *Unilateral Lymphatic Stasis in Diseases of the Lungs, Particularly the Pleura.*
6. du Bois — Reymond, R. *A New Sphygmograph.*
7. Koslow. *Ether-Acetone Combination of the Antiformin Method in the Identification of Tubercle Bacilli.*
8. Hoffmann. *The Malarial Conference in Simla.*

5. The author shows by careful descriptions and by a series of photographs that with diseases involving only one lung, especially where the pleura is also involved, there is frequently a definite lymphatic stasis limited to that side of the body. This stasis can be readily seen and felt by an increased turgidity of the tissues. This is not confined to half the thorax only, but is evident in the face, abdomen and upper arm. He concludes with a theoretical discussion of the reason for this stasis and its value as a diagnostic sign of intrathoracic disease.

No. 26. June 27, 1910.

1. Uhthoff, W. *Two Remarkable Cases of Sudden, Bilateral Blindness in Advanced Age.*
2. Wildbolz, H. *The Tuberculin Treatment of Tuberculosis of the Kidney.*
3. *Renner. *Cystic Kidneys and Renal Cysts.*
4. Augspach, A. *Collection of Illustrative Cases of Chronic Torsion of the Colon.*
5. Springfeld, A. *A Few Observations Concerning Anguillula Intestinalis.*
6. Bolle, C., Schlungbaum and Schröeder. *The Question of the Tuberculin Test for Cows Supplying Milk for Infant Feeding.*
7. Möllers, B. *The Tuberculin Test for Cows Producing Milk for Infant Feeding.*
8. Hinze, V. *The Treatment of Chronic Lead Poisoning.*
9. Freudenberg, A. *A Warning for Prudence in Considering the Diagnostic Value of the Wassermann Syphilitic Reaction.*

3. The author believes that the difference between cysts of the kidney and the polycystic kidney to be purely one of degree; that the same factors enter into the formation of the cysts. He mentions several cases and the results of operative interference. [J. L. H.]

Die Therapie der Gegenwart.

June, 1910.

1. Leube, W. *The Tenacity of Cellular Activity and Its Relations to Pathology.*
2. Forlanini, C. *A Question of Priority Concerning Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis, and the Mechanics of Its Action.*
3. Weiland and Sandelowsky. *The Value of Sahli's Desmoid Reaction in Hospital and Private Practice.*
4. Unna, W. *Improvised Clyster Therapy.*
5. *Axisa, E. *The Treatment of Amebic Dysentery.*
6. von der Porten, E. *The Treatment of Delirium Tremens with Veronal.*
7. Ritter, C. *An Old Forgotten Hyperemic Method.*
8. Muskat, G. *Dysbasia (Intermittent Lameness).*

5. Axisa reports a number of cases of acute, subacute and chronic amebic dysentery from the Austro-Hungarian Hospital in Alexandria. He finds Kossam a valuable remedy, especially in uncomplicated cases of long standing; some of his cases which had resisted other treatment for years yielded in a few weeks. In some instances the action of this drug was as specific as that of quinine in malaria. Kossam is the oily seed of bruces sumatrana and has long been a popular remedy for dysentery in Cochin China and elsewhere in the Orient. The active principle is a glucoside, kossmine. It acts directly on the amebæ; bleeding is promptly stopped and subjective symptoms relieved. In acute cases an occasional purge should be given. If the stools remain thin and watery after mucus and amebæ have disappeared, astringents per rectum are indicated, e. g., 0.5% tannic acid solution. [L. D. C.]

Il Policlinico.

June, 1910.

Medical Section.

1. Tomaselli, A. *A Study of the Leishman Bodies in the Juice of the Spleen of Infants Affected with Kala azar.*
2. *Ascoli, V. *Malarial Pigmentation.*
3. Stradiotti, G. *A Case of Multiple Calcification in the Subcutaneous Tissue of Syphilitic Origin.*
4. Pende, U. *Severe Anemia with Splenomegaly.*
5. Petacci, A. *Researches on the Romanowski Stain and a Quick Method of Using It.*

2. Ascoli studied malarial pigmentation by experiments on dogs. He was able to collect from the spleens of pernicious cases a certain amount of pigment which could not be obtained from the spleens of animals poisoned with pyrodin. The coloring matter was demonstrated by its chemical properties and by spectroscopic examination to be hematin, which is produced from hemoglobin by the action of the parasite. The properties of this pigment vary with the phases of the life cycle of the plasmodium. The degree of cachexia in malaria depends not upon the quantity of pigment produced, but upon the species of hematozoon harbored. The pigment is formed for the most part in the spleen and the bone marrow where the parasite completes the last phase of its asexual life and most of the phases of its sexual life. Pigment is present in the blood stream in small amounts only and quickly disappears. [L. D. C.]

Correspondence.

DUBLIN LETTER.

Obstetrics in Ireland. Tuberculosis. Anti-vaccination Agitation.

Dublin, July 13, 1910.

Mr. Editor: Though Ireland ought perhaps hardly to be called the home of obstetrics, it is surely a country

where, in the hospitals at least, the science and the art of obstetrics are taught and practised in very classic and conservative form. This is due in part probably to the insular character of the local civilization in which changes, though intelligently made, come slowly and without disestablishment of long-existing custom, and partly to certain well-marked racial physiologic characteristics of the people. It is a common saying in our own obstetric clinics in Boston that "the Lord loves the Irish," and in the matter of childbirth this seems to be true in the old country as well as in the new.

Our first experience of Irish obstetrics was in the city of Cork, at the Erinville Lying-In Hospital, a small but well-managed institution, conducted essentially on the principles of the Dublin Rotunda, and by a graduate of that hospital. The Erinville is pleasantly situated on one of the principal streets, and contains four public wards, "open day and night, free of charge, to respectable married women, without religious distinction, who must be recommended by a clergyman, doctor, or Lady Governess." It also has semi-private wards, in which patients pay twenty shillings a week, and a private room, not often occupied, we were told, for which the weekly fee is three guineas. The building is old, probably several hundred years, but shows, within and without, a capacity of adaptation to modern requirements which makes really good work possible even in an archaic environment. The principles of aseptic surgery and obstetrics are often all so very simple that understanding and conscience are the only essentials for their fulfilment, as in *Hamlet* "the readiness is all."

During the year 1909, 385 patients were admitted to the Erinville Hospital, of whom 333 were delivered. In the externe department, 180 women were attended at their own homes. Among the 565 patients thus cared for, there were only two maternal deaths, one from advanced heart-disease, one from secondary post-partum hemorrhage. The total infantile mortality was 19, 6 of these being macerated fetuses and 5 premature. Considering the life and surroundings of most of the patients, and the conditions under which much of the work must be done, these figures furthur illustrate the truth of the proposition that "the Lord loves the Irish."

In the hospital all the normal deliveries, which means a very large proportion, are conducted by the pupil nurses under the direction of the resident matron, who is a sort of combination of superintendent, head-nurse and house-officer, and an extremely capable woman. In the externe department, patients are attended by licensed midwives, graduates of the Dublin Rotunda or of the Erinville training-school, which receives yearly "a limited number of women to be trained as obstetric nurses and granted certificates when the medical staff are satisfied of their competency." As at the Rotunda, the term of study for such probationers is six months, "and the fee, including board, practise and instruction, £16." For nurses who have previously had "a satisfactory hospital training," the term is only three months and the fee £10. To one accustomed to our American training-schools where nurses are paid, howbeit scantily, it seems as surprising that they should be thus charged a fee as it does to learn that the medical staff at the Rotunda, from the Master down, pay a really considerable sum for their appointments, though the mere possession of wealth without qualification will not secure such appointment. In the old world opportunity for instruction and experience is still difficult enough of attainment to be really valued by those who get it. As long as this remains true, nurses will doubtless continue to pay fees to the training-schools. Until it ceases to be true, however, or until financial and educational conditions are largely modified, it will be impossible in Ireland to require of obstetric nurses, as is done in our best schools, a previous general hospital training, followed by six months obstetric pupillage, or, in the absence of such previous training, a fifteen months' course of obstetric instruction.

Medical students, the bane and *bête-noire* of our selfish American house-officers,— themselves barely out of studenthood, — are allowed to attend visits and demonstrations by the medical staff and occasionally to conduct deliveries, interne and externe. At Erinville they are nearly all members of Queen's College, Cork, now a national university. There is much less operative obstetrics for them to see than in American clinics, partly on account of our greater impatience and *fames operandi*, partly on account of the racial physiologic characteristic, already alluded to, which make normal labor much more often the rule in Ireland than the exception. At Erinville, as at the Rotunda, an expectant policy is pursued; patients are allowed to go much longer unassisted in the second stage than is our custom; and the visiting staff are summoned only for complications or prolonged dystocia, with good results that would be impossible in a clinic of different social or mixed racial composition. Puerperal complications, too, are rare: tonsillitis, otitis media, phlebitis and mastitis seem practically not to occur; and a puerperal temperature over 100° almost invariably means and is treated as uterine infection. That these cases, also, are very infrequent is evidence of the efficiency of the nurses' work, and it is to the immense credit of Irish obstetrics that it has so practically taught the principles of asepsis as to obtain their successful application under the most disadvantageous conditions.

Not all the problems of obstetrics, however, are successfully solved in Ireland. As in all other countries, the mortality from puerperal sepsis, outside of hospitals and teaching clinics, still remains unduly high, and is even greater in Ireland than in England and Wales. This is because unlicensed midwives still practise in Ireland. There has been of late considerable agitation, medical and popular, over the proposed extension to Ireland of the provisions of the British Midwives' Act, which requires examination and registration of all midwives in England, and forbids unregistered midwives to practise. Late in June a conference was held of representatives of the Irish Medical Society, of the Royal Colleges in Ireland, of the Royal Irish Academy of Medicine and of various other professional bodies, who voted unanimously to support the demand for such extension. In a letter published in a recent issue of the *Medical Press and Circular*, Sir William J. Smyly, of Dublin, a former Master of the Rotunda, strongly advocates this resolution, and in argument cites the fact that in England and Wales the death-rate from puerperal fever in private practise has steadily declined since a uniform Midwives' Act went into effect. He further points out the injustice now done the licensed midwives of Ireland, who not only have to compete with unregistered midwives in Ireland, but are not themselves allowed to practise in England. The remedy for this condition, he believes, is either the proposed extension of the British act to include Ireland, or a separate Irish Midwives' Act with standard requirements and reciprocity between the two countries. The problem of midwives is one that fortunately has not yet assumed serious importance in the United States, and probably is hardly likely to do so. Its present prominence here emphasizes an aspect of obstetrics with which we are happily but little familiar.

At Dublin, the center of obstetric interest, is of course, the Rotunda, but equally important and worthy of a visit are the Coombe Maternity and Sir Patrick Dun's hospital, which one cannot help wanting to associate somehow with Sir Patrick Spens. We were everywhere handsomely received, with fraternal professional cordiality and the graciousness of true Irish hospitality. It was rather interesting and surprising, by the way, to find the two Assistant Masters at the Rotunda one a Pennsylvanian, the other an orthodox Jew. It was also surprising to learn that the old gray weather-beaten round building from which the hospital derives its name, — and which one had always imagined as originally filled with patients' beds ranged around the wall and later perhaps used for lectures and demonstrations, — that this was never used obstetrically at all, but was built by the governors as a hall to be let to the public for dances, concerts and other entertainments, to furnish revenue for the maintenance of the hospital. For many years the Rotunda was the scene of all the gayest functions of Dublin society, and though it has somewhat lost caste of late, it is still used and furnishes a valuable source of income. At present it is lavishly placarded with posters of a mammoth Hibernian Bazaar to be held there the latter part of July. Similarly, within a few years, the governors have erected in the spacious secluded gardens of the hospital a large covered skating-rink, which is let to a private company

who maintain it and charge the public a fee for admission which nets a profit both to the company and to the governors. The need of hospital economy and thrift is not unknown in America, but we are hardly yet accustomed to the idea of the trustees of our institutions running public amusements in hospital buildings as a business venture.

In Ireland, as on the European continent, there prevails and is accepted as a matter of course, the theory that obstetrics and gynecology are but different aspects or departments of the same subject and should be taught and practised together and by the same persons. All the larger maternity hospitals have gynecologic wards to which are admitted not only patients with troubles consequent upon parturition, but women with pelvic disease of any sort. At the Rotunda, about five hundred such interne patients are treated annually, besides a large amount of minor, non-operative gynecology done in the externe department. The concept of the essential unity of obstetrics and gynecology is one that unhappily seems at present not yet fully established in America.

It is from the gynecologic surgery that the pathologist at the Rotunda derives the majority and the most interesting part of his material. Morbidity and mortality are rare in the obstetric wards. In the year 1908–09 there were but 4 maternal deaths among over 2,000 patients, and the pathologist was called upon to examine cultures from only 35 cases of suspected uterine infection, of which 15 proved negative. Autopsies are done on all fatal cases as a matter of course, there being no requirement of permission, as in our country, to hamper the pursuit of medical study. Another instance of the infrequency of puerperal complications is the fact that among over 2,000 patients last year there were but 7 cases of eclampsia, who all recovered, and only 2 of mastitis. The rarity of breast infection may be partly explained by the custom of letting all normal cases leave the hospital on the eighth day, but this cannot account for it altogether, and, like the rarity of eclampsia, it must be attributed in part at least to racial physiologic habit.

There is so much to see and to say about the Rotunda, that it is impossible to tell it all here. It is an unfailing source of interest and pleasure and inspiration to go about the wards with the master, to listen to his keen comment and trenchant criticism as he instructs his students, to watch him and his assistants at operation, to observe and compare points in which their method and technic differ from ours. The elements of asepsis are of course the same the world over, though it sometimes seems that the greater elaborateness of detail observed here must introduce possibilities of error which our simplicity avoids. In the operating-room the most striking single thing is that patients for pelvic laparotomies are placed in a combined Trendelenburg and lithotomy position, and the operator stands most of the time between the patient's legs, his assistant being on one hand, the operating nurse on the other. This method has at least one great advantage, that the surgeon can address his audience and demonstrate his work to their much better satisfaction. In the obstetric wards it is chiefly noticeable that forceps are applied and breeches delivered with the patient in the left Sims position, instead of on the back, procedures said to seem easy and natural to those who practise them, though appearing very awkward to us, and probably like most details of technic representing individual custom and habit rather than intrinsic difference of merit. The third stage is treated more conservatively and deliberately at the Rotunda than is often our practise, and the uterus is not nearly so strenuously controlled. Yet post-partum hemorrhage is not so frequent as in our clinics. Is this another instance of happy racial physiologic adaptation? "Did you have the first baby yourself, or did the doctor have to use instruments?" said the master to a woman whom he was examining for contracted pelvis. "Sure I had it meself," she rejoined, half indignantly, half humorously, "I'm Irish!"

Let it not appear, however, that there is nothing of medical interest in Ireland but obstetrics. The problem of pulmonary tuberculosis is one of the most important with which the profession has undertaken to deal, though, perhaps on account of climate, the racial susceptibility of the Irish to this disease does not seem to be so high here as it is in America. During the past ten years there has been in Ireland a great popular awakening to the nature of consumption and the possibility of its cure and prevention, largely due to the extensive educational campaign instituted and carried out by Lady Aberdeen. The results of her work may be seen not only in the establishment of sanatoria for tuberculous patients, in the improvement of housing conditions among the poor, and in the conspicuous posting of notices forbidding promiscuous expectoration, but also in the general frequency with which one observes wide-open windows, particularly in the early morning while most people are still asleep. Though the ventilation of many hovels and cottages is still abominable, the fresh-air theory seems to have got a foothold, and in the daytime nearly everyone lives outdoors anyway. In Dublin, two special tuberculosis nurses, maintained by the Women's National Health Association, spend their time among the poor, caring for those who have phthisis, and teaching others the principles of prophylaxis. Plans are also in progress for the erection in Dublin of a special Dispensary for the Prevention of Consumption. Notwithstanding such advances, however, much still remains to be done. At a recent quarterly meeting of the Dublin Hospitals' Tuberculosis Committee it was unanimously resolved that, in the opinion of the committee, "a large proportion of chest affections leading to tubercular disease in the city of Dublin is due to the excessive amount of dust in the streets, the inadequate watering thereof, and the faulty method of street-sweeping." The committee further "notes with regret that the plague of dust is especially prevalent in the poorer quarters, where little or no attempt is made to lay it by watering and subsequent removal." As a matter of fact, the streets in Dublin, and in Ireland generally, do not seem a bit dirtier than many in our own Boston, though it is true that street-watering and sweeping are not nearly as thorough as in our city. Cleanliness is no more an American than an Irish trait, and the ill-discipline of the average American nakes him an all too frequent offender in the scattering of street-litter.

Another problem of medical interest, over which there seems to be considerable agitation in Ireland at present, is the question of compulsory vaccination. Apparently, in Great Britain, vaccination is optional, and parents who have a conscientious objection to it are not compelled to have their children inoculated. In Ireland, however, the law is absolute, and those who seek to evade it are punishable by fine. In a letter to the *Cork Examiner*, a correspondent, evidently an opponent of vaccination, eloquently describes "the terrible and ghastly dangers inseparable from vaccine blood-poisoning," and relates the case of "a child who was 'stone-blind' and yet, shameful to relate, the law demanded that in addition to the terrible affliction of blindness there should be imposed upon it the filthy, torturing disease of cowpox, a disease of such malignancy that many strong men have been slain by it." He further expresses the hope "that the people of Ireland will give their representatives in Parliament no peace until they at least stand on an equality with their English, Scotch and Welsh brethren in this matter; or, better still, not until every remnant of this obnoxious compulsory vaccination law is swept from the statute book." Apart from differences of opinion as to the advisability of compulsory vaccination or as to the lethal "malignancy" of cow-pox, this letter is a straw that shows which way the wind of public opinion is blowing. It must be admitted that there is some justice in the correspondents' plea for equality, and it must be remembered that doubtless vaccination has been brought into popular disrepute in Ireland, as among some persons in America, partly through the improper practise of it by certain physicians whose intentions have been better than their asepsis.

In this connection it is interesting to compare some statistics recently published in the annual report of the Metropolitan Asylums Board for 1909, giving the mortality from smallpox in London since 1838. In that year there were 3,817 deaths from the disease among a population of 1,800,000, a rate of 2,120 per million. The death-rate then declined steadily till 1871 when, in conjunction with an epidemic, it rose to 2,422 per million. Since then it declined more rapidly, and in the years 1906, 1907 and 1908 there was actually not a single death from smallpox in the city of London, with a population nearly three times as

great as in 1838. In 1909 there were 2 deaths from smallpox in London, and in the first three months of 1910 only 8 have occurred in the whole of England and Wales. Ingeniously enough, the opponents of compulsory vaccination undertake to explain this decreasing mortality by the increase of conscientious objection to vaccination, and point out, in support of their contention, that the three years in which there were no smallpox deaths in London, the percentages of exemption for such objection were respectively 5.6, 6.2 and 17.2. In commenting on this absurd reasoning, the *Medical Press and Circular* appropriately remarks: "The *suggestio falsi* and *suppressio veri* involved in this line of argument is grotesquely apparent, and shows to what depths of intellectual squalor the anti-vaccinationists must have fallen." In an address before the Conference on Tuberculosis recently held in Edinburgh in conjunction with the annual meeting of the National Association for the Prevention of Consumption, Dr. Osler also took occasion to refer to the pernicious activity of anti-vaccinationists. He is reported to have said that in the event of a severe epidemic of smallpox he should like to issue them a challenge for the simultaneous exposure, in the care of the sick, often selected vaccinated persons and ten selected unvaccinated persons, — the latter preferably members of Parliament and anti-vaccination doctors and propagandists, — with the promise "neither to jeer nor to gibe when they caught the disease, but to look after them as brothers, and for the four or five who would be certain to die, to arrange a funeral with all the pomp and ceremony of an anti-vaccination demonstration." If the humor of this suggestion be half American, it serves to illustrate the better that other English-speaking countries are no freer than we from the lets and hindrances that impede the progress of medical service to the community, and makes us more appreciative of our professional good fortune in some respects at home by comparison with the troubles of others abroad.

Medicus Peregrinus.

RECORD OF MORTALITY

For the Week ending Saturday, July 23, 1910.

Cities.	Reported deaths in each.	Deaths under five years.	Cities.	Reported deaths in each.	Deaths under five years.
New York	1,483	694	Waltham	7	1
Chicago	585	255	Pittsfield	9	1
Philadelphia	—	—	Brookline	—	—
St. Louis	—	—	Gloucester	5	2
Baltimore	—	—	North Adams	4	2
Cleveland	—	—	Northampton	7	1
Buffalo	—	—	Chicopee	11	7
Pittsburg	—	—	Medford	1	—
Cincinnati	—	—	Beverly	4	—
Milwaukee	—	—	Leominster	—	—
Washington	—	—	Hyde Park	5	3
Providence	—	—	Melrose	—	—
Boston	185	62	Newburyport	4	—
Worcester	39	21	Revere	5	4
Fall River	77	38	Westfield	6	4
Cambridge	31	18	Woburn	5	2
Lowell	58	30	Peabody	—	—
New Bedford	55	40	Marlboro	2	0
Lynn	21	3	Attleboro	7	2
Springfield	37	17	Adams	5	5
Lawrence	40	25	Clinton	7	1
Somerville	17	4	Gardner	5	3
Brockton	12	5	Milford	4	2
Holyoke	18	10	Watertown	3	2
Malden	8	4	Plymouth	—	—
Chelsea	6	1	Southbridge	3	—
Newton	2	—	Weymouth	2	1
Salem	11	4	Framingham	—	—
Haverhill	15	4	Wakefield	—	—
Fitchburg	12	8	Webster	3	2
Everett	6	1	Arlington	2	—
Quincy	—	—	Greenfield	3	0
Taunton	19	5			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED JULY 27, 1910.

Wasdin, Eugene, surgeon. Granted one month's leave of absence from July 22, 1910, on account of sickness.

Eager, J. M., surgeon. Granted seven days' leave of absence from July 21, 1910.

Nydegger, J. A., surgeon. Leave of absence for seven days from July 3, 1910, amended to read on account of sickness, in accordance with paragraph 202, Service Regulations.

Wickes, H. W., passed assistant surgeon. Directed to proceed to Washington, D. C., and report to chairman of board of medical examiners to determine his fitness for promotion to the grade of surgeon. July 20, 1910.

Holt, John M., passed assistant surgeon. Granted seventeen days' leave of absence from August 11, 1910, and nineteen days' leave of absence from September 1, 1910.

Glover, M. W., passed assistant surgeon. Granted ten days' leave of absence from July 25, 1910.

Lloyd, B. J., passed assistant surgeon. Granted one month's leave of absence from July 20, 1910, on account of sickness.

Roberts, Norman, passed assistant surgeon. Granted one day's leave of absence July 21, 1910, under paragraph 191, Service Regulations.

Pettyjohn, Joseph, passed assistant surgeon. Granted one month's leave of absence from August 15, 1910, on account of sickness.

Knight, C. P., assistant surgeon. Granted seven days' leave of absence from July 18, 1910, under paragraph 191, Service Regulations.

Gray, E. George, acting assistant surgeon. Granted seven days' leave of absence from July 25, 1910.

Onuf, B., acting assistant surgeon. Granted four days' extension of leave of absence from July 17, 1910, on account of sickness.

Safford, M. Victor, acting assistant surgeon. Granted ten days' leave of absence from July 20, 1910.

Seavey, L. T., acting assistant surgeon. Granted twenty-one days' leave of absence from August 8, 1910.

Walker, Thomas D., Jr., acting assistant surgeon. Leave of absence for eleven days from June 28, 1910, amended to read eight days from June 28, 1910.

Rogers, Edward, pharmacist. Granted seven days' leave of absence from July 14, 1910, under paragraph 210, Service Regulations.

CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING JULY 30, 1910.

Rhoads, G. C., assistant surgeon. Ordered to duty at the Naval Hospital, Norfolk, Va. July 22.

Bloedorn, W. A., assistant surgeon. Ordered to the Navy Yard, Mare Island, Cal. July 23.

Downey, J. O., assistant surgeon. Detached from the Naval Hospital, Norfolk, Va., and ordered to duty at the Naval Hospital, Naval Home, Philadelphia, Pa. July 26.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.

The American Electro-Therapeutic Association will hold its Twentieth Annual Meeting at Saratoga Springs, New York, September 13, 14, and 15, 1910.

RECENT DEATH.

Dr. Frederick W. Lilienthal, of New York, died at his country residence in the Catskills on July 28, at the age of seventy-seven years. He was a native of Germany, and was graduated from the University of Berlin in 1858. He came to this country in 1861, and built up a large practice among the German population of New York. He was one of the founders of the *New Yorker Volkszeitung*, and was a prominent member of the International Socialist Union.

Original Articles.

THE CLINICAL ASPECTS OF ARTERIOSCLEROSIS.*

BY HENRY JACKSON, M.D., BOSTON.

THE subject of arteriosclerosis is one that interests us all in that it represents a condition that all of us who live long enough must sooner or later come to. The etiology is obscure and the pathologic processes dependent upon the condition are most varied. Clinically, the symptoms are as varied as are the pathologic processes which may result from changes in the vessel walls.

The marked changes in the larger vessels were recognized by the older anatomists and clinicians, but the importance of these changes was not appreciated until a comparatively recent time, some forty years, or until the work of Gull and Sutton in 1871–72. These authors were the first to recognize the important rôle in the etiology of disease played by fibrous changes in the walls of the smaller arteries, their so-called arterio-capillary fibrosis. For instance, Walshe, in his book, "Diseases of the Lungs and Heart," published in 1851, says "Atheroma and calcification of the aorta, conditions of great anatomical interest, have in themselves but little importance." Also in his discussion of the cause of angina, though he expresses the opinion that there must be some organic cause for the trouble, he does not mention the rôle of changes in the vessels as causative of the disease.

Pathologically, we find changes in the elastic tissue of the vessels, in the media and in the intima. As the changes in the intima are the most prominent features, so this factor was first noticed by the pathologists, and we find in the older books of pathology an accurate description of changes which have taken place in the intima, as atheroma, calcareous degeneration and colloid changes. These changes were well recognized before the changes in the smaller vessels were known, and when but little clinical significance was attached to atheroma of the aorta, for instance. It is now known that the primary process is found either as a degenerative or as an inflammatory change in the media, or perhaps some defect or strain of the elastic fibres. The marked and long recognized changes in the intima, on the other hand, represent a conservative process, a protective cement, so to speak, to guard against injury of the arterial wall because of the disease in the media. As Dr. Councilman has said, an atheromatous process represents "a degeneration in the media and a growth in the intima."

It is to me a deplorable fact that the laity are so conversant with and talk so much about hardening of the arteries without, of course, any idea of the significance of the changes in the specific case under consideration. We are all of us often asked whether we think the arteries are hardened, and in many cases we can truly say, yes, the arteries have changed just as the appearance of the skin has changed, but the arterial change means no more than the hardening of the skin means, a mark of advancing age. I often say to a patient that if a hand were pushed through a sheet he could at once say whether it was the hand of a man of twenty-one or fifty-one years; so the physician can discriminate between the arteries of a man of twenty-one or fifty-one years, though a decision as to the results of such arterial changes is a very complex matter, leading often into regions unexplored and always obscure.

In the sixth volume of the Transactions of the Association of American Physicians, Dr. Councilman published a very valuable article on arteriosclerosis, in which he describes what may be called the clinical-pathologic types of this disease; he makes three divisions.

(1) Nodular form, seen especially in the aorta, often of no importance clinically, and usually giving rise to no symptoms, except in the rather rare instances where such a pathologic change is the primary factor in the causation of aneurism.

(2) Senile type. In this form the vessels are often calcareous; the heart is small and the liver and kidneys show only the atrophy which accompanies old age.

(3) Diffuse arteriosclerosis. This is the type which gives rise to the serious types of disease from a clinical point of view, which is meant when the laity talk about hardening of the arteries. This is the disease which is the cause of many so-called cases of Bright's disease and practically all cases of "cardio-renal" disease.

Of the first, or nodular form, I shall not speak in that it does not give rise to clinical symptoms.

The second, or senile type, is of great interest from the point of etiology; the heart is not enlarged. Clinically, we often see arteries which feel like broken pipe-stems, and so hard that it seems as if they would crack if they were out of the body. We find these conditions in the very old, in people who are essentially well except for such ills as are dependent upon general debility of a senile type. The heart is often extremely intermittent and irregular, yet does not show the results of heart failure as evidenced by edema of the extremities, by congestion of the liver or kidneys, or even chronic bronchitis with varying grades of pulmonary edema. It is not my experience that such individuals are especially subject to apoplexy or other diseases which could be attributed to the diseased condition of the arteries.

It is hardly conceivable that the same etiologic factors underlie this form of arterial disease as are considered the probable cause of diffuse arterio-capillary fibrosis. It certainly suggests that in the latter type there is some toxemia, as yet undetermined, which is a powerful factor in the production of the widespread diffuse fibrous degeneration of the arteries seen in the third and all important type of diffuse arteriosclerosis.

Yet in the senile type we find many symptoms probably directly attributable to the condition of the arteries, rather local disturbances in the circulation than disease which affects the body as a whole.

* Read at The meeting of The Massachusetts Medical Society, June 7, 1910.

The third type of Dr. Councilman, diffuse arteriosclerosis, represents a pathologic condition which is of the greatest importance from its being the direct cause of many very varied pathologic conditions, as it has given rise to much discussion as to its etiology, and as it is the cause of many clinical symptoms or signs as different one from the other as cerebral hemorrhage, muscular rheumatism and heart disease.

Attention of clinicians was first permanently drawn to this disease by Gull and Sutton in 1872, though their chief attention was directed to the kidney lesions dependent upon arteriosclerosis.

Diffuse arteriosclerosis is a disease found especially and in its most marked type in individuals otherwise healthy, often of robust type and full blooded, who are from forty to fifty years of age; it may be found in much younger people, but it is most common in those advanced in years. The heart is enlarged, weighing on the average 400 gms. or more; in this form of heart disease we find the largest hearts, cases being on record of hearts weighing over 800 gms., when there was no valvular disease. The dilatation of the heart may be so great that all of the valves become incompetent, so that murmurs may be heard at all of the orifices of the heart without the presence of any disease of the valve curtains.

The kidneys are usually diseased as shown clinically by the presence of albuminuria with casts. When the heart is seriously affected, as is seen in so many cases, the question always arises what signs may be attributed directly to the sclerosis and what to the secondary disease of the heart. From an etiologic point of view many conditions must be considered, though clinically the most satisfactory classification is that of Osler who thus describes three great divisions of arteriosclerosis, namely: "Normal wear and tear of life, acute infection, intoxications and those combinations of circumstances which keep the blood tension high." In the last few years many experiments have been made in the attempt to produce in animals lesions similar to arteriosclerosis in man, but though such experiments have successfully produced types of sclerosis closely allied to certain types of sclerosis in man, most investigators are still in doubt whether the lesions are produced by the artificially increased blood pressure or by some toxic property inherent in the drug used to cause the increased pressure.

In 1889, the first reported animal experiments were made by Lion and Gilbert: they used intravenous injections of bacteria or bacterial toxins to produce sclerosis. In 1902, Von Eiselsberg reported similar changes in thyroidectomized animals. In 1905, Pearce and Stanton succeeded in producing definite sclerotic lesions by the use of adrenalin; they used twenty rabbits; nine died from poisoning by the adrenalin, but six of the eleven who survived showed lesions of sclerosis. In one case Pearce and Stanton report their results as follows: "The media is firm, parchment like, and so distinctly calcified that the vessel cracks in several places when the arch of the aorta is straightened." The histologic picture they describe as follows: "The most striking feature of the late histologic picture is the extent of repair in the intima. The latter with its newly formed connective tissue and elastic fibrils becomes so greatly thickened, that it constitutes in some places a quarter to a third of the entire vessel wall and offers convincing evidence of the compensatory nature of the repair process."

These lesions were produced in animals in the course of sixteen to sixty days by injection of adrenalin every other day, a drug which produced a definite rise in blood pressure, but a rise in pressure of very short duration, so that Pearce and Stanton as well as subsequent investigators express doubt whether the pathologic condition was the result simply of the increased pressure or of some toxic substance in the adrenalin acting entirely independently of its power to temporarily increase blood pressure.

Their results are especially interesting as favoring the generally accepted view that the primary disease lies in the media, and that the process so prominent in the intima is secondary and essentially of a conservative nature.

In 1906, J. L. Miller reported the results of his work in the production of sclerosis in animals. He agrees with Pearce and Stanton that the primary disease is in the media and that the intima and adventitia are not involved except in the process of repair, the defects in the wall being repaired by cells arising from the intima. Dr. Miller reviews the various substances used to produce experimental arteriosclerosis as digitalin, nicotine, lead salts, adrenalin, and adds two others physostigmin and barium chloride. He also considers that the question is not proven whether the exciting cause of the disease lies in the power of the drug to raise the blood pressure or in some toxic property independent of this power.

In 1906, Charles S. Bond, of Richmond, Ind., made to the Association of American Physicians a most interesting communication from a clinical standpoint as to the etiology of arteriosclerosis. For twenty years he followed the course of 150 cases of chronic indigestion with over indulgence in food, and selected 100 from which to draw conclusions. All cases were omitted in which there was alcoholic excess or a possible chance of syphilis. In these cases there was an excess of food, deficient motor power of the stomach, and constipation. Thirty per cent. developed arteriosclerosis in a more or less marked degree, 5 died of angina, 6 of apoplexy and 4 of cerebral hemorrhage, while the remaining cases were under observation and all showed varying grades of increase of arterial tension and abnormal heart action.

To certain toxic agents we may very surely attribute an important rôle in the causation of arteriosclerosis; alcohol taken in the form of hard liquor and used continuously, though not in quantities to cause intoxication, is, from clinical observation, a most important etiologic factor. Lead is another, yet neither of these substances raises the blood pressure. Syphilis produces a specific form of disease of the arteries which is recognizable by

the pathologist. Experimental work has shown that bacterial toxins may cause sclerosis.

Dr. W. S. Thayer has studied especially the influence of typhoid fever on the arteries. In 52 autopsies he found arterial changes in 30, in 21 of which the lesions were evidently fresh and presumably due to the toxin of the typhoid fever. Also he found changes in the coronary arteries in 62 cases, in 19 of which the lesions were evidently fresh in thirteen.

From experimental and clinical observations it seems probable that we must attach greater importance to the rôle of varying toxic processes associated with acute infectious diseases in the etiology of arteriosclerosis. Yet the chief cause probably lies in overeating and consequent gastro-intestinal disturbance.

The theories suggested offer certainly a possible explanation of the etiology of the two distinct clinical types of arterial disease which we see. The one, a calcareous degeneration of the arteries seen in old people, subject only to the ordinary though perhaps strenuous wear and tear of life, in individuals who do not appear to suffer from the arterial changes. On the other hand, we have the cases of diffuse arteriosclerosis in younger persons, who suffer most severely from varying secondary pathologic processes, a disease probably toxic in etiology.

The clinical symptoms of arteriosclerosis differ as widely as do the pathologic conditions, and may be divided into symptoms due to localized interference with the circulation, and symptoms due to general obstruction of the whole arterial system as in diffuse arteriosclerosis, with secondary enlargement of the heart.

The symptoms dependent upon arteriosclerosis may then, from a clinical standpoint, be divided into localized symptoms and general symptoms, and I first take up the localized symptoms as these are perhaps less generally recognized than the more severe types of disease dependent upon widespread capillary fibrosis.

Localized symptoms. — The most important, perhaps, are those associated with disease of the vessels of the heart. In many cases of sclerosis of the arch of the aorta we find an extension of the process to the valves of the heart resulting in sclerotic changes of the aortic valves. Such changes are recognized by an irregularity in the aortic second sound often with a slight systolic or diastolic murmur according as the lesion tends to produce a stenosis or a regurgitation through the valves. As these lesions are met with in advanced life, at a time when the heart is not called upon to do as active work as in younger individuals, we often find no serious clinical signs connected with the pathologic changes, and if the sclerosis does not invade the line of closure of the valves the pathologic condition exists merely as an anatomic change, which gives rise to no signs or symptoms during life. Our decision as to the significance of the lesions must be made not on the discovery of a murmur, but on the condition of the heart muscle as to its size and as to its ability to properly carry on the circulation. Such lesions represent only an extension to the aortic valves of a localized sclerosis of the aorta.

A more important local condition in the heart is found in diseases of the coronary arteries. In this condition we find one of the most important and possibly the only cause of angina pectoris. It is in many cases the true explanation of indigestion and various symptoms of distress in the chest attributed by patients to some fault in the stomach. It is rather unusual in such cases not to find some changes in the radial artery which give strong evidence that our suspicion of disease of the vessels of the heart is correct. The heart is often not enlarged, but the failure of the heart is shown by intermittent action or irregularity, and substernal distress with shortness of breath on moderate exertion. Unless the heart muscle is secondarily diseased we do not find general œdema, pulmonary œdema and allied signs of heart failure.

Our prognosis in these cases must always be guarded.

Thirdly, the heart muscle may be seriously affected by localized disease of the arteries when the circulation is so impeded that the nutrition of the muscle suffers, and we find a gradual dilatation of the cavities dependent upon the weakened condition of the heart wall.

This form of heart trouble represents usually a different type from the enlarged heart due to a widespread capillary fibrosis. I have seen one case of rupture of the heart secondary to a closure of the artery, which had cut off the circulation in the wall of the left ventricle.

Among the most important symptoms of localized arteriosclerosis are the disturbances of the nervous system, central and peripheral.

Central. — Vertigo is a common and often a very annoying symptom in elderly people, due to an interference with the circulation in the brain; also tinnitus, for which we find no local cause or any disturbance of the ear. Often these are the only symptoms that a patient with marked sclerosis complains of.

Epileptiform seizures in old people represent a more extensive involvement; it is important to recognize such a cause for these attacks that we may not make a diagnosis of epilepsy and institute treatment for that disease. The anatomical distribution of the cerebral sclerosis may be in such a situation and lead to so marked a degeneration of the cerebral tissue that a progressive dementia gradually comes on.

Transient monoplegia and transient attacks of aphasia are frequently seen: the question arises whether the symptoms are due to small hemorrhages or emboli. In many cases the diagnosis is obscure, but the rapidity with which many cases recover seems to preclude the probability of such definite pathologic lesions. Further, frequent post-mortem examinations in cases under my care, in whom during life I had observed several attacks of paralysis of short duration, have failed to show any evidences of a preceding hemorrhage. But the cerebral vessels were markedly sclerotic.

The probability is that such symptoms are due to a spasm of the vessel walls, which temporarily impedes the circulation. The clinical name of vasomotor ataxia is not unsuitable if we bear in mind that it is only a name, and does not prove the exact pathologic condition.

Peripheral. — A very interesting class of cases similar in type to the cerebral cases just spoken of represents many forms of "rheumatism," especially muscular rheumatism. An old person with hardened arteries finds that after very moderate walking he has rheumatism in the legs; after a rest or a little rubbing of the part affected the pain passes. In the interval, when the parts are quiet, there is no pain and no local tenderness. Examination shows that the pain is situated in the muscles, and not in the joints.

Such cases are extremely common, and according to the grade of the arterial lesion, may be developed with or without exercise. The most extreme grade of the disturbance is found in the combination of symptoms so characteristic that they are honored with the name of intermittent claudication; in some cases the loss of function is so marked that there is in addition to the cramp-like pain in the legs actual paralysis. Where the blood supply of the nerves is especially affected we find symptoms of neuritis rather than muscular pain, as in the class of cases just described.

In spasm of the abdominal vessels we may find many cases of obscure disease of the abdomen. Such cases are apparently closely associated with the large class of visceral disease combined with local skin disease of the erythema type.

I have under my care at the present time a lady of advanced years who has arteries that feel like pipe stems. The heart is not enlarged. She has always on any exertion severe dizziness and vertigo. The examination of the eyes shows only a sclerotic condition of the vessels. She is subject at frequent intervals to attacks of severe abdominal pain. She has been under my care for many years. As her digestion is never good and she has not much flesh I have asked several men to see her in consultation, fearing that I might have overlooked some possible malignant trouble. No one has been able to correct my own opinion, that the whole trouble is due to a marked vessel change: this diagnosis has been practically confirmed by the occasional occurrence of small patches of subcutaneous hemorrhage, which follow what she speaks of as localized rheumatism.

In diffuse arteriosclerosis we find clinical symptoms of a different type from those just described as occurring in localized sclerosis. Pathologically, in this type calcareous degeneration is not common and the larger vessels, as the aorta, may not show changes in the vessel walls. The process consists essentially in a disease of all the smaller arteries of the body, shown especially by changes in the media. As I have already said, it is a disease most frequent in persons from forty to fifty years of age, and represents evidently not a process of degeneration, but a growth of the tissue of the vessels.

This is the type that is most suggestive of some toxic process due to infectious disease or some auto-intoxication secondary to over-eating, alcohol, or faulty digestive processes. Clinical observations point strongly to two important causes — excess of food and improper digestion.

The individuals are usually essentially robust and well nourished: pallor is a prominent symptom: the explanation of the pallor is not plain, but the blood examination shows the pallor is not due to a deficiency of hemoglobin, nor to a reduced number of red corpuscles. The theory has been suggested, and seems probable, that the color of the skin is due to spasm of the smaller vessels.

Two important organs are secondarily diseased — the heart and the kidneys.

In the heart we find the most important factor: in all cases the heart is more or less enlarged, and though there may not be much trouble while hypertrophy is the main factor, in later stages there is a secondary dilatation of the heart cavities. A very large number of cases of "heart disease" are primarily cases of arteriosclerosis with secondary disease of the heart.

Such cases are often first called to our attention by a sense of constriction in the chest, shortness of breath on moderate exertion, and attacks of an asthmatic character. The asthmatic attacks may follow any acute bronchial attack, or be the result simply of overexertion. The blood pressure is always high, — 160 or more, — the skin pale, and the pulse rapid, with an occasional intermission.

This is one of the chief causes of myocardial disease of the heart, as distinct from valvular disease. The presence or absence of murmurs is of no special significance as the dilatation of the cavities may be so great that a relative insufficiency may be found at any of the valvular orifices.

As the heart gradually fails we find increasing degrees of œdema, until the patient may die of general anasarca. We also find chronic passive congestion of the liver, spleen and kidneys, as in any case of heart disease, with broken compensation.

In cases in which the kidney is the chief organ affected we have the picture of the small contracted kidney. It was the association of arteriosclerosis and kidney disease that first led to investigation of arteriosclerosis in the work of Gull and Sutton.

In fact, cases of so-called "cardio-renal" disease, a name in frequent use some years ago, were cases of arteriosclerosis, in which the heart or the kidney was involved to a great or less degree.

Treatment. — In prevention, we cannot, unfortunately, escape all infectious diseases, but we can advise our patients to avoid excess in food, especially when no active exercise is taken, and to care for a proper elimination of excrementious matter.

When the disease is recognized at an early stage, before the heart is seriously involved, much can be gained for the patient by a careful regulation

of the diet. Excess of nitrogenous food, especially meats, should be avoided; further, the weight of the patient should be very carefully reduced by a reduction of the total caloric value of the food taken.

The work should be reduced, both physical and mental; a man with an early arteriosclerosis must learn to live on a lower plane.

One drug I consider of value as a preventive measure and, perhaps in some cases, as a curative measure, iodide of potash. This drug I usually order for three weeks in a month in a dose of five tenths gr., three times a day. When iodide of potash disagrees with the stomach, iodide of strontium may be substituted though it seems to me less efficacious.

Small doses of nitroglycerin give temporary relief to many of the symptoms and may do permanent good.

In most cases saline cathartics are indicated.

In recent years there has accumulated considerable evidence that permanent good is accomplished by the use of electricity in the form of the high frequency current.

DISCUSSION.

Dr. George G. Sears, of Boston: One of the most interesting clinical aspects of arteriosclerosis, but of which Dr. Jackson has not spoken in his able paper, is the increased frequency of its occurrence, about which all observers seem to agree. We are accustomed to speak with satisfaction of the greater expectation of life now compared with a hundred and even fifty years ago, but our satisfaction should be considerably chastened by the fact that this prolongation has occurred in the years of adolescence and the statistics of the life actuaries of to-day appear to show that a man of forty-five stands rather a less show of arriving at the age of sixty-five than he used to, and one of the great causes of this is arteriosclerosis. The causes of arteriosclerosis, so far as we know them, are so bound up with the social, moral and physical life of the individual that it seems impossible that we should do much in prevention, since few persons are willing to listen to advice so long as they feel perfectly well. Our chief hope would seem to lie in recognizing it sufficiently early to be able to arrest or at least to delay the disease. Special interest should therefore be taken in those clinical aspects which are manifested in its incipient stage. Diagnosis is comparatively easy after it has progressed for a certain length of time. While it is a general disease it tends to progress with greater rapidity in one or another region, so that the picture will vary according to the organ which bears the brunt of the attack. The symptoms presented are those due to failure or perversion of function of the affected organ, added to which in many cases are symptoms due to spasm of the vessels at fault which lead to such manifestations as angina pectoris, angina cruris, or intermittent amaurosis, in the latter of which one may even see the spasm of the vessel. Early diagnosis, however, is a different matter, since the changes from normal are at first slight and often misinterpreted. Yet there are certain suggestive symptoms which are quite characteristic, particularly as we look back over the histories of those patients whom we have been able to follow from the beginning of the process. The most marked, and perhaps the most frequent, is the apparently causeless, but progressive loss of health which may be shown by lack of vigor, low spirits, inability to sleep as well as formerly, disturbing noises in the head, and sick headache; symptoms which we are accustomed to associate with neurasthenia, if one may still be permitted to use that term. Neurasthenia coming after forty should be looked upon with considerable suspicion. Neurasthenia it may be, but back of it circulatory disturbances should be looked for which may have contributed to, if they have not been the cause of the condition. The same suspicion should be attached to certain cardiac disturbances which are not infrequent in the early stages, some intermittency or irregularity of action, possibly a feeling of discomfort about the heart or even pain, not enough to complain much of but sufficient to call the patient's attention to the fact that he has a heart. These are symptons which are associated with such toxic substances as tobacco, alcohol or coffee, and such a cardiac condition may be dependent on them alone, but it should be remembered such symptoms are more easily produced when the arteries are beginning already to degenerate. There are also certain urinary changes which are suggestive and which I suspect are due, in part at least, to the spasm of the vessels in the kidneys, analogous to that in the heart which produces the symptoms of angina. The amount of urine which is passed and the specific gravity of the individual specimen may vary greatly as a result. These changes may be noticeable from day to day, or even from hour to hour; possibly one may find occasionally a slight trace of albumen, perhaps also a few casts. Careful and prolonged study of the urine may be of decided help in reaching a diagnosis. On physical examination one finds if the blood pressure is raised, some accentuation of the second sound of the heart over the base. The accentuation is usually more marked on the aortic side, but the sound in the pulmonic area may be the louder, a fact which does not seem to be generally recognized. The first sound of the heart as hypertrophy progresses is prolonged and heavier, but hypertrophy itself, which may or may not occur in arteriosclerosis, is often difficult to make out and is on physical examination frequently overlooked. Efficient assistance in recognizing the initial stages of arteriosclerosis, when much can be accomplished by treatment, is furnished by the various instruments for estimating blood pressure, and their use as a supplement to the trained finger should never be omitted when the patients have reached middle life. Persistent high pressure is a potent cause of arteriosclerosis, but arteriosclerosis is not necessarily associated with high pressure. Clifford Allbutt's classification of the disease seems to me the best one from a clinical standpoint, but it does not seem necessary to except from this classification, as he does, some of its rarer forms. He divides it into three classes. First, involutionary, which is often hereditary, and whatever it may be due to it is not a result of high living. It is not necessarily associated with high pressure, indeed it often is not, and for that reason, Dr. Jackson says, apoplexy is comparatively rare in these cases, even when the arteries are greatly degenerated and calcareous. Such cases are more apt to die from gradual failure, unless cut off by intercurrent diseases. The second class is of mechanical origin and a result of continued high pressure. These are the cases in which the sphygmomanometer is most useful by giving timely warning. The third class is toxic or infectious. It occurs especially in comparative youth and may or may not be associated with a rise of blood pressure. Fortunately for our patients we are gradually approaching knowledge that high pressure is a symptom and compensatory. In the circumstances under which he is living it is necessary for the life and comfort of the individual and no more to be treated than a cardiac murmur. It is fortunate also that drugs are

powerless to reduce it, and the well-meant but misdirected efforts of the physician to reduce it are successfully resisted by nature, which in her efforts to preserve the life of the patient fails to honor his drafts. It should also be emphasized that high pressure and a strong myocardium are not necessarily associated, since a weak heart may be accompanied by a high tension pulse. This accounts for the beneficial action of digitalis in some cases, even when the tension is very high. The patient may require a pressure of 200 or more in order to live, and to overcome this resistance in front the heart requires the tonic effect of digitalis.

Dr. Richard Hogner, of Boston: Dr. Jackson is perfectly right in saying that we all have to expect arteriosclerosis sooner or later. It is not due to old age, however, but because we are using alcohol, tobacco, coffee, tea; are over-eating too often; also often over worried. Arteriosclerosis is a rare condition in animals, no matter how old.

The natives on the islands of Samoa and Fiji, living in the interior of the island, mostly on fruits and water (using no stimulants whatever), and a healthy, natural life, are strong, intelligent, tall, often over six feet, and at the age of sixty are almost as vigorous as one of our boys at twenty.

The same race, living at the coast, under the ban of so-called civilization, drinking alcoholics and using tobacco, are weak, dull, small, degenerates, and at the age of thirty are almost as weak as one of our race at sixty or more.

In California are living many Indian women at the age of one hundred to one hundred and thirty years. One at the age of one hundred and twenty carried on her back a bag, containing six big watermelons, for three miles.

A common symptom of arteriosclerosis is redness of the face, a symptom the most elderly persons show, often very markedly.

To repeat, I do not think that arteriosclerosis is caused by old age, but that the symptoms of wrong living do not show up before we are old.

Dr. William H. Robey, Jr., of Boston: There is one form of arteriosclerosis which has particularly interested us at the Boston City Hospital. I refer to the cases in which there is marked widening of the aorta to percussion, with pain and pulsation in this area. The differential diagnosis between arteriosclerosis and aneurism is not always easy in these patients. One patient was a man weighing 220 lb. with a thick chest making percussion unsatisfactory. He had paroxysms of pain under the sternum radiating to the left arm. He had an increased area of dulness, and the x-ray expert thought that he had an aneurism. Dr. F. C. Shattuck saw this patient in consultation, and considered the condition one of arteriosclerosis. Subsequent treatment proved this to be the correct view.

A second case has presented more difficulties. A stout woman of fifty-five has had substernal pain and pulsation for two years. Her blood pressure is 230. On sinking the finger into the suprasternal notch a distinct pulsation is felt synchronous with systole. Several members of the staff who have seen her with me have agreed that there was strong evidence of aneurism, but two x-ray examinations nearly a year apart have been against this condition. Under treatment for arteriosclerosis she has slowly improved.

Figures given out by the Russian Government Sanitary Commission recently show that since the outbreak of the cholera epidemic, about the middle of May, until the end of July, 37,652 cases occurred with 16,651 deaths. The entire region affected includes forty-two provinces and territories. In the week ending July 23, 13,374 cases were reported, with 5,979 deaths. — *Med. Record.*

MEDICAL INSPECTION IN PUBLIC SCHOOLS.*

BY JUSTICE G. HANSON, M.D., NORTHAMPTON, MASS.

Compulsory medical inspection in public schools in the United States was first enacted as a law in Massachusetts in 1906. Probably no health legislation of recent years has been so important, for it opens the way to a very general dissemination of knowledge as to conditions pertaining to health and disease, and can be made a tremendous factor along the lines of preventive medicine.

The law as it exists gives the school inspector control over all health matters pertaining to pupils, teachers, janitors and the sanitary conditions of school buildings. The law does not provide for any penalty to parents who neglect the health of their children. This must be a matter of education, but a penalty can be imposed under the Compulsory Education Act for absence from school by reason of defects that are within the power of the parent to correct, and under this act courts have imposed a fine for failure to keep the child free from pediculi and its ova, and for not treating impetigo contagiosa.

Dual powers have been granted certain school and health boards in the appointment of school physicians, but while these boards should co-operate, it would seem best that appointments be made by the school boards, for the reason that it is so essentially an institution within the school, and also because school boards are more stable and the office is not as liable to become a political football.

Short experience in the work led physicians to advocate a school nurse, one who could follow up the cases, go to the homes and interest the parents in the health of their children and get them to consult their family physicians. The doing of this naturally brought the nurse in contact with cases of destitution and has led to an alliance of this work with civic leagues, children's societies and charitable institutions. I believe a nurse to be of invaluable aid to the school inspector and and a most important factor in the scheme of school inspection.

As there is no provision for general supervision in the application of this work, we find throughout the state all sorts of school inspection, some medium, some fair, some worthless. In a few cities and towns regular visits, complete records and detailed reports are made. This last method is the only proper way of expending public funds, and the work, if made uniform throughout the state, would open up a store of knowledge as to the general health of children, the manner of handling epidemics, conditions in school houses, the care and distribution of books, pencils and paper, the effects of dust, heat and moisture, and the care of defectives.

To successfully accomplish this, there should be established a department of hygiene, having nominal control over school inspection and perhaps over the thirteen health inspectors who are carrying on a similar work in shops and factories.

* Read before The Massachusetts Medical Society, June 7, 1910.

Then by furnishing the inspectors with uniform blanks, and calling for certain facts, fairly even work would be obtained throughout the state, and slipshod methods would be eliminated.

In this work the teacher has the best opportunity of watching the child, and to her we must appeal for the best results of inspection. It would be well if normal schools would give teachers instruction in hygiene, and to so much of children's diseases and defects as they are likely to meet in their work. Every inspector should get his teachers together two or three times each year and instruct them in such conditions as may come to them, and during the year keep in touch by bulletins relative to individual schools.

The teacher being nearer to parents, should have occasional parents' meetings, and to them give advice as to proper food, clothing, sleeping quarters, personal care, etc. In one of our schools, attended largely by children of foreign parents, the teachers have had the children interpret this advice to parents, and much interest has been awakened, and the results have been cleaner children, more open windows in sleeping rooms, more baths, suitable food, more sunlight and more tidy homes.

It has been our endeavor to keep our schools open during epidemics and to prevent or check epidemics, because every closed school means a money loss to the city. A very interesting fact was developed relative to measles, showing the contagiousness of the disease even before the child is known to be ill. In a room of thirty-five children about seven years of age, a child was in school Friday apparently well. On Monday the child was ailing and kept at home. On Wednesday, a diagnosis of measles was made. On Thursday eighteen children in that room who never had the disease were excluded for two weeks and a note sent the parents that they had probably been exposed to measles. Within the two weeks sixteen of the eighteen were reported as ill with the disease. By getting these cases out early we were able to keep the school open and not another case developed in the building. By following this method we have been able to keep the schools open and check epidemics.

Examinations of our children have brought out four important facts:

First: The great number of children with defective teeth, or a better description might be with septic mouths. It is a remarkable fact that these children are found to have inflammatory diseases of the pharynx and nasal cavaties, and are often anemic. It surely must be ignorance which permits a parent to allow a child to lose its first molars as fast as they come and have them go through the most active development period of life without the teeth so essential to proper mastication.

Second: The large percentage of children with defective sight, 10% having only $\frac{1}{3}\frac{0}{0}$ vision or less. By law parents are notified, and it is by experience that a large proportion of these are attended by itinerant oculists and low grade opticians. Is it logical for a state to insist upon yearly examination and reports and then permit unskilled persons to treat such cases?

The medical profession should stand as a unit in demanding that no person should prescribe lenses or treat the eye who has not had a thorough medical training not only in eye defects, but in such other conditions of the human body as produce disturbances of vision.

Third: The great number with enlarged tonsils and adenoids. Most parents readily heed the advice of the family physician and have them removed.

Fourth: The number found anemic. These children are usually found in our schools among the foreign born and the more illiterate. Conditions prevailing to cause anemia and tuberculosis, lack of proper food, obstructions in the vault of the pharynx, small tenements and insufficient air and sunlight. Physicians have been impressed with the necessity of aiding these children, and experimentally open air schools have been established with most gratifying results. It is not an expensive thing to try, for all that is necessary is to construct a platform 35 ft. by 35 ft. on the southern exposure of a school building and put an awinng over it with flies on the three sides that can be used if the sun is too bright. On rainy or very cold days the children can occupy the adjoining schoolroom. Except for a few weeks in winter, this outdoor room can be used for anemic children with most gratifying results, being followed by a marked increase in the children's weight and in the percentage of hemoglobin in their blood.

This leads me to discuss a special school that should be established in every city, — a school for defectives. There are from 40 to 50 such to every 2,500 school children, and in our public schools they are a nuisance and a hindrance to the normal children who are thrown into contact with them, besides interfering with the work of the teacher and getting themselves no benefit from attendance. Segregrating these children and placing a trained instructor over them, they can be taught considerable that will not only render their care more easy to parents and guardians, but will help these unfortunates to lead a more useful life.

School work demands the co-operation of the medical profession! Its aim is to establish a closer relation between physicians and their families, to educate the public in matters pertaining to health and comfort, to check epidemics, to educate in relation to tuberculosis, and matters of home hygiene.

If careful systematic inspection is carried on throughout the state, succeeding generations because of it will be burdened by less physical and mental cripples, will be more free from contagious and infectious diseases, and will have a more intelligent conception of disease, and its cause and effect.

DISCUSSION.

Dr. Thomas F. Harrington, of Boston: The most important factor to-day in discussing medical inspection of schools is the recognition of the great responsi-

bility that the state, especially the state of Massachusetts, has placed upon the medical profession in the newer and wider conception of this branch of preventive medicine. In its law of compulsory medical examination of all public school children, as well as in its child labor law of 1910, this state gives to the detection of contagious diseases secondary consideration only, and points out clearly that such duties are by no means the principal functions of school physicians. This view is in accordance with the established facts of modern bacteriology, and is founded upon the experience taught by the past fifteen years of school inspection.

Besides the immunity afforded by compulsory vaccination, more than 80% of children entering school for the first time have had measles, and more than 45% have had scarlet fever. Tuberculosis in its transmissible form is exceedingly rare among the children; and few, if any, of the 1% "carriers" of the Klebs-Loeffler bacillus have the virulent form of the microbe present. Special hospitals for the care of contagious diseases, the free bacteriologic examinations of sore throats by cities and towns, and the free supply of antitoxin and vaccine sera by the state, have combined to remove more than 60% of these cases from homes and schools before they had become a menace to others. The supposed influence of school closure as a factor in the decreased morbidity of contagious diseases during the vacation period is now recognized as a coincidence in the seasonal fluctuation of those diseases, insomuch as the decrease in the number of cases begins two weeks before the closing of school in June, and the increase begins two or three weeks before the opening of the schools in September. This is especially significant on account of the well-recognized short period of incubation in these diseases of childhood. The extreme contagiousness of measles before the appearance of the rash, and the evidence to-day that the desquamation in scarlet fever is not the chief source of contagion in that disease, are both factors in preventive medicine, emphasizing the need of greater knowledge of contagion in the homes rather than an argument in favor of the daily inspection of schools by physicians. The rarity of school outbreaks, independent of general or neighborhood outbreaks of transmissable disease, is likewise significant.

While the congregation of children in large numbers daily should not be underestimated as a possible means of spreading contagion, nevertheless we are not warranted in charging them with being "foci" of contagion greater than other gatherings, public and private. Schools, on the contrary, offer the best common medium for the control of these diseases. Teachers and school nurses learn frequently from the children of the existence of contagion in the homes which otherwise would go unreported. This is especially true concerning measles and whooping cough, diseases lightly considered, in fact invited, by the laity on account of the supposed freedom from danger and the immunity afforded by an attack. The truth is that these two diseases are each more fatal than scarlet fever or typhoid fever, and each lays a foundation for tuberculosis not equalled by any other one cause. If the medical history of each child entering school for the first time could be made a part of his registration, much useless exclusion from school could be avoided and unnecessary exposure to prevailing neighborhood contagion averted. School principals are very ready to co-operate with medical authorities in all measures tending to maintain a high attendance of healthy children. Already they have taken the initiative in reducing to a minimum the possibilities of spreading infection by means of "contact" among the pupils while in school. The lessons in prevention will take time for their dissemination into the homes and among the public. In the meantime, school nurses are doing most valuable work in educating the homes, and the results in combating the spread of infectious diseases, thus far accomplished, promise much more than those guaranteed by the daily inspection of schools by physicians.

The eradication of the skin diseases and the parasitic affections communicable among children do not call for daily attendance of the physician. These are chronic affections usually and are remedied by close continued treatment only. This no medical inspector recognizes as his function; nevertheless, few parents ever seek private or public medical aid for these children. They are diseases calling for isolation, if not exclusion. To exclude these children without some "follow up" system for treatment aggravates the situation and manufactures truants, if not vagrants, in many cases. School nurses under medical supervision have been able to solve this problem in many localities, and the absenteeism of the infected pupils has been reduced to a minimum; protection to the other children in the home and in the school being assured.

When we pass fron the consideration of the infectious and the parasitic diseases into the wider domain of preventive medicine, we find abundant opportunities for the best thought and the highest service of the physician. A new field in medicine awaits him. Educational authorities and grade teachers recognize the shortcomings of the present system of medical inspection in aiding them in adjusting school life and physical growth so that each child shall receive his full complement of both. Many conscientious medical inspectors have done much to meet the requirements of the situation. Where medical inspectors have been health department physicians of the contagious disease division, their work in the schools has necessarily been incidental and, to a great degree, associated with the work of that division. Such a system fails to cover the larger part of the actual conditions in the schools needing medical attention. The health department and the school department should bear co-equally the solving of the problem awaiting solution. There need be no duplication of efforts, there should be no friction. Neither should the surgical aspects of some of the problems met in the inspection of large groups of children be so prominently emphasized. Statistics based upon the investigations carried out in the Boston schools could be quoted to prove that much of the sensational announcements relative to the importance of these factors in causing mental and physical retardation are unwarranted. A summary of the problems met in the schools shows this. These problems are varied; and although pedagogical in aim, nevertheless they are strictly medical in solving.

In the first place comes the detection, in the earliest years of school life, of those defects tending to prevent the child receiving the fullest benefits of his school work. Under this heading we find defects in speech, in vision, or in hearing, bad postures, lack of nervous stamina, inco-ordination, epilepsy, chorea, carious teeth, anemia, glandular enlargement (including tonsils and adenoids), improper feeding, insufficient sleep, overwork, etc. Then, too, the amount, the kind, and the time of the daily gymnastic exercises, of organized games, plays, recreations, and dances, — all means of mental as well as physical development when properly guided and controlled along physiologic, as well as psychologic, lines. The control of athletics so as to give to each pupil an opportunity to develop a healthy physique without the danger of surpassing the age, sex, or individual limitations of each one is greatly needed, a problem which can be solved rationally by medical guidance only. The physician is likewise an essential

factor in dealing rightly with the retarded pupil, with the mentally backward or defective, as well as in guiding the over-bright; also in fitting school programmes, so that the growth, development, fatigue, and rest shall each be harmonized; and in the kind and quality of school lunches, etc. Nor are the problems any less pressing in the sanitation domain. Here the medical advice of the specially trained physician is needed in the choice of school sites, in the planning and the arrangement of the buildings and grounds, as well as in pointing out the imperfections in those at present occupied and in the improvements necessary to render them sanitary. This includes also the establishment of open-air classes and the enforcement of rules concerning ventilation, heating, room temperature, lighting, seating, cleaning, as well as the supply of bathing and hygienic drinking facilities, — all problems of health greatly neglected to-day. Finally the great problem of interpreting rightly the advances made in hygiene and in physiology, especially in physiologic chemistry, so that those truths may be presented to the teachers and normal school pupils in such a way as to enable them to instil into the minds of the children an interest, as well as a useful knowledge of the laws of health. Hygiene and physiology as taught to-day in the schools are very far from fulfilling such needs, — a shortcoming recognised by most grade teachers and special teachers.

The problems and the opportunities awaiting the physician in school life to-day could be enumerated without limitations, embracing many of the most interesting branches of medical, psychological, and pedagogical aspects of child life. They are not diseases controllable by board of health laws. The aim and the purpose underlying all medical supervision in the schools are primarily that all grave hindrances to the school life of the child and to his doing successful school work shall be prevented and removed. This makes the physician's position on the school organization educational as well as medical; consequently the authority to whom the control and purpose of school work is especially entrusted should determine in a measure the duties and the qualifications of its medical officers; and this department, to which all the investigations and reports pertain directly, should control the services of those making such reports.

Medical inspection, medical supervision, school hygiene, or any other system for combining medicine and pedagogy, calls for an organization on the widest plan of preventive medicine. The public will hold the medical profession responsible for the type of the work done as well as for the immediate results. The work calls for a special line of instruction in medicine not yet offered in many medical colleges. The medical profession, however, cannot avoid the obligation nor neglect the responsibility. Modern medicine has made this an evident duty of the physician. State medical societies, such as this one, should act at once through its special committees by formulating a plan, by establishing the qualifications of fitness, as well as by fixing the rate of compensation of those who are to undertake this branch of medicine. This is essential for the guidance of the state and city officials, in order that this important branch of preventive medicine may be uniform and effective according to the particular needs of each city and town, and the whole scheme in perfect accord with the highest ideals in medicine as well as in education. With a school medical department established upon some such basis, the school physician would readily become the counsellor and guide whom school authorities are seeking, in order to give to school life that higher efficiency and greater health which the recent advances in medicine and in pedagogy have made possible.

THE DIAGNOSIS OF INFANTILE PARALYSIS IN THE PRODROMAL AND EARLY ACUTE STAGE AS FOUND IN THE EXPERIMENTAL STUDY OF ACUTE POLIOMYELITIS IN MONKEYS, WITH REPORT OF FINDINGS IN FOUR HUMAN CASES.*

BY WILLIAM PALMER LUCAS, M.D., BOSTON.

The past year has brought out so many interesting facts about the infectious nature of acute anterior poliomyelitis, its transmissibility, its epidemiology, and, recently, some valuable facts in experimental immunity, that now great efforts are being made to discover some means of protection. In view of such a discovery, and having failed thus far to find the specific etiological cause, it seems of some import to find some means of making a fairly accurate diagnosis early in the disease, as there is little or no hope of being able to check the process after paralysis has appeared. The invasion of the white matter of the cord is undoubtedly an end result of the acute process, so that when the paralysis is first observed the virus has already about spent itself. This being so, there must be some indication in almost every case that the virus is at work some time before the paralysis appears.

The New York investigation of the prodromal symptoms agrees completely with the early symptoms found in animal experimentation. The most noteworthy signs are those of change of disposition. At times slight, but fairly constant and characteristic, is the restlessness and irritability that often appears several days before any other symptoms. Or the other extreme of apathy may be moderately marked for a number of days before one is aware that the paralysis is present. In these cases the occurrence of paralysis is much harder to determine, or, at least, we are not so apt to notice it as early as in the irritative cases. The paralysis may even be ushered in with delirium and convulsions or epileptiform attacks, which may last for several days before the paralysis is noted. In the exceedingly irritative cases the diagnosis of epidemic meningitis is most often made. And, indeed, it is really a distinct type of acute meningitic anterior poliomyelitis. Experimentally, it is hard to be sure of pain, but pain in the prodromal stage is by no means an uncommon finding, most often in the back along the spine, or in the joints of the extremities, which may show swelling and tenderness. Headache, general or frontal, is not infrequently met with in children old enough to locate the pain, and this is often accompanied with rigidity of the neck. If with any of these nervous manifestations there should be any trouble in the upper air passages, as coryza, bronchitis or sore throat, suspicion should at once be aroused. In all of our animals, and in each of our four human cases, there was some affection of the upper air passages along with one or more of the above nervous manifestations. Temperature though present in

* Work done under a grant from the Proctor Fund in the Department of Surgical Research and Serum Diagnosis, Harvard Medical School. Read before The Massachusetts Medical Society, June 8, 1910.

nearly every case is not typical and is of little use as a guide. It is usually of short duration, two or three days, though a low temperature of about 100° may continue for a week or more, as may be seen, in our four cases, in three of which it persisted for over three weeks. The bowels show no particular change in the majority of cases, though either constipation or a moderate diarrhea may exist.

These clinical manifestations in conjunction with certain definite laboratory findings which I have been able to show in an experimental study, and in a few human cases that I had the good fortune to see about the same time, make the diagnosis somewhat more certain, though, of course, not as exact as some specific reaction by which we had hoped to be able to make a positive diagnosis, but in which so far we have failed. Yet this combined information should be of great assistance toward making a more accurate and early diagnosis in this condition.

POINTS OF DIAGNOSIS FROM SPINAL FLUID AND BLOOD IN THE PRODROMAL AND ACUTE STATE OF ANTERIOR POLIOMYELITIS FROM EXPERIMENTAL AND HUMAN STUDY.

The original material for experimental work was obtained through the kindness of Dr. Flexner, who furnished us with two different strains of virus. We were able to produce paralysis in three monkeys from this original virus, and were able to transfer paralysis through two subsequent series of inoculations. The work of diagnosis may be divided into two parts as we carried them out. First, the ordinary laboratory methods of blood and spinal fluid examination, and, secondly, the more complicated biological tests of these same fluids. All these tests were made before the inoculation in a large enough number to give us a fair idea of what normal findings were. These same tests were carried on during the period of incubation, through the prodromal stage and through the acute stage until the fluids examined returned apparently to their normal findings. The temperature findings were not constant except that in the first irritative stage there was a fairly uniform rise, with a drop to normal, often subnormal, during the acute stage, with at times a furthur rise toward the end of the acute stage or beginning of convalescence.

The study of the blood brought out at least two very interesting facts, and, when taken in conjunction with certain findings in the spinal fluid, will certainly make a strong diagnostic point early in the disease. The normal differential count ran about: Polynuclears, 60%; large and small mononuclears, 25%; lymphocytes, 12%; eosinophiles, 3%. In the acute stage there was a moderate to a constant lymphocytosis, the count being: Polynuclears, 40%; large mononuclears, 15%; lymphocytes, 40%; eosinophiles, 5%. Parallel with this lymphocytosis there was a marked and constant leukopenia. This drop in the white count lasted fairly consistently with the acute stage, disappearing about the time that the hyperesthesia or other manifestations of the acute stage disappeared. The average normal count of our monkeys was in the neighborhood of 20,000 per cubic millimeter. This count did not change during the incubation period, but did change occasionally during the irritative or prodromal stage, when there was a marked or moderate drop in the white count. During the acute stage there was always a marked drop, the lowest count being 8,000 on the second day after paralysis was first noted.

SPINAL FLUID.

The spinal fluid shows even more marked and very characteristic constant findings during the incubation period, prodromal and acute stage, disappearing about the time that the acute symptoms begin to subside, being at its height either in the prodromal stage or on the first or second day of the acute stage. Before inoculation it is often impossible to get even one drop of spinal fluid from a lumbar puncture; most of our attempts gave nothing more than dry taps. However, when successful, there were only one or two cells to be seen in an ordinary Thoma-Zeiss counting chamber, and on staining these were apparently large mononuclears or plasma cells. During the incubation period there is a marked increase in the amount of fluid that may be obtained from lumbar puncture, and the cells in the fluid are very markedly and characteristically increased anywhere from 100 to 300 cells per cubic millimeter. These cells are mainly of the large mononuclear type, with some polynuclear cells and lymphocytes. In the prodromal stage there is even a more marked increase in the cells, often reaching 1,000 per cubic millimeter. In this stage, also, polynuclears are still present, in some cases as high as 60%, though the large mononuclears and lymphocytes were very evident. In the early acute stage the increase in cells is very marked. The cells are now, however, mostly of the lymphocytic or very early form of cells, and sometimes very hard to place, as they are apparently undifferentiated cells. As the cells decrease in number, the polynuclears begin to return, and at the end of a week or ten days there are very few cells present, mostly large mononuclears with a few polynuclears. In the prodromal and acute stage there was at times a fibrin clot. This clot would disappear fairly early during the acute stage. Fluid in our monkeys was never under any great pressure, though the amount was sometimes increased so that 5 ccm. was easily withdrawn. This occurred fairly regularly in the meningeal type of the infection.

A comparison of these experimental findings with the findings in four cases of acute poliomyelitis in children is of considerable value. These four cases were seen first between the second and fifth day of the acute onset. When seen all of them were running a slight temperature and were still in the hypersensitive state, with paralysis just commencing, so that the first findings in these cases are comparable with our findings in the early acute stage of our experimental studies. It will be seen from the chart that the blood find-

ings show from a moderate to a quite marked drop in the white blood count, with a lymphocytosis moderately marked in all but one of the cases, which was the one examined at the latest day. The spinal fluid findings are very interesting in all these cases, from the fact that in two of them definite fibrin formation was present early, which disappeared rapidly in one and very slowly in the other. The increase in cells was marked in all at the first puncture, and in three of the cases increased slightly later on in the course of the acute stage. The increase of cells was still present in two cases as late as the twentieth day of the acute onset. The type of cells found was practically parallel with the findings of the experimental spinal fluids, the lymphocytes and small mononuclears predominating on the first examinations, later being replaced by large mononuclears, and in the last findings polynuclears were beginning to reappear.

TABLE 1.

Noteworthy Prodromal Symptoms.

1. Irritability.
2. Restlessness.
3. Pain in spine or extremities.
4. Apathy.

TABLE 2.

Important Symptoms during Acute Stage.

1. Fever, 100° to 106°. Duration of fever, two to seven days.
2. Vomiting (25% in New York series).
3. Restlessness.
4. Apathy.
5. Rigidity of neck.
6. Headache (frontal).
7. Delirium.
8. Stupor.
9. Convulsions.
10. Photophobia.
11. Dysphagia.
12. Sluggish pupils.
13. General pain (early in 58%).
14. Absence of deep reflexes.
15. Cold extremities (vasomotor changes).

TABLE 3.

Types of Acute Poliomyelitis (Wickman).

1. Spinal poliomyelitic form. Sudden onset followed by paralysis.
2. The ascending form (Landry's paralysis). Involvement of respiratory centers. Most fatal cases belong to this type.
3. The bulbar or pontine form. Nerves most often involved: Facial, ocular, hypoglossal. May exist alone or with paralysis of extremities.
4. Encephalitic or cerebral form. May exist alone or with spinal involvement.
5. The ataxic form. Much like Friedrich's ataxia.
6. Polyneuritic form.
7. Meningitic form.
8. Abortive form: (1) General infection. (2) Symptoms of meningeal irritation. (3) Cases of much pain like influenza. (4) Cases with marked digestive disturbances.

TABLE 4.

Intracranial Injections Producing Acute Poliomyelitis in Monkeys.

Monkey No.	Material used.	Incubation.	Prodromal symptoms during	Acute onset on	Died on	Type of disease.
1	Virus K. (Flexner-Lewis) 4 ccm.	7 days.	5 days (2 days well.)	12th day.	17th day chloroformed.	Marked prodromata, spinal poliomyelitic form.
5	Emulsion cord (monkey) 12 ccm.	2 days.	1 day.	4th day.	6th day.	Bulbar, pontine type; respiratory paralysis.
7	Emulsion cord No. 273 (Flexner-Lewis) 2 ccm.	5 days.	1 day.	7th day.	12th day.	Spinal poliomyelitic form.
9	Virus M. A. (Flexner-Lewis) 6 ccm.	12 days.	2 days.	15th day.	40th day.	Spinal poliomyelitic form.
12	Emulsion No. 273 (Flexner-Lewis) 2 ccm.	4 days.	1 day.	6th day.	8th day.	Spinal poliomyelitic form.
15	Emulsion cord (monkey) No. 5, 2 ccm.	7 days.	2 days.	10th day.	10th day.	Meningitic form.

Average, 6⅛ days.

TABLE 5.

Spinal Fluid in Acute Poliomyelitis (Monkeys).

	Normal.	During incubation.	Prodromal.	Acute stage.
1	2 cells seen: 1 large mononuclear; 1 small (?) plasma cell.	6th day, 100 cells per cmm. Large mononuclears, 40%; small (lymphocytes), 60%.	10th day, 240 cells per cmm. Large and small mononuclears, 60% lymphocytes, 40%	14th day, 400 cells per cmm., mostly lymphocytes. 16th day, 60 cells per cmm. Lymphocytes. A few polynuclears.
5	Dry tap.		3d day, 1,000 cells per cmm. Polynuclears, 60%; mononuclears, 40%.	4th day, 800 cells per cmm. 5th day, 1,000 cells per cmm. Lymphocytes and polynuclears. Young cells undifferentiated.
7	No cells seen.		6th day, 160 cells per cmm. Excess of large mononuclears.	7th day, 12 cells per cmm. Lymphocytes. 8th day, 90 cells per cmm. Lymphocytes. 12th day, 20 cells per cmm. Large mononuclears. A few polynuclears.
9	One (?) plasma cell.		14th day, 120 cells to ccm. Lymphocytes, 40%; large mononuclears, 60%.	16th day, 200 cells per cmm. All lymphocytes or small mononuclears (young cells).
12	Dry tap.			7th day, 80 cells to cmm. Lymphocytes ++.
15	A few large cells and 1 (?) plasma cell.	6th day, 300 cells to cmm. Large mononuclears, 60%.	9th day, 150 cells to cmm. Large mononuclears, 30%; lymphocytes, 60%; polynuclears, 10%.	10th day, 180 cells per cmm. Lymphocytes ++. 30th day, few polynuclears found.

TABLE 6.

Blood (White Blood Count) in Acute Poliomyelitis (Monkeys).

	Normal.	During incubation.	Prodromal.	Acute stage.
1	White blood count, 20,000.	Average white blood count, 23,000.	11th day, 21,000.	12th day, 19,000 (1st day); 14th day, 12,000 (3d day); 15th day, 11,800 (4th day); 16th day, 16,000 (5th day).
2	21,000.	2d day, white blood count, 21,400.	3d day, 22,400.	4th day, 14,000 (1st day); 5th day, 19,000 (2d day);
7	40,000.	2d day, white blood count, 16,000.	6th day, white blood count, 19,800.	7th day, 13,000 (1st day); 8th day, 8,000 (2d day); 12th day, 13,000 (6th day).
9	21,000.	Average white blood count, 19,000.	14th day, white blood count, 13,000.	15th day, 14,000; 16th day; 9,000; 20th day, 12,000; 24th day, 19,400.
12	23,000.	2d day, white blood count, 23,200.	4th day, 23,000; 5th day, 18,000.	6th day, 18,000 (1st day); 7th day, 12,200 (2d day);
15	20,000.	2d day, 48,000; 7th day, 39,000.	9th day, 19,000.	10th day, 9,400 (1st day); 12th day, 11,800 (2d day).

TABLE 7.

Case 1.				Case 2.			
Day.	Temp.	Blood.	Spinal Fluid.	Day.	Temp.	Blood.	Spinal Fluid.
5th	100	White blood count, 17,400; differential lymphocytosis.	10 ccm.; 180 cmm.; no clot; lymphocytosis, 98%.	2d	100	White blood count, 10,000; lymphocytosis, 62%.	5 ccm. clear clot in 24°; 350 cells per cmm.; degenerated mononuclears.
8th	100	White blood count, 12,000; lymphocytosis.	20 ccm.; 50 cmm.; no clot; mononuclears, degenerated forms.	5th	98.5		Blood fluid with clot + 20 ccm.; very few leucocytes.
13th	99	White blood count, 11,600.	10 ccm. to 80 cmm.; no clot; large mononuclears and degenerated forms.	7th	100	White blood count, 7,800; slight lymphocytosis.	35 ccm. bloody fluid; clot ++; few degenerated mononuclears.
				9th	99.5	White blood count, 12,200.	
				12th	100	White blood count, 11,800.	30 ccm., first lot clear, slight clot, 80 cells to cmm., mononuclears, +. Third lot opaque, clot +, 580 cells to cmm., mononuclears and lymphocytes.
Case 3.				Case 4.			
4th	101	12,000 normal differential.	50 ccm., clear; no clot; high pressure; 60 cells per cmm.	4th	99	13,400; differential polynuclears, 75.5 mononuclears, 24.5.	20 ccm. clear; fibrin clot +; 50 cells per cmm.; degenerated small and large mononuclears.
	100		25 ccm. clear; 510 cells per cmm. mononuclears and lymphocytes.	5th			30 ccm clear fluid; 130 cells per cmm. mononuclears and lymphocytes.
			10 ccm. clear; 240 cells per cmm.	9th			

A PROPHECY.

BASED UPON STUDIES IN PASTEURIZATION.

BY M. J. ROSENAU,

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Any study approaches the rank of an exact science in proportion to the precision with which it can explain and foretell the phenomena with which it deals. The mathematician would not admit the sanitary science into his classification of an exact science, yet our knowledge has reached a stage which enables the sanitarian to explain the causes and modes of transmission of many infections and therefore, to foretell and control the progress of epidemic diseases. Studies in epidemiology occasionally enable us to prophesy the course of events in the communicable diseases. Last winter Levy and Foster, health officers of Richmond, Va., sucessfully foretold and warned against an impending epidemic of measles. Over 2,200 cases occurred with 26 deaths. It is much easier to prophesy good than evil. It needs no seer to foretell that great sanitary reforms will be followed by diminished morbidity and mortality. Omens

of good sometimes fail on account of a lack of knowledge of the fundamental facts. This was the case in Washington after the installation of an expensive slow-sand-filtration plant for the purpose of purifying the Potomac River water. It was prophesied and generally expected that the purification of the river water would be followed immediately by a marked decrease in the amount of typhoid fever in the capital city, where typhoid had prevailed excessively since the vital statistics have been recorded. We now know that the failure of the purified water to make an impress upon the typhoid situation in Washington was due to the fact that very little of the typhoid fever in Washington was water-borne; most of it came through "contacts," and from milk.

A sanitary reform of no small significance has recently taken place in Boston which invites the hazard of a prophecy. In the fall of 1909 it was estimated that about 25 to 35% of the common market milk supplied the city of Boston was pasteurized. During the winter this process was extended, until now over 90% of the market milk furnished the city is pasteurized. Of the three large contractors who furnish over 90% of the city's supply, one of them pasteurizes all the milk he handles, and the other two pasteurize all excepting that which is "certified" or "inspected." The proportion of certified and inspected milk is much less than 1% of the general supply. This wholesale pasteurization is not under official surveillance (as it should be), but taking it for granted that it will be consistently and efficiently carried out, it must have a favorable impress upon the morbidity and mortality statistics of the city. It is easy to prophesy that there will be no more large milk-borne outbreaks of scarlet fever, typhoid fever or diphtheria such as those which Boston has suffered from severely during the past years. Occasionally scattered cases caused by infected milk may still occur through the contamination of a single bottle or can, but the steady flow of infection in the milk-stream from the farm to the city will be checked. In our studies in Washington we found that at least 10% of all cases of typhoid fever came from the milk. Kayser, in Strasburg, estimates that 26.7% of the typhoid fever occurring in that German city is due to typhoid bacilli in the milk. Just what percentage of the typhoid in Boston has its source in the milk is not known, but it is safe to prophesy that the wholesale pasteurization of the city's milk supply should cause a definite reduction of the typhoid fever in Boston. Glasgow, in 1903, began the practice of pasteurization of much of the milk sold in the public shops, and this in a great measure was thought to account for the reduction of typhoid fever from 20 to 30 per 100,000 to 10. In 1901 depots for the sale of sterilized and modified milk were established in Liverpool, and a study of the typhoid statistics of that city shows that the decrease in death-rate began after 1902. A somewhat similar coincidence occurred in London.

In the studies made in Washington it was found that there was much less typhoid fever among the customers of those milk dealers who pasteurized their milk and sterilized their bottles than among those who did not do so. For example, in 1906 there was only one dealer who sterilized all his milk bottles and pasteurized all of his milk, and it was noticed that of the large dealers he had the smallest number of typhoid fever cases among his customers in proportion to the milk sold; that is, he had 6.7 cases of typhoid fever from 100,000 gallons of milk sold, whereas, the ratio among others ranged from 16.6 to 113.9. That this was not a coincidence was shown by similar figures in 1907 and again in 1908.

Boston now has a safe water supply and with a safe milk supply it only remains to fight typhoid from the standpoint of a contagious disease, as is now being done in Chicago.

If much of the infant morbidity and mortality comes through the large numbers of active bacteria in the milk, we should also see a diminution of summer complaints and a saving of babies' lives. There are so many factors which enter into the problem with the babies that prophecy here is uncertain, but good effects may be anticipated and the results will be watched with keen interest.

The pasteurization of the great bulk of Boston's milk supply may be regarded as an experiment on a large scale, and its effects upon the vital statistics will be closely studied by sanitarians. It is a matter of regret that the temperature and time of heating the milk, the cooling and after-care, the sterilization of bottles, cans and containers, are not under the legal control of the health officials. The pasteurization of the general milk supply is too important a public health measure to leave to individual caprice. Assuredly "a pure milk is better than a purified milk." Pasteurization should be regarded only as a temporary expedient; it cannot atone for filth. Before the city of Boston can have a satisfactory milk supply it must institute measures that strike the source of the trouble; these consist in education and inspection. Through a centralized system of inspection and licensure a safer, cleaner and fresher milk supply can be obtained.

NOTES ON THE CONDITION DENOMINATED EXTERNAL AND INTERNAL ATONY, SUGGESTING ITS ASSOCIATION WITH TUBERCULOSIS.*

BY A. MACKENZIE FORBES, M.D.,

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THE question of balance has at all times interested those who practise orthopedic surgery. The position of the center of gravity of the human being, when in the erect posture, is of importance.

Reynolds and Lovett, of Boston, have devoted a great deal of time to studying the position of the center of gravity or, as Cooke, of Hartford, would express it, the "question of balance," and their experiments and observations are of great interest to the medical profession at large

* Read at the Montreal Medico-Chirurgical Society, May 27, 1910.

One of the affections coincident with a change in the position of the center of gravity, an affection which causes more unrest than almost any other of these so-called minor complaints, is that of ordinary round shoulders, or stoop.

I am inclined to view stoop as being a manifestation of a laxity of the ligaments and a weakness in which the dorsal spine becomes kyphotic in shape, and the lumbar spine compensates by assuming the position of lordosis. It is, in fact, my firm belief that it is impossible to get a dorsal kyphosis without a lumbar lordosis.



Illustration of the apron or abdominal support used in conjunction with a corset or brace in the treatment of internal and external atony.

How to cure stoop or round shoulders has baffled most surgeons, all brace makers and nearly every mother. The British drill sergeant seems to have solved in a crude way the problem. His constant advice, nay, his every command to the recruit, is to hold his belly in and to raise his eyes but slightly above their normal position.

I believe that the way to cure stoop is not to attack the shoulders, is not to attack directly the kyphosis, but rather to attack it indirectly by preventing lumbar lordosis, and thus forcing a reduction of dorsal kyphosis, thereby changing the center of gravity.

It is only a question of balance. Throwing the shoulders back tends to broaden them; holding one's head back does not do away with a dorsal kyphosis, but, as soon as you straighten out the lumbar lordosis you are bound to have a compensatory change in the dorsal column.

My practice, then, is to get pressure at the anterior abdominal wall in the hope of primarily altering the lumbar curve, and, secondly, through altering the center of gravity, causing a reduction of the dorsal kyphosis or stoop.

To do this I make a light spinal brace which is somewhat similar to the spinal brace of the late Fayette Taylor. This brace has shoulders and a pelvic band. The shoulder straps are not to hold the shoulders back, but, with the pelvic band, are calculated to form two fixed points of counter pressure at the upper part of the dorsal spine and at the pelvis. This brace, as now described, can be expected to do little or nothing towards curing stoop. It acts simply as a vehicle to carry what I think is the important part of the whole appliance, namely, an abdominal apron or support, which is buckled to it and which can be expected to so control the abdomen of the patient that a lumbar lordosis is straightened out, which straghtening is followed by compensatory changes in the dorsal region of the spine.

I have been convinced of the truth of my theory for many years, and I have been treating my cases of stoop in the way suggested. I present to-night a little girl, M. H., for whom I prescribed such a brace as I have now described, on the 7th of September last.

As I have interested myself in this condition, and as I have been impressed with the compensatory lordosis which accompanies the dorsal kyphosis, I have seen that in many of these cases the lordosis is accompanied by a protuberant abdomen.

What is the cause of a protuberant abdomen? Ordinarily speaking, we are told that it is due to the patient's having an increase of adipose tissue.

I have not felt this to be so. How can it be explained that a person, whose arms and legs and every part are thin, and lack adipose tissue, should have a protuberant abdomen, if this protuberance is due to an increase of this form of tissue? Why should a person lay on fat in one place and not in any other? The possibility of doing this does not seem rational.

In looking for an explanation of this fact I concluded that probably a protuberant abdomen is due to a laxity of the mesentery, allowing a sagging of the intestinal tract. This is as far as I got.

Goldthwait,[1] of Boston, at the same time had been thinking. He got further. Goldthwait has been able to prove that many of these cases with stooped shoulders and a protuberant abdomen are suffering from enteroptosis, or, as he expresses it, ptosis. Goldthwait proved this first, and I think I am prepared to follow in his footsteps and prove it to you to-night.

He had a series of x-rays taken of patients to

[1] Joel Goldthwait, M.D.: Am. Jour. Orthop. Surg., April, 1910.

whom he had first given a bismuth meal. These photographs showed the stomach in many of the cases to have sunk beneath the umbilicus and even into the pelvis. The transverse colon even had assumed a somewhat similar position.

I believe that his procedure is this; in any case, this is the procedure which I have followed. The patient is given 1 to 2 oz. of bismuthcarbonate, emulsified and administered in milk. The patient is then given a couple of slices of bread and butter. The patient, after being encouraged to move about for a while, has an x-ray taken. The x-ray is taken from behind, namely, the x-ray tube is placed behind the patient's spine and the plate is placed in front of the patient's abdomen.

X-rays taken thus have demonstrated to Goldthwait's satisfaction that in many patients ptosis exists and that this ptosis acts definitely to the detriment of them.

Goldthwait has recently suggested that this condition of ptosis is a cause for certain of the chronic arthritides. He says "that under normal conditions food flows practically by gravity from the stomach into the first portion of the doudenum, which has no mesentery. In the second portion the ducts from the gall bladder and the pancreas open, and with a sagged stomach tending to shut off the outlet of the duodenum, and by pressure to interfere with the normal action of the pancreas, which lies in this region, it seems that there must be some interference with the normal secretion of the pancreas, therefore, with the early intestinal digestion.

"He makes the statement also that the lower border of the stomach in the normal subject seems to be about one inch or more above the level of the umbilicus and that in every case of this condition, so far studied by him, there has been a ptosis of this organ, which has varied from two to four or more inches below the umbilicus.

"He says that it was a natural inference that in poly-articular diseases, many of which are associated with various so-called digestive disturbances, an explanation of these symptoms might be found in the above-mentioned phenomena, and that what, for lack of a more scientific explanation, clinicians are in the habit of describing as disturbances in metabolism, might be no more or less than interference with chemical or bacterial reactions incident to the processes of indigestion when carried on under adverse anatomical conditions. Further support has been given to this supposition by a recent article of Maury,[2] who has approached the subject from a different point of view, in which, among other things, he has demonstrated that even the jejunum, which is ordinarily free from bacterial life, may be inhabited by some of those organisms which ordinarily reside in the large intestine and the ileum only."

I have not made any observations on any form of arthritis being associated with enteroptosis, but I do think that it is one of the things the possibility of which we should bear in mind.

[2] Jour. Am. Med. Asso., Jan. 1, 1910.

Goldthwait, however, has made the following statement, the truth of which I desire to prove to you to-night: "The common type of this condition, seen in childhood as well as in the adult, in which the shoulders are rounded, the lower dorsal and lumbar spines are straight, the lower abdomen protuberant and the neck and head thrust forward, have shown in the x-ray a marked sagging of the stomach and colon."

I have tried to present to you three patients. The first, M. H., was referred to my clinic last August by Dr. Patch because she had round shoulders.

The note taken on that date says that she had been treated for three years for her lungs at the tuberculosis dispensary.



Illustration of a simple brace which shows only the principle used in the support of the abdominal organs in external and internal atony. A corset with an apron or abdominal support is often used instead.

The second patient, S. K., was sent to me by Dr. Albert Nicholls because of pain in the region of the sacro-iliac joint. She has suggestions of a tuberculous pulmonary lesion.

The third patient, R. G., was kindly referred to me by Dr. Campbell Howard. She has a suggested tuberculous pulmonary lesion. Dr. Howard's house surgeon, in examining her, noticed a prominence of the vertebræ in the dorso-lumbar region, and asked Dr. Howard's permission to refer her to me for examination of the spine.

The first thing that I would like to draw your attention to is the fact that each of these three patients stands with a dorso-lumbar kypho-lordosis; each of them has a protuberant abdomen; each of them is in a more or less asthenic condition; each of them suffers from a suggested tuberculous lesion, and I may add that each of them was referred to me because of pain or deformity in or of the spine.

Each of these cases has been treated, and treated with some benefit, by elevating the stomach and by controlling the lordosis and, through it, the kyphosis by the simple brace demonstrated to-night.

The inference that ptosis is often conicident with a tuberculous lesion is not a new one.

As I have said already, I do not know how strongly Goldthwait's views regarding ptosis as a cause of arthritis will be borne out.

I do know, however, that many of the pains and aches which are ordinarily attributed to the spine and the sacro-iliac joint have not their source in either of these positions, but, rather, are symptomatic of a general condition in which there is a great laxity of the spinal and other ligaments associated with enteroptosis.

This condition I first called internal atony and enteroptosis, but more recently, I have been distinguishing it by the name of external and internal atony.

There are several interesting points about this condition: —

(1) As I have said before, its association with tuberculosis is of interest. I look upon it as curious that my three cases should have been associated with tuberculous lesions and convincing that it has often been noted before that such association is common. The question that this brings to my mind is, however, whether it is not possible that ptosis may be the cause of the gastric symptoms so frequently the first manifestation of pulmonary tubercle.

In the past we have been in the habit of attributing those symptoms to a toxemia. May I suggest the possibility of some of them being due to ptosis accompanied by a dilatation of the stomach.

(2) It is undoubtedly the cause of pains, both definite and indefinite, referred to the back, to the back of the thighs, and, I believe, in some cases, to the groins and front of the thighs.

(3) I believe that it is sometimes accompanied by spasm of the erectores. This spasm may be directly due to an accompanying tuberculosis of the lumbar glands.

(4) There is often a prominence of the dorso-lumbar vertebræ, (as in Dr. Howard's case), which prominence would suggest Pott's disease of the spine.

(5) A dorso-lumbar kypho-lordosis is common, this condition varying from an "s" shaped curve to a curved upper dorsal and straight anterior slanting dorso-lumbar spine.

(6) There is probably always a more or less protuberant abdomen.

(7) There is possibly a slight rise in temperature especially of evening temperature.

(8) It is often associated with a neurosis.

This condition should be distinguished from,

(1) Pott's disease of the spine. I have no doubt that the difficulty of the diagnosis between these and early cases of Pott's disease will be found to be great. Of course, there would be no difficulty in the cases of fixed deformities of the spine, but the time to make a diagnosis is not when deformity has resulted, but in the early stages of Pott's disease.

(2) Sacro-iliac disease. I think that beyond doubt, a great many cases of sacro-iliac pains which have in the past been diagnosed as due to affections of the joints were really more than this; that the sacro-iliac pains were really a manifestation of a general condition and not of a localized lesion in these sacro-iliac joints.

(3) The so-called rheumatoid conditions. These affections will also have to be excluded. As I have said already, Goldthwait has suggested that they, or some of them, may be caused by it.

(4) Tuberculous lumbar glands. Recently we have been attempting to diagnose this condition, and in a recent paper I have suggested that they may be a precursor of Pott's disease. My position tends now rather to assume that tuberculous lumbar glands in many cases accompany this more general condition that I have called external and internal atony.

Medical Progress.

RECENT PROGRESS IN LARYNGOLOGY.

BY A. COOLIDGE, JR., M.D.,
AND
D. CROSBY GREENE, JR., M.D.

THE SPHENO-PALATINE GANGLION.

Sluder's recent publications on the anatomical and clinical relations of Meckel's ganglion to the nose [1] have aroused interest in the whole subject of neuroses of nasal origin, and suggest fertile fields for future investigations. He calls attention to the anatomical fact that the ganglion lies in the pterygo-palatine fossa close to the spheno-palatine foramen. It, therefore, is very close to the external bony wall of the nose, in which the spheno-palatine foramen occurs as a small deficiency at its upper superior part. The foramen seems to be accurately placed at a point just posterior to and immediately above the posterior tip of the middle turbinate. The ganglion lies close to the plane of this foramen. Meckel's ganglion is, in fact, in quite as close relation to the nose and its accessory sinuses as is the optic nerve. It is, therefore, reasonable to assume that inflammatory processes pass over to Meckel's ganglion. According to the author's observations, characteristic disturbances have followed post-ethmoidal and sphenoidal suppurative inflammation which cannot be explained otherwise than by assuming that Meckel's ganglion has become involved by extension. In other cases the conviction has been equally positive that the extension has been from the nose proper.

The typical picture of these neuralgic phenomena is of pain which begins at the root of the nose, extends downward over the maxilla and backward on the mastoid, to become severest posterior to its tip; thence extending backward to take in the entire occiput, and downward into the neck, shoulder blade, shoulder and sometimes into the axilla. This pain very rarely invades the upper part of the head.

Remembering the position of Meckel's ganglion, in close proximity to the sinuses and the widespread distribution of its branches and connections, he felt that the distribution of pain was possibly due to inflammation extending to or acting upon the ganglion and that cocaine applied over the spheno-palatine foramen might probably prove effective in at least mitigating the pain. The experiment was tried and succeeded even beyond expectation. During an attack an application of a single drop of dilute solution 4% cocaine, through the nose to the region overlying the ganglion, was followed by only the faintest relief, but with a drop of saturated solution the relief would usually become complete. The author also puts alcohol in direct contact with the ganglion. A straight needle directed upward and outward under the posterior fourth of the middle turbinate will reach the spheno-palatine fossa, just where the ganglion lies. The injection of the alcohol aggravates the characteristic pain already described but the exacerbation is transitory and is followed by relief. In one of the cases reported, applications of ½% formaldehyde were continued over a period of four months, the pain behind the eye and in the jaw having stopped at the end of four weeks, for the most part. It occasionally returned in a lesser degree. The intervals between the "bad spells" became longer, and their severity lessened. The author calls especial attention to a case of acute access of glaucoma. In this case the area of the spheno-palatine foramen was inflamed. One application of 50% cocaine to the spheno-palatine foramen stopped the violent pain. It did not return. The attack aborted. In this case the other eye had been lost by glaucoma three years previously. The pain had been relieved only by iridectomy. But despite this, there had lingered always a little pain in this eye. An injection of alcohol into Meckel's ganglion aroused this pain to great severity, which lasted about three hours and then began to subside, requiring a week to stop all together. But when the reaction was finally over the old pain had stopped.

In a later paper [2] he describes two cases of typical spheno-palatine neuralgia in which he notices an asymmetry of the arches of the soft palate, with a deviation of the median raphe towards the well side and a diminution of tactile sense on the affected side of the soft palate and nostril.

NASAL ASTHMA.

A short paper on the relation between asthma and the nasal cavities is published by Nikitin. [3] Asthma is due to a contraction of the bronchial muscles through the vagus, aroused by peripheral irritation, often in the nose. The irritable zone is the upper and middle turbinate and the superior and middle meatus. This region is supplied by nerves from the spheno-palatine ganglion, and it is through this that the reflex disturbance is distributed. Surgical and other local therapeutics in this region sometimes produce an effect on the asthma, sometimes they do not. The majority of authors are in favor of local applications and opposed to surgical methods. The author believes that swelling of the mucous membrane of the sensitive area may be the peripheral source of asthma, perhaps by squeezing the nerves in the mucous membrane. Some other factors, heredity, increased irritability of nerves generally or locally, are also probable. The author's treatment, in addititon to internal medication and hot baths, consists in a thorough douche of salt solution morning and evening.

ATROPHIC RHINITIS.

From the study of many children with especial reference to the first symptoms of ozena, Baumgarten [4] describes an early stage in which the lower turbinate becomes temporarily engorged, generally unilaterally, with a tendency to form scabs. This engorgement gradually diminishes in frequency and extent until the lower turbinates remain shrunken and the stage of crust formation begins. The first symptoms he discovered by careful search in younger and younger children until he concluded that the disease may be present at birth, but symptoms rarely appear before four years of age. The author does not believe that it can be contagious on account of the very large number of cases in which with every opportunity for infection, the child remains well. It appears sometimes to be inherited, especially from mother to daughter. Females are more liable to it than males. Mothers with ozena sometimes have two or three daughters with the disease, while sons escape. He has found no connection between ozena and tuberculosis or syphilis. For treatment he has obtained good results in the earlier stages by application to the mucous membrane of phenolumnatrosulforicinoseum in 30% solution, two or three times a week.

A long and exhaustive monograph by Alexander [5] reviews the theories which have been advanced to explain this disease, and from them builds up an explanation of the different conditions, adding the hypothesis that, from the primarily diseased underlying bone, pathological substances permeate the mucous membrane and cause the atrophy and other changes. Disease of the bone is the primary pathological disturbance. The earlier in life the disease starts, the more pronounced are the characteristic bony appearances, infantile nose, small turbinates, etc. It may begin in fetal life. The atrophy of the mucous membrane and other structures is caused in some way, probably chemical, by the bone disease. The crusts and fetor are accidental

complications of the diseased mucous membrane and glands. The process extends to the lymph glands and mucous membrane of the pharynx and larynx.

In another paper [6] he discusses the relation between ozena and syphilis; although unable to obtain any positive reaction by Wassermann's test, he argues for a possible or even probable connection between the two diseases.

NASAL TUBERCULOSIS.

A few recent papers on nasal tuberculosis, while not materially adding anything new, serve to review and fill out our present knowledge. Such a composite description is given by Freer.[7]

Custom still retains the name "lupus" for a group of cases of nasal tuberculosis possessing special features. The usual classification of the various forms of nasal tuberculosis is that of Gerber [8] adopted by Gleitsmann. Nasal tuberculosis is divided, according to its aspect, into four forms — the tuberculous ulcer, the tuberculous tumor or tuberculoma, the diffuse infiltration and the formation of granulation areas, the latter being the variety characteristic of lupus.

In the first group of cases, to which belong most of those secondary to pulmonary or laryngeal phthisis, ulceration is the chief characteristic of the affection. The tuberculous infiltration which precedes the ulcer is rarely seen as it creates no symptoms. While the tuberculous ulcer is seldom rapidly destructive, it produces perforations of the septum.

The tuberculous tumor is usually solitary, and, like the other forms of nasal tuberculosis, often appears upon the cartilaginous septum, and next in frequency upon the inferior turbinated body. It varies in size from the bulk of a pea to growths large enough to be mistaken for sarcoma. Nasal tuberculoma may be spherical or lobulated, may have a papillomatous, smooth or irregular surface, and may be pedunculated, but it has usually a broad base.

The tuberculous infiltration, like the edematous form of laryngeal phthisis, with its deep-seated tuberculous infiltration, produces diffuse swelling of the part in the nose attacked, which is usually the cartilaginous septum. In marked cases the thickened septum may appear like a tumor filling both nares.

The form of intranasal tuberculosis typical of lupus is the granulating area upon the mucous membrane. It commonly begins, as do the other varieties, upon the cartilaginous septum, and appears as a bed of grayish-red granulations, producing a surface like that of a raspberry, commonly hidden by scabs. Later in the disease the granulations also appear upon the lower turbinated bodies.

Nasal tuberculosis is commonly a benignant and often primary form of tuberculosis in a tissue little susceptible to the disease and permitting but few bacilli to penetrate it. If, therefore, the tissue invaded can be completely removed, recovery without a relapse is a possibility. Even in lupus, and still more in common nasal tuberculosis, secondary deposits, in the form of pulmonary tuberculosis, tubercular meningitis, tubercular lymphomas, joint disease or some other forms of tuberculosis, are to be feared as long as the primary affection in the nose is not extirpated. As compared to its location in other organs, primary tubercular disease within the nose is somewhat favorably situated for the thorough surgical extirpation which its dangerous and obstinate nature demands as the treatment of choice in case it be deemed feasible. As compared to surgical excision, all of the other methods of treating nasal tuberculosis are far less certain in their results, some being but vaguely experimental.

A paper by Renner [9] read at the same time records a case of typical tuberculoma of the septum. The proliferative form of nasal tuberculosis is considered to be primary. It occurs usually in people of robust health who have no other active tubercular lesions, although evidences of latent tuberculosis may be found in other organs. The tuberculous tumor or tuberculoma is of the type of so-called primary infection of the nasal septum.

Onodi [10] considers tuberculosis of the cartilaginous septum of rather common occurrence. Where the whole disease can be removed by a reasonable operation, it should be done; otherwise, even if there is improvement, relapses are frequent.

Gerst [11] has found nasal tuberculosis in several cases which showed little or nothing abnormal except under the microscope. By this he demonstrated typical foci under the unbroken mucous membrane of the turbinates.

PALATO-PHARYNGEAL ADHESIONS.

Roe [12] discusses fully the etiology, characteristics and treatment of various forms to date. He then reports four cases. Three of these were treated by the suture method of Nichols, and the last by a plastic method devised by Roe. Nichols' suture method is described as follows: Silk sutures are introduced at the side of the palate and allowed to remain *in situ* until a healed channel has taken place around them. The palate is then liberated between these channels, great care being taken not to wound the outer wall of the channel. Roe modified this procedure by the use of silver wire instead of silk. He does not state the advantages of wire over silk. The latter would seem to have at least one advantage in being much more comfortable to the patient. In Roe's fourth case the suture method was tried and proved ineffective because of the thickness of the adhesions, which prevented the formation of a healed channel. At the operation for liberating the palate he found the healing had extended but a short distance beyond the mucous membrane. Having freed the palate from the posterior wall of the pharynx, he concluded to cover the raw surface on the palate side of the opening with a flap. His description of the operation is as follows: "As it was necessary to cover but one surface of this opening, the

anterior or palatal side was most available. In order to secure the mucous membrane for this purpose, a broad flap was taken from the side of the palate and inside of the cheek, including sufficient submucous connective tissue to assure its vitality. This flap was then brought down and turned backward and upward around the outer and lower border of the soft palate and stitched at the sides and the free border through it to the palate along the upper end of the flap that had been turned up behind. The palate was stitched to the latter with sutures passed directly through the palate. Complete union of this flap took place and on healing there was no undue contraction at the site of these flaps nor was there the slightest tendency for the readherence of the soft palate to the pharynx at any time."

Roe recommends this method in preference to the suture method as being much quicker and causing less discomfort.

THE FUNCTION OF THE TONSILS.

What the function of the tonsils may be, or whether they have any function at all, is a question which has not yet got beyond the stage of guessing. This guessing has been going on for some years and has resulted in a fairly voluminous literature. A paper by Levinstein, [13] though long, is interesting because the author, who is an assistant in Fraenkel's clinic, reviews the history of the discussion and argues either for or against many of the theories which have been brought forward. It is true that as a result of this and much previous study of the tonsillar ring his conclusions are rather colorless, agnostic and generally not original, but this result is not necessarily the fault of the author. Many of the theories the author believes may be discarded for more or less obvious reasons. That the tonsils and other lymphoid structures in the pharynx are a protective mechanism against infection he rather doubts, because if this were the case these structures themselves should be the last in this neighborhood to become the seat of infectious processes, whereas they appear generally to be the most vulnerable points.

The important and interesting question whether certain infections of the tonsillar ring are primary or secondary infections he answers by arguing that both forms exist and that in many cases it is doubtful. The acute tonsillitis which follows nasal operations is due to infection brought to the tonsils from an outside focus. The tendency of secondary syphilis to show itself there is an instance of an infection brought through the blood stream, but also clinical experience shows that local infection, such as diphtheria and perhaps tuberculosis, find the tonsils the weakest point of resistance.

Whether the tonsils have any function in childhood, or whether they are examples of atavism, has not been proved either way. He doubts whether they have a protective function, and, on the other hand, he does not believe that they are responsible for all sorts of infectious diseases. In spite of his disbelief in the virtues, and agreeing to the weakness of the tonsils, the author is conservative in his treatment. He lays stress upon local cleanliness of the mouth, pharynx and nose. It is a little startling to find him advocating the galvano-cautery for the purpose of making the tonsil more resistant. He says that it is useless to try to take the whole tonsil out because it may be reproduced. He has perhaps not seen tonsillectomy. It is difficult to criticize his statement that clinical experience proves his point, except to say that it often seems to prove many illogical methods of treatment.

A monograph by the same author [14] on the appendix of the ventricle of Morgagni is an interesting contribution to the anatomy and physiology of the tonsillar system. This so-called appendix is actually a tonsil, differing from the other tonsils in being placed in the depths of a cavity instead of lying on the surface of the mucous membrane. The histological study of this laryngeal tonsil points to the conclusion that the function commonly ascribed to it, that of lubricating the vocal cords, is probably correct. The interesting inference is drawn that, as we can prove this function for the tonsil without doubt, it is possible that a similar function is served by the similar tonsils of Waldeyers' ring.

In an earlier paper [15] he reviews the histology of the follicles of the lateral and posterior wall of the pharynx, which are practically supernumerary tonsils and adenoids.

CHRONIC LARYNGEAL STENOSIS.

In the treatment of chronic laryngeal stenosis, two methods of treatment have their respective advocates. One of these, progressive dilatation of the stricture by means of modified O'Dwyer intubation tubes, is advocated by Delavan.[16] He points out that to accomplish the continued dilatation and consequent pressure atrophy, modification of the O'Dwyer tube is necessary as shown by Rogers.[17] The "normal tubes" designed by O'Dwyer were made to fit somewhat loosely the average larynx and to exert the least pressure compatible with retention of the instrument. In cases of stricture a special tube is necessary for each case in order to effect the desired dilatation. To determine the dimensions of this tube, the patient is put under deep general anesthesia and a number of graduated normal tubes are passed through the larynx until one is found in which the retaining swell distends the constriction to the limit which the operator judges it will bear without causing a slough. Inasmuch as the retaining swell lies just below the cricoid where the stricture is narrowest, and in the trachea which is capable of considerable distention without damage, quite a little force in this test tubage is permissible. Having thus determined the largest possible diameter of the larynx, a special tube is made, of the length of the normal tube, suitable for the age and development of the patient, but with a retaining swell having the same diameter as that of the trial tube. The neck of this special tube should be as large as possible, but its transverse diameter must be 3-32 in.

less than that of the retaining swell or it may be coughed out. Also the head of the tube must be 6-32 in. greater in diameter than the retaining swell to prevent downward slipping. Tubes should ordinarily be made of hard rubber, but occasionally, in obstinate cases, metal tubes are more effective. Some cases will cough up any tube which can be inserted. Under these circumstances it is generally advisable to open the trachea and through the opening clamp or plug the lower end of the intubation tube. In very tight, fibrous strictures, urethral sounds should be used for dilatation from below upward through a tracheal opening before inserting tubes from above. The duration of intubation varies from one month to four years. A fibrous stricture usually requires treatment for two years. Hard rubber tubes should be removed and cleaned once a month and metal tubes oftener. Mayer [18] devised a hollow introducer of intubation tubes for use in cases where the introduction is slow and difficult with danger of asphyxia. Simpson [19] and Johnson [20] report cases of successful treatment of laryngeal stenosis by intubation. The latter emphasizes the value of direct laryngoscopy in the diagnosis and treatment.

A noteworthy advance in the technic of intubation in cases of chronic laryngeal stenosis is to be credited to Winslow [21] and Mosher [22] who, working independently, both performed the operation under direct vision. Mosher has devised an apparatus for this purpose which he has demonstrated to be practical. The advantages of this method are obvious.

The second method of treatment referred to is laryngo-tracheostomy. The method of prolonged intubation is considered unsatisfactory by many of the recent writers on the subject on account of the length of time and the frequent occurrence of auto-extubation. The operation of laryngo-tracheostomy which was first devised by Killian and later modified by Sarguon and Barlatier is described by Delsaux [23] as follows: The operation is divided into seven stages: (1) Median incision through the soft tissues of the neck to the larynx and trachea. (2) Longitudinal division of the larynx and trachea. (3) Suturing of the mucous membrane of the larynx to the skin on each side. (4) Median division and excision of the scar tissue. (5) Introduction of the tracheal canula and rubber dilator. The latter is a soft rubber drainage tube which occupies the lumen of the larynx and trachea with an opening in front below the larynx through which the tracheal canula is inserted. (6) Dressing the wound. This consists of two parts; The first keeps the dilator in place within the laryngo-tracheal tube; the second consists of an external dressing on the canula. Frequent change of dressings and cleansing of the wound and tubes is recommended for a few days after operation. Liquid food is given through an esophageal tube. The duration of dilatation in a series of thirty-six cases reported by Delsaux varied from half a month to nine months and was followed by closure of the opening by plastic operation. He reports cures in 39% — 33% under treatment — death in 14% and failure in one case.

Winslow [24] has used successfully a specially devised T-shaped hard rubber tube for maintaining the dilatation after laryngo-tracheostomy.

Iwanoff [25] has done laryngo-trachesotomy successfully in cases of stenosis resulting from perichondritis of the larynx.

Jackson [26] reports seven cases of laryngostomy. He prefers a soft rubber tube for dilatation, which is either fastened to the tracheal tube below or attached to a spur which runs upward from the tracheal tube.

Sieur,[27] Baumgarten, [28] Ucherman [29] have made contributions to this subject. Lack [30] has found in children with laryngeal stenosis in whom tracheotomy had been performed for diphtheria, and who were subsequently unable to breathe after withdrawal of the tracheotomy tube, that the fault lay in the site of the tracheotomy, which was too high. In these cases he has found that, following a lower tracheotomy, the patients gradually begin to breathe better and are sometimes finally able to dispense altogether with the tracheal tube. He accounts for the enlarged lumen by natural growth.

In stenosis from abductor paralysis Gleitsmann [31] performed thyrotomy and excised both vocal cords in a patient sixteen years of age. An apparently successful result was followed by death seven weeks after operation from pneumonia subsequent to endo-laryngeal curetting of granulations.

TUBERCULOSIS OF LARYNX.

Casselberry [32] divides cases of tuberculosis of the larynx into three types, — the non-resistant, the hopefully resistant and the type capable of arrest. He describes briefly treatment by the more commonly used methods and agents. His conclusions are: (1) Tuberculous hyperplasia in the larynx has not infrequently undergone resolution in whole or in part. (2) Unmistakable tuberculous ulcers have occasionally healed and remained healed. (3) Favorable negative qualities have characterized in common the cases which have proven to be capable of arrest or recovery; for instance, the laryngeal hyperplasia has been less progressive, less diffuse and less prone to ulceration; the underlying pulmonary infection has been less extended; there were fewer tubercle bacilli, a lower pulse rate and less emaciation. (4) These qualities persisting, the cases which are capable at least of a hopeful resistance can be differentiated, thus justifying every effort at any sacrifice to invoke the methods likely to arrest the disease and lead to recovery, including intralaryngeal surgery, when the lesions in degree and kind are suitable for it. (5) In like manner the non-resistant type should be recognized and those patients guarded from privation and distress which surely follow in the wake of an indiscriminate exposure to the elements and to the hardships of travel in distant climes. In them surgery is contra-indicated, excepting to prevent air hunger and suffocation

or to prevent starvation by the removal of some particularly painful impediment in swallowing.

ACTION OF THE DIAPHRAGM IN TONE PRODUCTION.

The common conception of the diaphragm as an inspiratory muscle which by contraction flattens the floor of the thorax and thus enlarges the cavity of the thorax is combated by Makuen.[33] While admitting that the contraction of the diaphragm in so far as it results in flattening the floor of the thoracic cavity does enlarge this cavity, he calls attention to the fact that by reason of its costal attachments the diaphragm in contraction also pulls the ribs inward and thus tends to diminish the size of the cavity. The diaphragm being relatively poor in muscle fibers is not a strong muscle, and its action is not comparable in power with that of the extra-thoracic rib-raising muscles of the upper trunk, nor with that of the rib-lowering muscles of the abdominal wall. The latter, by drawing the ribs downward and inward, are the main factors in expiration, and the former by drawing the ribs upward and outward do the chief work in inspiration. But Makuen goes farther than this and maintains that in the tone production the diaphragm is in effect an expiratory muscle. His explanation of his theory is not clear nor convincing, and he gives no proofs.

In support of the theory that the diaphragm plays an unimportant rôle in respiration and does not flatten during inspiration, but retains its domelike contour during both inspiration and expiration, Boyce and MacLachlan [34] report their investigations with the fluoroscope. On using a tube of the proper penetration, the shadow of the diaphragm was very distinctly seen. It rose in expiration and sunk in inspiration but its contour was not perceptibly altered in any of the series of cases examined. The action was uniformly the same both in males and females.

BRONCHOSCOPY.

Several articles have appeared during the past year on matters related to bronchoscopy. In a paper which he calls "Gleanings from Experience" Jackson [35] records epigrammatically some interesting conclusions:

As far as possible, skill should take the place of anesthetics. Foreign bodies in the esophagus are just as apt to cause dyspnea as those in the trachea. The bronchoscope is a better breathing channel than a tracheal wound.

Respiration is more often arrested in the endoscopic removal of foreign bodies from the esophagus than in tracheo-bronchial cases, though laryngeally lodged cases are worse in this respect than any of the others.

He has reduced his armamentarium to one bronchoscope 5 mm. by 30 cm. for children, and one 7 mm. by 40 cm. for adults.

Foreign body work is a question of mechanics from begining to end.

The simplest, safest and best source of current is a double dry battery, that is, two sets of four cells each. Each set should have two binding posts and a rheostat. All forms of rheostats devised for adapting commercial circuits to tube work are dangerous.

The exposure of the larynx is the whole art of introducing the bronchoscope. Until it is so mastered that the larynx can be exposed and held exposed to view indefinitely, no one should attempt bronchoscopy.

In the dorsally recumbent position, an assistant must be trained to place the parts in the proper position by raising the head at the same time that it is squarely extended on the occipito-atlantal joint, not on the cervical spine.

A widely spread gag may render bronchoscopy impossible by jamming the lower jaw down on the hyoid bone.

The same author, in a joint paper with Gaub,[36] suggests the use of the bronchoscope to maintain pressure within the lung in operations on the chest. In dogs this can be done safely. Oxygen is admitted to the lung by the suction tube of the bronchoscope, and the pressure regulated by the thumb on the main tube. In this way the lung may be inflated or deflated at will, and a sufficient supply of oxygen furnished to both lungs.

In Europe the present theory and practice of bronchoscopy is represented by Brunnings' book. The author, who is the assistant of Killian, has taken charge of Killian's armamentarium and has developed, modified and increased it. The illumination is entirely from the upper end of the tube, and both the tubes and instruments can be lengthened and shortened by ingenious mechanism. The relative merits of these instruments and those perfected by Jackson will for some time be discussed; at present one might be called the European and the other the American method.

Pressure upon the trachea and esophagus has in a series of cases been found by Guisez [37] to be due to an unsuspected aneurism. The diagnosis may be made clear by the bronchoscope.

Casselberry [38] has made a bronchoscopic pin cutter and fragment holder, for cutting long pins which have become pinned into the bronchial tubes. It was successfully used in the case for which it was devised. Similar cases have been reported in which this instrument would have much simplified extraction.

Ephriam [39] substitutes for local applications long sprays for local anesthesia of the trachea and bronchi. He uses applications of alypin 20% for the larynx and a spray of novacaine 10% with suprarenalin for the trachea.

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Reports of Societies.

CONNECTICUT STATE MEDICAL SOCIETY

ONE HUNDRED AND EIGHTEENTH ANNUAL MEETING, NEW HAVEN, MAY 25-26, 1910.

THE DIAGNOSIS OF INSANITY. HOW CAN THE GENERAL PRACTITIONER DETERMINE, DEMONSTRATE AND CERTIFY THE EXISTENCE OF MENTAL DISEASE IN A GIVEN INDIVIDUAL ALLEGED TO BE INSANE?

DR. JAMES M. KENISTON, Middletown: To determine the existence of insanity or a psychosis, the examiner should pursue a systematic course. Hence he should get as complete a history as possible. He should first find out just what the patient sees and hears or feels or smells, and whether things are really what they seem to him. Disturbances of memory are next to be noted. Disturbances of the train of thought may be often exhibited and noted during the tests of perception, apperception and memory. Judgment is the loftiest and most complicated of the mental faculties. One can test the patient's judgment in a general way by submitting to him various problems concerning proper conduct, morality, business, etc. It is not enough to know whether he knows right from wrong, and the nature of a criminal act. We should ascertain whether he has lost, wholly or in part, the finer feelings that modern civilization has evolved and society demands. The full fruition of volition depends immediately upon an antecedent idea. Acts performed without a definite idea are not volitional, but reflex. The above details help us to determine the general conduct and show its deviation not only from the patient's norm, but from the standard imposed to-day by society. When the general practitioner has obtained possession of all these facts, and arranged his material, he will be in a position to demonstrate to the proper authorities, or to his confrères, or to the friends of the patient, the existence of insanity. At the Connecticut Hospital for the Insane, up to Oct. 1, 1908, 12,823 patients were committed; and 97 of these, or 0.75%, were diagnosed as not insane. In these 97 cases, a temporary disturbance was mistaken for a more permanent derangement.

DISCUSSION.

DR. MAX MAILHOUSE, New Haven: If the physician will but bear in mind that dementia paralytica often begins with neurasthenic symptoms, and always make his diagnosis by the process of exclusion, he cannot go wrong. In those as to whom there may be a doubt as to whether the trouble is insanity or crime, it is of the highest importance, as the author states, to determine whether the conduct and character deviate from their own norm, as well as from the standard imposed to-day by society. To determine this point, it is not only necessary to question the patient's nearest relatives, friends and associates, but also those absolutely disinterested. The statement of the large percentage of transitory mental disturbances that have appeared in the State Hospital for the Insane seems to me to be a strong argument for the establishment of psychopathic wards in general hospitals.

DR. WILLIAM E. FISHER, Middletown: Despite the fact that we all recognize that the question of the mental health of a community and its preservation are of vital importance, I have knowledge of only one medical college that affords instruction in psychiatry and makes it a part of the curriculum. It would hardly seem necessary to emphasize the necessity of more active co-operation between the alienist and the general practitioner, were there not abundant evidence of a lack of communism of interests. It is is no less possible to group symptoms of the different psychoses so as to afford typical clinical pictures than it is to group the symptoms of a respiratory or a cardiac disease. Much of the difficulty formerly experienced in obtaining clinical pictures of the different psychoses was due to the inadequacy of the methods pursued in restricting the study of the disease to the minute analysis of symptoms at some given period, instead of studying the entire course of the disease. Guard against falling into the habit of seizing upon certain symptoms, ignoring others, and making the clinical picture fit some arbitrarily constructed frame.

GEORGE N. LAWSON, Middle Haddam: I understood Dr. Keniston to say that a man is really responsible for his crimes, very often, even though insane. It seems to me that family physicians are in a position to say more readily than a stranger whether his patient is insane or not, whether he has passed from his own norm and the recognized standards of the day. He can be of great assistance to the staff of physicians at the hospital if he will write up the history and give it to these physicians, along with the certificate of insanity.

INSTRUCTIONS TO PATIENTS SUFFERING FROM SPECIFIC URETHRITIS.

DR. PERCY D. LITTLEJOHN, New Haven: In order to overcome the difficulty of not having my instructions accurately followed by patients, I have prepared some leaflets containing careful directions. I have tried to make the statements contained in them as terse and as clear as possible, and at the same time emphatic. Gonorrhea is not the slight complaint that many consider it. Alcohol must be strictly avoided. Exercise should be taken, but all forms of violent exertion should be avoided. A careful cleansing of the nails and hands is imperative after the gauze dressing is handled. All infected persons should sleep alone, if possible; and all toilet articles must be for their own exclusive use. Particular attention should be given to the alimentary tract, in order to avoid constipation. Few realize the value of drinking large quantities of water and the free urination which this causes. Cases in the acute stage must have a milk diet, as far as possible; and as the disease improves, the diet may be increased. The patient should be cautioned to keep reasonably quiet after his day's occupation is finished. The proper technic in the use of the hand injection should be properly explained. Though I believe that we can cure all cases of anterior infection, and am optimistic regarding the chronic cases, provided the directions are fully followed for as long a time as necessary, and I also believe that cases so treated will not infect other people, yet until all the gonococci can be proved to have disappeared

we are scarcely justified in making a positive statement to that effect when matrimony is contemplated.

DR. FRANK H. COOPS, Bridgeport: Dr. Littlejohn's plan of putting into the hands of the patient printed slips describing the points of the home treatment of gonorrhea, I have seen carried out with splendid results. I have for some time been thinking of getting out such a set of printed instructions, and I cannot do better than copy the set presented, making a few changes to suit my individual fancies. The instruction, "You should drink all the water possible," I should have put in bold type, for instance. When the urethra is washed out every half hour, not enough discharge accumulates to require the use of any dressing at all. The request that the patient come to the office with a plentiful supply of urine in his bladder is of the utmost importance from a diagnostic and prognostic standpoint. I believe, too, that our patients should be instructed as to the import of these various urethral shreds, etc. The disease, under the best of conditions, is a very difficult one to cure.

DR. CHARLES S. STERN, Hartford: The total elimination of red meat would in some cases retard the cure by reducing the patient's resistance. A patient is much more likely to constantly renew a small bit of cotton than a large piece of gauze. Unnecessary handling always increases and continues the local inflammation. I should add as a conclusion to the other instructions, and in heavy type, "Don't stop treatment until you are completely cured."

DR. GEORGE BLUMER, New Haven: It is now known that the white meats have rather more extractives than the red. If meat be stopped, it should be meat of all kinds.

DR. RALPH A. MCDONNELL, New Haven: I have been unable to satisfy myself that diet has any influence upon gonorrhea after the acute part of the infection is over. I think that the drinking of water should be controlled during the latter part of the evening.

DR. LITTLEJOHN, closing the discussion: I was well aware that white meats have more extractives than red, but I knew that if my patients did not eat red meat, they would get very little meat of any kind. People with a recent infection, never having had any previous trouble of this kind, should be told what to avoid in the way of eating; in chronic cases, it does not make nearly so much difference.

THE MANAGEMENT OF SYPHILIS.

DR. ALFRED G. NADLER, New Haven: I do not believe that syphilis is on the increase. Begin treatment as soon as the diagnosis is made, which is usually at the first visit or very soon thereafter. The microscope will almost invariably make or confirm the diagnosis of chancre. The chancre should be excised, but the patient should be subsequently treated just as if this operation had not been attempted. Mercury may be given externally, internally and by injection. The internal administration is not to be resorted to unless conditions prevent the use of inunctions or injections. Treatment by suppository is also inefficient. Administration by inhalation is one of the best methods. I have had no experience with intravenous injections. The advantages of intramuscular and subcutaneous injections are that there is greater regularity of treatment, the absorption is more certain, the stomach is left free for the reception of other medicines, there is less chance of stomatitis, the physical effect is more marked and they are convenient for the patient. Pain may accompany the injections; and sometimes a deposit of mercury is left, which suddenly absorbs, producing poisonous symptoms. The intramuscular injection of insoluble salts produces a deposit which is slowly absorbed and slowly eliminated; when injected subcutaneously, the salts are absorbed and eliminated more rapidly and should be used when a prolonged action is required, but the intramuscular injections have a more profound effect upon the deeper manifestations of syphilis. The first two years of the treatment is the most important period for the patient, but treatment should be actively pursued for at least five years. One should watch carefully for complications. I consider inunctions preferable to injections, and believe that it is better to treat too long than not to treat enough.

DR. RALPH A. MCDONNELL, New Haven: I always find it inconvenient to cut the chancre out, and one cannot promise the patient that cutting it out will do any good, so I do not see any advantage in insisting upon it. I do not find it so easy to discover the spirochetes with the microscope as is indicated by the paper, so I am not able to make the diagnosis by means of the microscope, although it can be done with proper technic. I am not sure that my inability to find the spirocheta does not work to the advantage of the patient, as I believe that, unassisted, the system acquires a certain power of opposition to the disease as time goes on. It is well to let the patient go untreated for a time, even when the diagnosis is made. My preference is for the injection of an emulsion of metallic mercury, which I have given in over one thousand injections without untoward results. I have seen various late manifestations of the disease, and even total blindness, years after the infection, controlled after a few injections.

DR. THOMAS M. BULL, Naugatuck: Physicians should be more careful to diagnose syphilis. If one contagious case be left undiagnosed, an untold amount of harm may be done. Inasmuch as 99% of medicine is given by the mouth, and as this is the natural way for anything to enter the blood, I must confess to a predisposition for this method. There is little danger of irritating the digestive tract if you see the patient frequently and grade the dose carefully. Although the disease is capable of producing the most terrible consequences, I believe it to be the most easily treated of any of equal gravity. I should strongly advise any patient who has ever had syphilis to take a month's mixed treatment every year, whether symptoms have developed or not. The best treatment must be prophylactic.

DR. CHARLES C. BEACH, Hartford: In treating syphilis successfully, it is absolutely essential to make the diagnosis early. I presume that the ideal treatment is by injection or inhalation, but I never use either of these. We get sufficiently good results from the internal treatment by the mouth, and I have found no difficulty in giving the protiodide. We are supposed to keep as professional secrets the names of those that suffer with syphilis, but I believe that cases of this disease should be reported with the same care as cases of scarlet fever or any other contagious disease.

DR. OLIVER C. SMITH, Hartford: The place for such patients is in the hospital, in bed on their backs. They have no right to go about disseminating the disease. We should try to educate the communities in which we practice concerning the great importance of these two terrible infections, gonorrhea and syphilis.

DR. RIENZI ROBINSON, Danielson: I should like to ask the author of the paper whether he would prefer mercurial treatment to the iodide for the tertiary manifestations of syphilis.

DR. CHARLES S. STERN, Hartford: I do not believe that at present the Wassermann reaction has the same standing among physicians as it had a year ago. Either positive or negative, it is not to be depended on.

Dr. Percy D. Littlejohn, New Haven: I thoroughly agree with the statement that gonorrheal patients are better off in the hospital, but you cannot keep syphilitic patients there.

Dr. Nadler: With reference to the Wassermann reaction, I should say that it is not considered so valuable now as it was formerly. I mentioned in my paper that negative reactions do not indicate a cure of the disease. I should treat the tertiary manifestations with intramuscular injections of calomel, and give potassium iodide. I did not enter into the sociological question at all. Chancre may be located where it can be conveniently removed; and in that case, its removal will eliminate a host of infecting agents. I think that the spirocheta can be readily discovered under the microscope with the so-called dark-ground illumination.

A CONSIDERATION OF THE ANATOMY AND CLINICAL IMPORTANCE OF THE SUBDELTOID BURSA.

Dr. Paul P. Swett, Hartford: Lesions of the subdeltoid bursa are more frequent than other lesions in this region, including fracture and tuberculosis of the shoulder. The old term, "peri-arthritis of the shoulder," is not definite, and usually refers to subdeltoid bursitis. The exposed position and peculiar function of the bursa render it especially liable to inflammation. Although the vast majority of cases are best treated by excision of the bursa, there are many instances in which limitation of motion does not exist; and treatment of this class of cases by means of rest, massage and counterirritation is usually sufficient. A diagnosis of rheumatism, tuberculosis, paralysis, ankylosis or neuritis should not be made until the possibliity of subdeltoid bursitis has been excluded.

Dr. Ernest W. Arnold, New Haven: The investigations regarding the subdeltoid bursa are the logical outcome of the investigations regarding the behavior of bursæ in general. The bursæ at the knee-joint inflame without cause. There are a certain number of cases in which no great trauma has been received, and repeated slight trauma from kneeling cannot be held responsible for the chronic inflammation of the patellar bursa. There must, then, be accepted the possibility that these bursæ partake of the same inflammations that the joint itself is liable to have. All infections leave the bursa permanently thickened; and such a bursa must be not only useless, but a great hindrance to the function of the joint. It should be removed, if the impediment to the joint is mainly due to the bursa. We all know that a good many cases will clear up under other treatment, however, than operative interference.

Dr. Ansel G. Cook, Hartford: Here is a new bursa that must be reckoned with. All that is true of the other bursæ is true of this one. Fixation *per se* has never been proved to cause the inflammation of any bursa, but if the arm is fixed in such a position as to cause pressure, that pressure will be trauma. I have given prominence to this point in order to show that we need not be afraid to fix any of these joints, if necessary. There are times when an inflamed joint will do better at rest, and other times when irritation is desirable.

THE IDEAL NOSE AND PHARYNX.

Dr. Frederick W. Wilson, Bridgeport: The amount of air passing through the nose and pharynx in a year must be reckoned in millions of cubic feet. An obstruction having almost no influence in a single inspiration may have great influence in a million inspirations. This is also true of nasal cavities that are too large. Laboratory experiments give expired air a much lower percentage of micro-organisms than inspired air, most of the organisms having been deposited on the moist mucous membrane of the nose and pharynx and being subsequently blown on to the handkerchief or expectorated. The nose and pharynx might almost be called the filtration apparatus of the air. These organisms rarely breed and do harm on a plane surface; they must have some hiding-place where they can lodge and multiply. The ideal nose and pharynx contains as few of these hiding-places as possible. We as a profession are not fully alive to the importance of the existence of small, unnecessary hiding-places and of their complete obliteration by surgical means.

Dr. Dorland Smith, Bridgeport: Nasal surgery for the prevention of consumption is, at first thought, somewhat startling. I have, however, for some years been making careful search for small defects in the nose and pharynx, and obliterating them. We are used to the correction of large defects, but the idea of making an ordinarily well person perfectly well by paying attention to small defects is a further step in development. The acquisition of a good nose and pharynx not only gives one practical freedom from colds, catarrh, sore-throat and the air-borne diseases generally, but also gives one a higher level of health; and this may be given to almost any one who will take the time and trouble to have done those little bits of surgery that make the nose and pharynx approach the ideal. In cases of the removal of tonsils and adenoids, I am satisfied that the certainty of permanent cure and ideal end-results is to be found, not in thoroughness in extirpating tonsil tissue, but in thoroughness in searching out crypts and pockets and recesses that will admit a probe, and in converting them into shallow saucers by trimming their edges. In small tonsils, it is the pockets and adhesions, and not the smooth tonsil-tissue, that make the trouble.

Dr. Wilson: We have definite and positive evidence that these small pockets are of importance in influenza, hay fever, asthma and other minor diseases. We have not the clinical evidence, however, that they are important in pneumonia, tuberculosis and other general diseases; and this is the point upon which we need the help of the general practitioner.

THE TREATMENT OF INFECTION FOLLOWING ABORTION, MISCARRIAGE AND LABOR.

Dr. Charles A. Monagan, Waterbury: The ideal treatment is preventive, — the development of a complete, rigid, aseptic technic. The general use of rubber gloves cannot, unfortunately, be enforced. When the condition is actually present, before the system has become loaded down with bacteria, the uterus should be curetted with a blunt curette. Now, if, at any time, intra-uterine douches may be of service. Antistreptococcic serum has been disappointing in its results. As the prognosis of this grave condition changes very rapidly, undue credit is sometimes given to the remedy last used. The autogenous vaccine treatment has not had very good results, especially in cases of the acute type. The application of hyperleucocytosis often fails to arrest the contagion. I have not seen any good results follow the use of unguentum Crédé. Ergot does good by contracting the uterus, thus preventing further infection. The medical treatment is the ordinary supporting treatment used in fighting any toxic condition. All drugs irritating to the stomach should be avoided. The patient's strength should be kept up by a liberal supply of nutritious food. Salt solution in large quantities is the best single means of controlling the inroads of sepsis. The temperature should be controlled with wet packs, sponging,

cold baths and abdominal coils. Opening into Douglas's pouch and packing with iodoform gauze has been advocated; also hysterectomy for those cases that fail to improve after curettage. The latter procedure would be of use in cases caused by the presence of a suppurating tumor. In septic peritonitis, multiple incisions, thorough drainage and the constant use of saline rectal infusions offer the best means of treatment. If a collection of pus can be located, it should be opened and drained.

Dr. Samuel M. Garlick, Bridgeport: While I would not abate one iota of the needful care in all cases of labor, I am far from convinced that every maternity case should have the same preparation and management as an abdominal section requires. The modern woman, with her highly apprehensive organism, is often brought to the verge of a state of nervous breakdown by the anticipation, worry and fear engendered by such elaborate, detailed and expensive preparation. So often has my hospital experience shown me the bad results of indiscriminate and routine curettage that I am sometimes led to wish it had never been introduced. Antistreptococcic serum has been disappointing in my hands or under my observation. With autogenous vaccine treatment, I have had no experience. Two cases of hysterectomy for septic metritis have proved fatal. I have had no experience with unguentum Crédé.

Dr. Ralph W. Crane, Stamford: Dr. Monagan outlined one method of treatment after another, as did Dr. Garlick afterward; and both said that these were all no good. The fact is that the treatment is prevention, as Dr. Monagan said in his opening sentence.

Dr. Thomas G. Sloan, Hartford: I recently saw in consultation the case of a woman who died, at the end of ten days, of puerperal septicemia. It did not seem that she could have been infected by the man who delivered her. I do not think that any douches were used previous to the confinement, and no nurse came in contact with the patient in a way to infect her. The woman's mother and sister had both died of puerperal septicemia. Where the infection came from, except from the vagina, it is impossible to say.

Dr. Allen H. Williams, Hartford: If the patient realizes that perfect cleanliness will insure her recovery, care of that sort will not scare her. The meaning of these precautions should be explained to her.

THE SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCER.

Dr. Everett J. McKnight, Hartford: The surgical treatment of gastric and duodenal ulcer and their complications shows a lower mortality and a higher percentage of permanent cures than can be produced by medical treatment alone. None of the complications or sequelæ, except hemorrhage, usually occurs early in the disease; and it is a question whether a perfectly healed, non-indurated scar following ulcer ever gives rise to further trouble. The healthy stomach has the same tendency to recover from injuries caused by traumatism as has any other healthy organ. In cases that do not recover, some extra factor is at work. Investigations point to hypersecretion and hyperchlorhydria as the most important factors in preventing the normal process of repair. The beneficial effects of a gastro-enterostomy are due to regurgitation of biliary and pancreatic secretions into the stomach, neutralizing to some extent the excess of hydrochloric acid rather than to a better drainage of the stomach. I prefer the grouping of symptoms used by Graham in the *Journal of the American Medical Association* for Aug. 22, 1908. If the ulcer is located in the abdomen, gastro-enterostomy is the operation of choice. In gastric ulcer, however, the removal of the ulcer is the only proper procedure for some cases, although in a majority of cases a posterior gastro-enterostomy is sufficient. Operation is rarely needed for the control of hemorrhage itself. One of the most serious complications of ulcer is perforation, which is more frequent when the ulcer is situated on the anterior wall. The results of operation performed during the first few hours after perforation are exceedingly good. The patients should be watched as carefully after the operation as before, until a sufficient time has elapsed to enable the attendant to be certain that a permanent cure has been effected.

DISCUSSION.

Dr. Oliver C. Smith, Hartford: It takes a reasonable length of time to determine whether medical treatment is to be successful or not. After this, the ulcer becomes a surgical disease. The fact that conditions lower down develop symptoms so similar to those of gastric ulcer that they are confused with it has been referred to; and the fact that many carcinomas develop on the basis of a gastric ulcer emphasizes the importance of early operation. It is not possible to tell before operation just what condition we are dealing with, and this argues for more frequent resection of the portion of the stomach bearing the ulcer. We should use a soluble material for sutures in the inner coat.

Dr. Edward W. Smith, Waterbury: It is very unusual to find present in one patient a healed ulcer and the production of symptoms of pyloric stenosis due to conditions lower down in the intestines. I have seen a case that showed these points. He had had a peptic ulcer that had been healed by medical treatment. He then had pylorospasm simulated by an irritated appendix. When you have a gastric ulcer, the appendix had better be looked out for also.

Dr. William H. Carmalt, New Haven: I think that Dr. McKnight has not made so much of the symptomatology of supposedly cured cases as he should. The condition of relief obtained from a course of medical treatment is not a cure, but simply a temporary condition of improvement. When several such series of symptoms occur in a patient, it is time to cease medical treatment.

Dr. William F. Verdi, New Haven: I should like to call attention to the fact that there is a difference between a chronic ulcer and a perforating ulcer. Perforating ulcers come on, as a rule, in persons between twenty-eight and thirty years of age. The symptoms are not usually severe, and the patients are able to continue their work. They are usually seized with the perforation while at work and are brought to the hospital suffering intense pain that requires immediate relief. At first, it is the right half of the abdomen only that is affected. The intestinal contents are poured out under the surface of the liver and go toward the right iliac fossa. The chronic ulcer is different. The patients have a long train of symptoms, going on over a number of years; and in these cases there is not much danger of perforation because the ulcers are protected from perforation by a great many adhesions that form about them.

Dr. Louis M. Gompertz, New Haven: It is extremely important for the medical man constantly to bear in mind that ulcers of the stomach and duodenum are much more common than is usually supposed. When patients complain of pain on an empty stomach, relieved by eating food, and then coming on again within two to four hours, one should be

suspicious of the presence of an ulcer at the pylorus or lower down. When an early diagnosis is made, the very acute ulcers are sometimes benefited by medical treatment, but it does not make any difference how you treat patients with chronic ulcers, for they will still have the ulcers. If you wish them cured, send them to the surgeon for operative treatment.

DR. MCKNIGHT: We are all coming to feel that, for ulcer of the stomach, resection or partial gastrectomy is the operation of choice, considering the large numbers of cancers that develop on the basis of ulcers. I have operated on more cases of appendicitis that simulated gastric disease than I have on gastric ulcers; so these cases are not so rare as Dr. Edward W. Smith thinks. Regarding Dr. Verdi's distinction between the two classes of ulcers, I would say that in the case of a man of fifty-five years there was a chronic ulcer with sudden perforation.

THE TREATMENT OF FRACTURES.

DR. GEORGE W. HAWLEY, Bridgeport: The treatment of fractures does not appear to have kept pace with the advance of modern surgery and does not meet present-day needs. The enormous number of persons that are crippled every year as the result of fracture offers a challenge to surgical science. This industrial age will soon ask what is being done to lessen the great industrial loss through fractures. There is room for common-sense in laying down principles on which treatment should be based. In all fractures, the bones tend to unite without assistance of any kind. The most that we can do is to help nature to obtain useful union. The only way to do this is by approximating the ruptured tissues, on the principle that the more accurate the approximation, the more perfect will be the repair. There is need for better means of holding divided bones in apposition, and there is opportunity for improvement in the technic of operations on fractures, based on the fact that bone stands trauma or infection but poorly. There is no reason why we should not repair an injured bone as readily as we would any other injured structures, and there is great reason to believe that the future will see an increased interest in fractures and a creditable advance in their treatment.

(To be continued.)

Book Reviews.

A Manual of Personal Hygiene. Proper Living upon a Physiologic Basis. By American authors. Edited by WALTER L. PYLE, A.M., M.D. Fourth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1910.

This volume presents in popular form the physiologic rationale of personal hygiene, under the subjects of the digestive apparatus, the skin, the respiratory system, the ear, the eye, the brain and nervous system, and physical exercise. To these original topics, this fourth edition adds a section on home gymnastics, new chapters on body-posture and domestic hygiene, and an appendix describing the elementary principles of hydrotherapy, thermotherapy, mechanotherapy and first aid to the injured. Representing though it does the work of ten different authors, the book has, nevertheless, a unity of purpose as a manual to teach the principles and methods of physical right living from the legitimate didactic standpoint of the physician.

The Diseases of the Nose, Mouth, Pharynx and Larynx. A Textbook for Students and Practitioners of Medicine. By DR. ALFRED BRUCK (Berlin). Edited and translated by F. W. FORBES ROSS, M.D. Edin., F.R.C.S. Eng. Assisted by FREDERICK GANNS, M.D. Illustrated by 217 figures and diagrams in the text. New York, Rebman Company.

This is a book of six hundred pages, covering the subjects of its title briefly and systematically. It was written in Germany, translated in England and is offered as a manual to American students and practitioners. There are several similar textbooks published by Americans, and it is interesting to note the more striking differences between them and this one. Here the ear is not included, but instead there is a division for the mouth. This is a good arrangement. The common diseases of the mouth and tongue should logically be taught with those of the throat, and practically are often treated in laryngological clinics, yet they are seldom included in laryngological or other textbooks in common use. The ear, on the other hand, has its own manuals, and even when written by the author of a manual on the throat it might with advantage be bound separately, if only for ease in handling. In addition to the division for diseases of the mouth there are included other subjects of more or less importance which should be welcome in a book of reference, as examples of which may be mentioned: Sycosis of the Vestibule, Mumps, the Examination and Pathology to the Trachea, the Voice in Singers. On the other hand, it is startling to find the whole description of operative treatment of deviations of the septum, including the Ashe operation and submucous resection, occupying less than a page. It is perhaps less surprising that the occidental interest in the tonsils, and especially their removal, should not yet have found its way into the book, except to say " that various authors, and recently Winkler also, advise evulsion "; but the description of how or why tonsillectomy is done is dismissed in a few lines. These are the two weakest points in the book. The pages on anatomy are brief and clear. Many of the illustrations, although not all original, are good. The text is better arranged for reference than is often the case in German manuals, and it is well printed. The object of the author is to state briefly the essential points, and to leave out nothing of importance. This he has succeeded in doing well, with but few exceptions, and the result is a book which will be found useful both to the student and to the general practitioner. It would be a good supplement to most of our American manuals, filling in omissions in some places and giving a different point of view in others.

Contributions to Abdominal Surgery. By the late Harold Leslie Barnard, M.S., F.R.C.S., Surgeon (with charge of Out-Patients) to the London Hospital. Edited by James Sherren, F.R.C.S., Surgeon (with charge of Out-Patients) to the London Hospital; Surgeon to the Poplar Hospital for Accidents, etc. New York: Longmans, Green & Co. London: Edward Arnold.

This is a delightful book, characteristic of certain of our English contemporaries. Barnard died two years ago. He was known as a brilliant teacher, clinician and investigator in the London Hospital, and was beginning to make a great impression on the surgery of his community. This book is a collection of a number of his important recent unpublished papers. The book begins with a sketch of Barnard — charming and sympathetic — by his associate, H. H. Bashford, whose account of the man, of his methods and of his influence is abundantly worth reading. Then there follows an extremely interesting paper, filling much more than half the book, on Intestinal Obstruction, another on Gastric Surgery, another on the Simulation of Acute Peritonitis by Pleuro-pneumonic Diseases, three lectures on Acute Appendicitis, and finally, an extremely important contribution on the Surgical Aspects of Subphrenic Abscess.

To the student of abdominal disease and to the man who delights in terse and vigorous scientific English these essays appeal strongly.

The Medico-Chirurgical Series No. 2. The Stomach, Intestines and Pancreas. By W. C. Bosanquet, M.A., M.D. Oxon., F.R.C.P., Assistant Physician to Charing Cross Hospital and to the Brompton Hospital; and H. S. Clogg, M.S. Lond., F.R.C.S. Eng., Assistant Surgeon, Charing Cross Hospital; Senior Surgeon to the Evelina Hospital for Children. Edited by James Cantlie, M.A., M.B., C.M. Aberd., F.R.C.S. Eng., Surgeon Seamen's Hospital Society; Lecturer on Surgery, London School of Tropical Medicine. New York: William Wood & Co. 1910.

This work is a clear and concise description of its subject both in its medical and in its surgical aspects, but without notable departures from the teachings of previous standard textbooks of medicine and of surgery. To the student approaching the subject for the first time, it offers profitable and easy reading. But for the practitioner of medicine already familiar with the subject in general outline searching for new hints to improve the efficiency of his treatment either medical or surgical there is not sufficient detail. As is stated in the preface, the authors have aimed to produce a concise description of the various diseases rather than an extended scientific discussion. In this they have succeeded admirably.

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THE OPIUM TRAFFIC.

The agitation which has been going on for some time relative to the opium traffic in the far East will undoubtedly soon lead to definite results. This is largely due to the untiring efforts of Bishop Brent, of the Episcopal Church in the Philippines. Bishop Brent has been intimately associated with the opium commission since its inception and has devoted much time and attention to the extremely difficult social and political problems involved in an equitable solution of what must generally be regarded as an evil.

For many years a considerable part of the revenue of India had been derived from export to China and the Strait settlements. In the fiscal year 1907–1908 for example, upwards of 48,000 chests of opium were exported with a net revenue to the government of more than $17,000,000. In 1906 the Chinese government promulgated regulations for the control of the growth aud sale of opium and two years later the British Ministry agreed with the Chinese government that 51,000 chests of opium should be considered the standard amount to be imported yearly into India, this amount to be decreased each year by 5,100 chests, the importation finally to cease entirely after the lapse of ten years. It will be realized how important an element the trade in opium is when it is stated that in 1905, 7,270,000 lb. of opium with a valuation of $23,000,000 were exported to China. It is said that the amount of opium grown in China approximates these figures. In 1909 the situation appeared to be sufficiently critical to make desirable the appointment of a commission. The idea of this commission was initiated by the American government and delegates from China, European and Asiatic nations together with representatives from the United States met at

Shanghai. Bishop Brent was made president of the commission and resolutions were forthwith adopted bearing upon the various governments for the suppression of opium smoking. Had these resolutions as finally adopted been as drastic as was originally proposed by the American and Chinese delegates it is probable that the traffic would speedily have been suppressed. The American plan was, however, opposed by Great Britain owing to certain trade relations existing between China and England, and the contention that China was not carrying out pledges made in 1908 relative to the discontinuance of the growth of the poppy.

As in most such undertakings it appears that certain officials are active and others lax in carrying out the regulations looking to the suppression of the opium traffic. It is evident that the interests involved are so comprehensive and concern so many nations that an amicable and satisfactory settlement of the question must involve large diplomatic foresight and a thorough consideration of the claims of the various governments involved. Bishop Brent's experience together with his well recognized reputation for tact and wisdom in handling men and situations will doubtless go far toward rendering a final solution of the question satisfactory to the varying interests involved.

THE MEDICAL STUDENT AND HIS FINANCES.

Among the professions, there is none in which money is so necessary during the preparatory stage as in medicine. To get a good medical education one must spend at least eleven years in elementary, grammar and high schools, or their equivalent, two years in college and four years in the medical school. Following this, a hospital service lasting from one to two years is practically a necessity. Assuming that one begins to study at the age of six, he will be at least twenty-four before he can begin to practise. As a matter of fact, there are very few who graduate as early as this from the schools requiring previous collegiate training. The great majority of men are between the ages of twenty-six and thirty when they leave the medical school. It is not at all uncommon to find among hospital internes men of over thirty.

The cost of such an education, considering only the two years of college and the four years of medical school and reckoning each year's expenses as $500, amounts to $3,000. Occasionally, men spend less than this, but the cost of living in cities, where medical schools are for the most part situated, generally brings the expenses much higher. A number of men offset this expenditure, or a part thereof, by earnings. Even in college, however, the prospective medical student has less chance to earn than men taking a less scientific course. His laboratory work consumes much more of his time, and the subjects in which he is proficient are usually not the subjects in which tutoring is in much demand. When he enters the medical school, he should have all his time and energy for study.

It is easy to see, therefore, that unless a student's family is able to support him for five or ten years after he is of age (a situation frequently more distasteful to the student himself than to his parents) his struggle to get through the medical school without being very deeply in debt is sure to be a hard one. There is one type of man who can meet this problem successfully, but there are also many men of different type, who, although hard workers and equally good students, have not the ability to find satisfactory work. The remedy for these conditions is none too easy to find. Assuming that there is money available for scholarships, it must be turned in the proper direction. Assignment of scholarships according to marks alone is often objectionable, for the really deserving man may be prevented from winning by his efforts to earn his bread and butter. The mere ability to gain high marks, furthermore, is not necessarily the talent which later makes a man useful to his profession.

Harvard University has done wisely in appointing a director of scholarships for the medical and dental schools. As one having authority, this officer may be interviewed by college men long before they enter medicine, and can give them reliable information as to their chances of help. He can single out from among the applicants for aid those in whom the money will be best invested. He is to be empowered to loan small sums, and his office, furthermore, is to be used as an employment bureau. This should make available for medical students whatever suitable positions may exist, and should also serve the public by furnishing them the best men for the vacancies which they would fill.

THE WANDERINGS OF A SMALLPOX PATIENT.

Many persons in New York were recently exposed to the danger of contracting smallpox by the extraordinary actions of a patient suffering from that disease. This was a young German employed in a candy and ice-cream shop in upper Second Avenue. Feeling ill, he consulted a phy-

sician in the neighborhood, who made the diagnosis of smallpox. As soon as the young man heard the word smallpox, he bolted from the office, and in a distracted condition boarded a trolley car. From this he transferred to another car, which took him to West One Hundred and Thirtieth Street ferry, where he crossed to the New Jersey Shore. There he climbed the hill and remained till evening, when he returned by the ferry to New York. By this time, believing that he would surely die from the loathsome disease, his mind was made up for suicide, and, finding a deserted street corner, he drew from his pocket a small revolver which he had always carried since his arrival in this country and shot himself in the head. Curiously enough, the bullet struck a glass eye which he wore in place of one of his eyes, lost by an accident in Germany. From thence it was reflected alongside the skull for several inches, making a shallow but not dangerous wound. This he bound up himself with a handkerchief, and then went back to the room he occupied, near the place where he worked. All that night he suffered from severe pain in the head, and, the pain continuing he rode all the next day in various street cars, in the effort to seek distraction from his trouble. At nightfall he could stand it no longer and accordingly betook himself to Bellevue Hospital. From there, as soon as the diagnosis of smallpox was confirmed, he was sent to the reception hospital for contagious diseases.

MEDICAL NOTES.

Special Poliomyelitis Number of "Pediatrics." — The August issue of *Pediatrics* is devoted to the subject of acute poliomyelitis. Those who contribute are Drs. I. Strauss, Simon Flexner, John M. Armstrong, F. E. Coulter, Colin K. Russell, George P. Shidler, J. S. Fowler and C. A. Anderson. The latter writes on an epidemic of two hundred and seventy-nine cases. In addition to these articles the excellent discussions recently held in Washington at the Congress of American Physicians and Surgeons are published, together with a retrospect of literature on the subject of poliomyelitis. The importance of the disease certainly justifies such comprehensive articles collected in readable and condensed form. It is primarily necessary that practitioners everywhere should learn to recognize the early symptoms of the disease and such knowledge can be obtained in no better way than by such comprehensive statements in medical periodicals.

A Retail Drug Corporation. — Negotiations have been completed for the exploitation of a gigantic retail drug corporation, with a capital of $15,000,000 to be known as the Riker-Hegeman Company. The president is to be John N. Flegler, of the Standard Oil Company, the present head of Hegeman & Co., and the business of this company, with a capital of $6,000,000, is to be united with that of the William B. Ricker & Son Company, with a capital of $2,500,000. The additional $6,500,000 capital will be used for further expansion. Twenty of the drug stores in the new combination have been operated by the Hegeman Company, and twenty-five by the Riker Company, and, as several of these stores are now placed close to each other and compete for the trade of the same localities, it is planned to do away with duplicate stores and to place new ones in other localities in the city. In addition, it is purposed to open stores in Boston, Philadelphia and Baltimore, and possibly to establish a chain of several thousand stores throughout the country.

Exorbitant Prices for Milk. — The Attorney-General of New York State, who has been investigating the matter, asserts that present prices charged for milk are exorbitant. This is certainly very regrettable, and it is to be hoped that corrective measures may be rendered possible. At the same time, it is probable that the average milk supply of New York was never before of so good a quality as at present. The State Commissioner of Agriculture, Raymond A. Pearson, has been very energetic in his efforts to secure purity of the supply. Scores of violations of the ordinances have been discovered, and convictions and fines have followed. The city health department has also been most active in the good work, and, while the milk purveyers as a rule have co-operated cheerfully, the untiring labors of the department have been at the bottom of the maintenance of a high standard. Dr. Darlington, when Health Commissioner, labored diligently to keep the milk sold in the city uncontaminated, a task not easy in a territory extending into Massachusetts on the one hand and as far as Ohio on the other. A recent statement issued by his successor, Commissioner Lederle, shows that in the methods of dairy and depot inspection no falling off of vigilance has been permitted. The closest practicable supervision is maintained over the thousands of dairies furnishing the supply. The work of inspecting all dairies within the state limits is carried on by a corps of trained

men who visit the dairies at regular and also irregular intervals, and for each dairy a score card is kept. Each of them has its rating, and if any falls below the high standard required, its milk cannot be brought into New York until the objectionable conditions are rectified. The requirements from the proprietors as regards cleanliness of premises, cows and milkers are, in fact, more exacting than are usually maintained for private consumption anywhere in this country. In the city, not only are samples of practically all the milk brought in examined at the places of entrance and analyzed in the health department laboratories daily, but a constant lookout is kept over the entire city for local outbreaks of disease which may be traceable to the milk supply.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Aug. 9, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 39, scarlatina 17, typhoid fever 18, measles 26, smallpox 0, tuberculosis 67.

The death-rate of the reported deaths for the week ending Aug. 9, 1910, was 15.15.

BOSTON MORTALITY STATISTICS. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Aug. 6, 1910, was 195, against 191 the corresponding week of last year, showing an increase of 4 deaths and making the death-rate for the week 16.14. Of this number 96 were males and 99 were females; 189 were white and 6 colored; 136 were born in the United States, 56 in foreign countries and 3 unknown; 28 were of American parentage, 140 of foreign parentage and 27 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 48 cases and 1 death; scarlatina, 19 cases and 1 death; typhoid fever, 24 cases and 0 deaths; measles, 23 cases and 1 death; tuberculosis, 55 cases and 18 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 11, whooping cough 0, heart disease 22, bronchitis 0. There were 12 deaths from violent causes. The number of children who died under one year was 67; the number under five years, 82. The number of persons who died over sixty years of age was 32. The deaths in public institutions were 87.

Cerebrospinal meningitis, 1 case. Consumption, 2 cases and 1 death. Scarlet fever, 2 cases and 1 death. Diphtheria, 2 cases.

Deducting deaths of non-residents, the total is 176 and the death-rate is then 14.57.

WORK OF BOSTON MILK AND BABY HYGIENE ASSOCIATION. — This association is attempting to educate the poorer classes in the care of their children by the wide circulation of leaflets containing striking statements regarding dangers to be avoided and measures to be followed if the health of the babies is to be preserved during hot weather. We quote what are properly termed "Six Imperative Rules for Saving Baby's Life." "Feed baby from the breast wherever possible. Nurse your baby at regular times. Give him pure milk from a thoroughly clean bottle. Keep cool. One cotton shirt and a diaper is clothing enough. Give plenty of fresh air — always have the windows open. If baby is sick, stop feeding altogether, give it plenty of water, and take it to a doctor, children's hospital or milk dispensary." This is a sample of the purpose of these leaflets although they enter very much more into detail than these dogmatic statements alone would imply. We have no doubt such a propaganda is useful and certainly it should be encouraged by the people to whom it chiefly applies.

NEW YORK.

BEQUESTS. — By the will of the late Charles P. Armstrong, of New York, $5,000 each is left to the Methodist Episcopal (Seney) Hospital and the Methodist Home for Aged People in Brooklyn.

A CENTENARIAN. — Daniel Darney of New York, died on Aug. 3, at the age of one hundred years. He was a native of Cork, Ireland, and came to this country forty-six years ago.

APPOINTMENT OF DR. GLENTWORTH R. BUTLER. — Dr. Glentworth R. Butler, of Brooklyn, at present President of the Kings County Medical Society, has been appointed a member of the State Board of Medical Examiners. The term of service is for three years.

STATE MORTALITY STATISTICS. — The State Department of Health reports that in the month of June the total number of deaths reported in the state of New York was 10,893, and the total number of births, 16,782. In New York City the number of deaths was 5,946 and of births, 10,400; thus giving the city all but 1,435 of the total excess of births and deaths, which was 5,889.

NEW ANTI-VENOM SERUM. — An anti-venom serum prepared at the Rockefeller Institute, under the direction of Dr. Noguchi, has just been used

for the first time in the case of a patient at Bellevue Hospital who was bitten in the hand by a rattlesnake which he owned, and it was successful in saving the man's life.

Purchase of Real Estate by Academy of Medicine. — A special meeting of the New York Academy of Medicine was held on July 18 for the purpose of adopting a recent report of the Trustees and Council of the Academy relating to the purchase of real estate property for the use of the Academy, and of authorizing the ratification of the same, in accordance with the provisions of the by-laws of the Academy.

Verdict Against a Hospital. — The Appellate Decision of the New York Supreme Court recently confirmed a verdict for $30,000 damages in the lower courts against St. John's Hospital, Long Island City, in the borough of Queens. The winner of the suit was a bicyclist who was rendered blind in consequence of injuries received by being run over by an ambulance of the hospital. It is not probable, however, that the ambulance service of any of the hospitals in the city will be discontinued as a result of the large amount awarded in this case. Practically all of them have for years been carrying indemnity policies of considerable size with insurance companies to protect them against damage suits of this kind, and, in addition, the city makes most of the hospitals maintaining an ambulance service an allowance of about $1,200 a year.

Death from Administration of Lysol. — The authorities are now investigating the death of a six-months-old infant which occurred at Trenton, N. J., on July 24, from the administration of lysol, given in mistake for laxol, the castor-oil proprietary preparation. The physician who was attending the child, asserts positively that the prescription which he wrote called for an ounce of the latter, while the druggist who put it up claims that the prescription was for lysol. Even granting that the word as written did look like lysol, the druggist is clearly at fault for not calling the physician's attention to the large dose of this poisonous drug ordered before allowing the medicine to go out of his shop.

Hospital for Sick Children. — The plan is now being discussed by the municipal authorities for securing for the use of the city as a hospital for sick children a fine new hospital building recently erected by the national government on Ellis Island, in New York Harbor. This hospital, costing $250,000 and with a capacity of 500 beds, was designed for the treatment of contagious diseases among the immigrants arriving at the island, but the building is now found to be useless for this purpose, as the New York Health Department recently issued an order that all immigrants suffering from such diseases must be detained at quarantine. It is believed, therefore, that the government would be willing to rent the building to the city for a comparatively small sum, and Mayor Gaynor has expressed a favorable opinion of the proposed, provided the rental asked is not too large.

Opening of a Model Tenement House. — In connection with the celebration of the one hundredth anniversary of St. George's Protestant Episcopal Church next year it is purposed to open a large model tenement house, subscribed for by members of the parish. The shares for this undertaking are now being taken up, and it is stated that J. Pierpont Morgan, ex-Mayor Seth Low, Joseph W. Harriman and other men prominent in the business and financial world who are members of the vestry will have only one share each, the idea being that the poorest as well as the richest in the congregation shall be subscribers. The cost of the land and the building, which is to be located in the congested district east of St. George's, is estimated at $200,000. While the church is to raise the money, the actual work of erecting and managing the model tenement will be placed in the hands of the City and Suburban Homes Company, the head of which is Dr. E. H. R. Gould, and which now has a number of such houses in successful operation.

Free Distribution of Ice. — A corporation which does not write to have its name known has announced that it is prepared to give away to the poor ten thousand tons of ice during the present heated term. The institutions and societies designated to make the distribution are the City Health Department, the Charity Organization Society, the Association for Improving the Condition of the Poor and its auxiliary, the New York Milk Committee, the United Hebrew Charities, the Brooklyn Bureau of Charities, and the Brooklyn Children's Aid Society. Each of these organizations will be supplied with tickets which can be cashed at any ice wagon in the city.

Diphtheria at Manhattan State Hospital — An outbreak of diphtheria has recently occurred at the Manhattan State Hospital for the Insane,

on Ward's Island. Sixty or more patients were attacked but vigorous measures were at once adopted by the hospital staff, assisted by physicians of the Health Department, and the disease is now reported as under complete control. Only one death occurred, and this was at the beginning of the outbreak. A few of the cases were transferred to the Willard Parker Hospital for diphtheria and scarlet fever, but most of them were treated in special wards in the institution, and by way of prophylaxis all the inmates and employees were given antitoxin. At the same time, a rigid quarantine was put into force. Of the total number of cases, two thirds were women, and the patient who died was a young woman employed as cook. Investigation has shown that the disease was brought in from the outside.

RECIPROCITY BETWEEN NEW YORK AND NEW JERSEY. — As the result of a recent order of the Board of Regents of the University of the State of New York refusing to recognize the licenses of New Jersey physicians unless such physicians are also practitioners in the state of New York, the Board of Medical Examiners of New Jersey has retaliated in kind by passing a resolution to the effect that on and after Nov. 2, 1910, further endorsement of the certificates of medical licenses issued by the state of New York shall be discontinued unless the agreement of reciprocity between the two states is renewed in the interim. The agreement referred to was made in October, 1906, and remained in effect until a month ago, when the new order of the New York Regents was adopted. A formal request for a reconsideration has been transmitted to Augustus S. Downing, First Assistant Commissioner of Education of New York, by the New Jersey Board of Medical Examiners, and in commenting on the matter, Dr. H. C. Norton, secretary of the latter board, has made the following statement: "The medical statutes of New Jersey have not been changed since the agreement was made, and the standards of examination have not been lowered. The agreement was drawn up after a painstaking examination of the laws of both states. Our medical societies opposed the endorsing of licenses from any state which does not endorse the licenses of New Jersey, and we trust that the New York Board of Regents will be willing to reconsider their action, believing, as we do, that this action was taken without sufficient consideration of the subject and without due regard for the interests of the medical profession of their own state and ours."

Current Literature.

MEDICAL RECORD.
JULY 30, 1910.

1. EVANS, W. A. *Ventilation in Schools.*
2. DOWD, C. N. *Tendon Transfer for Correction of Spastic Hand Deformity.*
3. DWYER, J. G. *The Use of Vaccines, Sera and the Hiss Extract of Leucocytes in the Treatment of Eye, Ear, Nose and Throat Infections.*
4. FLEMING, A., AND CLEMENGER, F. J. *A Simple Complement Fixation Technic in Syphilis and Report of Cases.*
5. FREUDENTHAL, W. *In What Way can Laryngology Aid in Making the Diagnosis of Incipient Pulmonary Tuberculosis?*
6. WAUGH, W. F. *A Case of Pellagra in Illinois.*
7. POOL, E. H. *A Useful Accessory in the Treatment of Varicose Ulcers.*
8. OCHS, B. F. *A Case of Urticaria Caused by the Sun's Rays.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.
JULY 30, 1910.

1. *KNOTT, V. B. *Treatment of Localized Appendicular Abscess.*
2. SKOOG, A. L. *Amyotonia Congenita: The Report of a Case with Muscle Biopsy.*
3. MCCOWN, O. S., AND FONTAINE, B. W. *Acute Yellow Atrophy of the Liver. A Case Following Two Chloroform Anesthesias in Quick Succession in a Pregnant Woman.*
4. DURAND, A. C. *A Method of Determining Ocular Dominance.*
5. COOVER, D. H. *Cryptophthalmia, with Report of Two Cases.*
6. VARNEY, H. R., AND JAMIESON, R. C. *A Bilateral Herpes Zoster. Report of a Case.*
7. BROOKS, C. *Action of Alcohol on the Normal Intact Unanesthetized Animal.*
8. HOWE, L., HANSELL, H. F., AND SCHNEIDEOMAN, T. B., *Report of the Committee on Collective Investigations Concerning the Ocular Muscles.*
9. *REBER, W. *The Ocular Palsies Associated with the Induction of Spinal Anesthesia by Various Solutions, with a Report of Five Cases.*
10. GIFFORD, H. *The Danger of Sympathetic Ophthalmia from the Use of the Cautery in Treating Iris Prolapse. Other Methods of Treatment.*
11. HALL, W. S. *Influence of Diet on Chyle.*
12. COLLINS, J., AND BAILEY, R. *The Dependence of Neurology on Internal Medicine. A Plea for the Establishment of Neurologic Hospitals and Neurologic Wards in General Hospitals.*
13. NEFF, J. H. *The State Care of the Inebriate.*
14. *BIGELOW, E. B. *Serum Treatment of Hemorrhagic Disease of the Newborn, with Report of Three Cases.*

1. Knott's experience with 161 cases of appendix abscess leads him to believe that in the majority of cases the appendix should be removed at the primary operation, adhesions towards the pelvis broken up to allow hidden pus cavities to drain, and drainage with a large (one-half inch in diameter) rubber tube instituted, together with the Fowler position and rectal seepage. With this line of treatment his mortality in 161 cases was only 1.4%. He feels that the results are infinitely better than under the former plan of treatment, in which the abscess was simply drained and the appendix left to be taken out at a second, often very difficult, operation. The safety of this radical procedure lies in the fact that with the Fowler position and rectal seepage the great danger of even a general peritoneal infection is practically absent.

9. Reber's most interesting paper is well worth study. He reports 5 cases of ocular palsies in a series of 2,000 spinal anesthesias, and from 66 odd reported cases summarizes as follows: The drugs used have been stovain, novocain, cocaine, eucain, tropacocain and alypin. Stovain leads the list in producing ocular palsies. The dose has varied from 10 to 15 cgm. on the continent, and 5 to 7 cgm. in America. The external recti are the muscles most involved. The average time of onset is about ten days after the spinal analgesia has been induced. This varies

considerably, however; some cases developing in four days, others not for thirty days. It seems that novocain predisposes to an earlier onset of the palsies. Few palsies are transitory: most of them are undoubtedly permanent. The fact that they are one-sided seems to exclude their being of an infectious nature, for these latter are generally bilateral. Babcock, who has given 1,400 injections, is in favor of some decomposition of the fluid used as the cause of these palsies. Reber suggests that careful tests on animals and otherwise of boiled and non-boiled solutions be made in order to discover the cause of this distressing complication.

14. Bigelow reports 3 cases of hemorrhagic disease of the newborn successfully treated with freshly prepared rabbit serum. The dose used was 5 ccm., repeated in twelve hours if necessary. He quotes Neil, who suggests that the dose of 75 ccm. used in the case finally transfused by Murphy was altogether too large as too large doses often produce the opposite from the desired effect. [E. H. R.]

BULLETIN OF THE JOHNS HOPKINS HOSPITAL.

JULY, 1910.

1. *WINTERNITZ, M. C., AND BOGGS, T. R. *A Unique Coincidence of Multiple Subcutaneous Hemangio-Endothelioma, Multiple Lymphangeo-Endothelioma of the Intestinal Tract and Multiple Polypi of the Stomach Undergoing Malignant Changes; Associated with Generalized Vascular Sclerosis and Cirrhosis of the Liver.*
2. TODD, J. L. *A Review of the Recent Advances in our Knowledge of Tropical Diseases.*
3. *ANDERSON, J. F. *Anaphylaxis and its Relation to Clinical Medicine.*
4. REIK, H. O. *An Unusual Case of Cerebral Tuberculosis Following Tuberculous Otitis Media.*
5. *MARSHALL, H. W. *Etiology of Chronic Arthritis.*

1. The title of this paper is self-explanatory. The article is illustrated with twenty-one excellent plates and contains a study of the apparently unique condition under the following headings: (1) Description of the case; (2) protocol of the autopsy; (3) Histological studies; and (4) summary and theoretical deductions.

3. This article is a general review of this subject, with a description of its development and significance.

5. Marshall presents his theory as to the etiology of chronic arthritis as follows: "That the causes of chronic arthritis are chemical irritants in the blood, disturbances of the central nervous system, mechanical pressures and strains and external physical stimuli; and that each etiological factor may be a variable quantity; also that joint tissues themselves have a vital resistance of variable degree." Under irritating substances in the blood he discusses (*a*) chemical products of bacterial growth, (*b*) chemical products derived from gastro-intestinal tract, (c) metabolic products of organ activities and therapeutic drugs, and poisons like lead. Disorders of the central nervous system he believes are a factor chiefly through their influence on the gastro-intestinal system and other organs. The influence of mechanical irritation to joints is self-evident. He speaks briefly on various external physical agencies, such as extreme heat, cold, etc. Finally, he discusses the application of this theory to treatment of chronic joint disorder. [J. B. H.]

THE LANCET.

JULY 16, 1910.

1. TURNER, W. A. *The Morison Lectures on Epilepsy Lectures I and II.*
2. *ANDREWES, F. W. *The Croonian Lectures on the Behavior of the Leucocytes in Infection and Immunity. Lecture IV.*
3. HAWARD, W. *The Aspects of Disease.*
4. MACKENZIE, W. L. *Administrative Control of Pulmonary Phthisis in Scotland.*
5. HOPE, E. W. *Preventive Measures and the Administrative Control of Tuberculosis.*
6. *SCURFIELD, H. *Preventive Measures and the Administrative Control of Tuberculosis.*
7. CHALMERS, A. K. *Pulmonary Tuberculosis as a Problem of Administration: the Economics of Phthisis.*
8. HUGHES, G. W. G. *A Recruiting Officer's Notes on the Prevalence of Certain Diseases in Egypt.*

2. In the fourth of the Croonian Lectures, Andrewes takes up the question of the bone marrow in immunity and its action in infective processes. He discusses the marrow reaction to pyogenic and the non-pyogenic bacteria, and the varying nature of bodily defense against different bacteria.

6. Scurfield describes the organization against tuberculosis in Sheffield, a city in which the anti-tuberculosis campaign has advanced further than in any other in England. Among other factors, he mentions free examination of sputum, home visiting, examination of "contact," or persons exposed to the disease, which means the annual examination of 700 families in Sheffield, hospitals for short periods of educational treatment, sanatoria, hospitals for advanced cases and after care. [J. B. H.]

BRITISH MEDICAL JOURNAL.

JULY 16, 1910.

1. SHAW, L. E. *The True Aim of a United Medical Profession and the Handicap of the Trade Union Bogy.*
2. PYE-SMITH, R. J. *Principles of Practice in Relation to our Patients.*
3. ALLFREY, C. H. *Fifty Years of Medical and Surgical Progress and the Part Played in it by Experimental Research.*
4. MAIDLOW, W. H. *After Ten Years.*
5. PUCKLE, S. H. *The Country Practitioner of To-day.*
6. BROOK, W. H. B. *On the Working of the Workman's Compensation Act of 1906.*
7. SCOTT, S. N. *The Doctor and the Public.*
8. DEWAR, M. *The Future Prospects and Position of the Medical Profession Under Poor-Law Commission. Reports and Proposals, and a Public Medical Service.*

THE PRACTITIONER.

JULY, 1910.

1. BROADBENT, J. *Malignant Endocarditis.*
2. WARING, H. J. *Treatment of Large Post-Operative Ventral and Unilateral Hernia.*
3. *BATTLE, W. H. *Internal Abdominal Injuries.*
4. *GUTHRIE, L. G. *Hydrocephalus.*
5. HALL, A. J. *The Diagnosis of Intracranial Tumors.*
6. FRENCH, H. *A Case of Exostosis of the Os Calcis.*
7. MILLER, R. *Acute Polio-Encephalitis.*
8. THOMPSON, A. H. *A Note on Slight Opacities of the Lens.*
9. GEMWELL, J. E. *Two Cases of Pregnancy Complicated by Intestinal Obstruction and Appendicitis Respectively.*
10. COSTOBADIC, V. A. P. *Bennett's Fracture.*
11. BURSTAL, E. *One Hundred and Thirty-Three Cases of Hydramnios.*
12. MAMOURIAN, M. *The Safety of Immediate Appendectomy in Cases of Suppurative Appendicitis.*
13. HANNA, G. H., COOMBE, R., AND GORDON, W. *A Case of Traumatic Cerebral Hemorrhage, with Remarkably Late Onset of Symptoms; Operation; Recovery.*
14. PITT-TAYLOR, F. S. *The Prescription-in-a-Nutshell System.*

3. Battle has collected and studied all the cases reported at the London hospitals of severe internal abdominal injuries. The total number of cases is about 2,500. Of these 64% are simple contusion of the abdomen. His work is limited to a study of those cases without external wound, but with the internal organs affected. He discusses in detail the symptoms arising from such injuries according to the part of the abdomen struck or the organ injured. In one class of about 50% of all cases there is shock, vomiting, acute abdominal pain and rigidity; in a second group, comprising about 40% of all cases, the initial symptoms are slight, but after a few hours severe symptoms set in. A third small group gives only indefinite symptoms at first, with no vomiting or apparent shock, little pain, tenderness or rigidity, with a gradually rising pulse and development of severe symptoms. He discusses in detail the various symptoms, the methods of operation, and presents many illustrative cases. He describes cases of rupture of the bladder, spleen, liver, etc. He gives the details of many previously reported cases in tabular form.

4. Guthrie describes the etiology of the various forms

of hydrocephalus, internal, congenital internal, acquired internal, external or subdural. He discusses the anatomy and physiology of this condition as well as the morbid anatomy and pathology. He briefly describes the symptoms of this condition and its diagnosis by lumbar puncture. He discusses treatment under four headings: (1) Lumbar puncture, (2) puncture and drainage of the lateral ventricles, (3) drainage of the subarachnoid space and (4) drainage of the ventricles into the subdural space. [J. B. H.]

EDINBURGH MEDICAL JOURNAL.

JUNE, 1910.

1. BEATSON, G. T. *Local Recurrence After Removal as a Sign of Malignancy in Tumors of the Female Mamma.*
2. *MILES, A. *On the Treatment of Acute Gonorrheal Urethritis in the Male by Passive Hyperemia.*
3. *GREIG, D. M. *Two Cases of Volkmann's Ischemic Contracture.*
4. RITCHIE, J. *Relapse in Cerebrospinal Meningitis, with Notes on a Case Treated by Serum and Vaccines.*
5. DRUMMOND, W. B. *The Training of Teachers in Hygiene.*
6. SYM, W. G. *The Influence upon Vision of the Increasing Yellow Coloration of the Lens.*
7. LOCHHEAD, J. *Résumé of Recent Literature on the Development of Intrathoracic Surgery.*

2. Miles describes his method of treating acute gonorrheal urethritis by the Bier method. He has used this in over three hundred cases and believes it far superior to treatment of injection, safer for the patient to carry out and possible to use in cases of phimosis. The great objection is that it occupies an entire hour every day.

3. Greig discusses Volkmann's ischemic paralysis and gives the details of two interesting cases with photographs. [J. B. H.]

JULY, 1910.

1. BOYD, F. D. *Discussion on the Artificially Prepared Hypnotics. Their Use and Possible Abuse.*
2. COMRIE, J. D. *Early Knowledge Regarding Phthisis.*
3. *ADDIS, T. *The Coagulation Time of the Blood in Disease.*

3. Addis, using a modification of McGowan's method of taking the blood coagulation time, concludes that, in spite of extreme morphological, physical and chemical alteration in the blood, the coagulation time may remain normal. In bacterial diseases no marked changes in coagulation time are seen unless the organisms are actually in the blood itself. When this occurs, the typhoid bacillus and the pneumococcus hasten coagulation, while streptoand staphylococci delay it. Moderate loss of blood has no effect on coagulability, but very large hemorrhages hasten it. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 27.

JULY 7, 1910.

1. LEUTZ, O. *Pathology and Treatment of Rabies.*
2. UHLENRUTH AND MULZER, P. *The Experimental Foundations of the Chemico-Therapeutic Investigations with Recent Arsenic Preparations in Disease from Spirochetes, with Special Reference to the Treatment of Syphilis.*
3. HART, C. *Secondary Infection with Tubercle Bacilli and their Saprophytic Growth, Together with a Few Conclusions.*
4. *LIERTZ, R. *Radiographic Representation of the Appendix. An Essay on the Etiology of Epityphlitis.*
5. *GRAU, H. *Gelatin and Blood Clotting.*
6. KÜMMELL, H. *How Can we Decrease the Mortality from Appendicitis and Avoid Abscesses and Peritonitis.* (Concluded.)
7. MOMBURG. *A Flat-Foot Plate Established on a New Principle.*
8. FRÄNKEL. *Further Observations on the Treatment of Foot Deformities.*
9. PESCHEL, M. *A New Histological Test in Glioma of the Retina.*
10. WASSERMANN, M. *Oxygen Mud Baths.*
11. HERMANN, A. *A New Instrument for Nasal Massage.*

4. At one time it was thought impossible to show the appendix in an x-ray picture. Recently, however, it has been demonstrated that the appendix may be shown in certain cases. Bismuth is used in these examinations. As a result of observations on a case, Liertz concludes that the position of the appendix is the all-important factor in inflammations of it. The bacteria play entirely a secondary rôle, and the severity depends upon their virulence.

5. Grau reviews briefly some of the literature on blood clotting and the use of gelatin. Then he gives briefly the results of his tests. The method used for determining the clotting time is that suggested by Bürker. His conclusions are that gelatin in a large proportion of the cases calls forth a long-continued increase in the ability to clot. The cases in which gelatin should be used will be more clearly indicated when the mechanism by which gelatin aids clotting is more clearly demonstrated. [C. F., JR.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 27.

JULY 4, 1910.

1. *WECHSELMANN, W. *The Treatment of Syphilis with Dioxydiamido-Arsenobenzol.*
2. GLASER, F. *The Diagnosis of Syphilis and Its Activity by Test Injections of Mercury.*
3. ROSENFELD, G. *The Rôle of Albuminous Bodies in Fatty Degeneration of the Liver.*
4. BORNSTEIN, A. *Attempts Towards Prophylaxis in Caisson Disease.*
5. WIDERÖE, S. *What Changes in the Organs Result from Large Infusions of Salt Solution.*
6. EPHRAIM, A. *Endobronchial Therapy: Bronchiectasis and Bronchial Asthma.* (To be concluded.)
7. FLATAU, T. S. *A New Method of Management of the Functional Vocal Disorders, Together with Remarks as to Their Pathology and Treatment.*
8. WYNHAUSEN, O. J. *Concerning the Proportion of Diastase in Human Blood and Its Relation to Diabetes Mellitus.*

1. The author describes Ehrlich's early experiments in treating syphilitic apes with various drugs, and of his success with dioxydiamido-arsenobenzol. This drug is commonly spoken of as "Preparation 606."

Last March, at Ehrlich's request, Wechselmann began to put this to a practical test in the treatment of human syphilis. He reports his results from a series of some 80 cases. He states that the most sceptic critic can no longer doubt that this new drug has a rapid and fundamental action on the symptoms of syphilis. Wechselmann illustrated this paper before the Medical Society of Berlin with numerous patients treated by him to prove his statements; these patients are briefly described in this paper. Then follows a full description of seven cases either apparently cured or improving rapidly under treatment. In many of these cases treatment with mercury and KI had not been able, even in the hands of experts, to check the progress of the disease. The results obtained from the use of this drug are evident in some cases after a few hours, and great improvement, if not a complete cure, follows in the course of a couple of weeks.

Following the injection of this drug there is usually a sharp rise in temperature, and often pain so severe in character that morphine has to be used, but these symptoms only last a short time. The patient almost immediately feels better and stronger in spite of the pain, the lesions decrease in size or disappear and the patient begins to gain in weight. One patient gained about 18 lb. in the three weeks following the injection of "Preparation 606."

Much seems to depend on the size of the dose used. The author has found that 0.45 gm. for women and 0.6 gm. for men gives the most certain results. Where the dose is too small, and the symptoms are not entirely relieved, a second dose must be given.

The author points out that it is too soon to say positively that the cures are permanent, but the evidence in hand certainly points to that as a probability.

As to the danger of the drug, animal experimentation seems to show that the tissues can withstand many times the dose given to obtain satisfactory results. It certainly has had no bad effects on the heart, kidneys or gastrointestinal canal so far as can be observed in the cases

already treated. A pregnant woman and a patient with nephritis have been treated for syphilis with this drug with no evil resulting. One fatality is noted in a syphilitic patient with pernicious anemia. [But as the patient was in a very low condition, with a hemoglobin of only 20% and as death followed eight days after administering the drug, it can hardly be regarded as due to the drug.] Careful examinations seem to show that this drug has no injurious effects on the optic nerve. The drug is used intramuscularly, and the author carefully describes his technic.

[The full discussion of this paper and Ehrlich's own remarks will be found on page 1292, No. 27, of the *Berliner Klinische Wochenschrift*.] [J. L. H.]

ARCHIV FÜR KLINISCHE CHIRURGIE.

BD. 92. HEFT 2. JUNE, 1910.

14. *VON HABERER, H. *Experimental and Critical Observations Regarding Ligature of the Mesentery with and without Omentoplasty.*
15. THIEMANN, H. *Intestinal Obstruction and Paralysis and Peritonitis.*
16. *KÜMMELL, H. *How Can We Reduce the Mortality of Appendicitis, and Prevent Abscesses and Peritonitis?*
17. RIEDL, H. *The Results Following Gleich-Brenner's Operation for Flat-foot.*
18. KOCHER, A. *Results of Histological and Clinical Studies of One Hundred and Sixty Cases of Basedow's Disease.*
19. *CODIVILLA, A. *The Treatment of False Joints and of Long-Continued Separation in the Diaphyses of Long Bones.*
20. SOLIERI, S. *Operation on the Spleen in Malaria.*
21. TILMANN. *The Surgical Treatment of Traumatic Epilepsy.*
22. SPRENGEL. *Critical Observations on Abdominal Sutures and Abdominal Incisions. Suggestions regarding Physiologically Correct Incisions.*

14. Interested in the possibility of cutting away a portion of mesentery in cases where that structure was involved by carcinoma, Von Haberer performed upon a series of dogs the experiment of ligating mesenteric arteries and stripping a portion of the gut of its mesentery. In some cases he wrapped the denuded portion in omentum, in others he did not. He concludes that because of anatomical differences, the results of such experiments upon dogs are not applicable to operations upon man. Dog's intestine, when stripped of its mesentery for a distance of from 10 to 30 cm., practically always becomes gangrenous before collateral circulation through the omentum can be established. In the few cases in which such circulation is established, ulceration of the gut and stenosis follow.

16. Kümmell's article is a lengthy discussion of appendicitis from several points of view. He believes the disease to be a sort of end-process following some systemic disturbance, such as influenza or colds. In support of this he presents figures which show that the disease is more than twice as prevalent in December as in the preceding or following months. The most important diagnostic point he thinks is the tenderness on deep pressure over the appendix. For showing the immediate condition of the appendix, and for predicting the future course of the attack, the white count is of little value; considerable information as to the amount of involvement of the peritoneum is gained by measuring the viscosity of the blood. Normal viscosity is four or five times that of distilled water. An increased viscosity denotes peritoneal inflammation. His figures of mortality in Germany are interesting. More deaths between the ages of ten and twenty-five occur from appendicitis than from all other diseases put together! For the past three years, the statistics of his clinic are as follows: Of 347 cases operated upon within the first forty-eight hours after the commencement of the attack, .5% died; of 481 cases operated upon between attacks, .2% died; of 108 cases with peritonitis, 23% died; of 31 cases with abscess, 16% died.

To the question, "How can we lower the mortality of appendicitis," his answer is "By early operation." Some cases with tenderness and occasional pain as their only symptom may be allowed to wait; all others should be operated upon as soon as the diagnosis is established. This should be within twenty-four hours in every case. The public, he says, has more sympathy with the doctor's desire to operate than with his procrastination.

19. Codivilla says that in the treatment of false joints and separations in the shafts of long bones, the two factors to be considered are the mechanical conditions of the part and its state of osteoplastic activity. The simpler methods, such as freshening the ends of fragments and wiring them, he passes over, but discusses more fully the method of treatment by transplantation of a bone flap. He lays down three rules: (*a*) The transplanted flap must be strong enough to withstand the pull of neighboring muscles, and large enough to permit of certain fixation with each of the fragments between which it is placed; (*b*) the slightest sepsis is fatal to success; (*c*) the limb must be supported by a dressing until such time as the transplanted bone is replaced by new growth. There are two kinds of bone flaps; the one is from a nearby bone (as from ulna to radius) with its pedicle intact; the other is a completely transplanted piece of bone from another part of the body. The former method is surer, but the latter is better where, because of injury or atrophy, the neighboring bone is likely to lack in vitality. The flap in either case must be well covered with periosteum and is bound into place by a metal suture at each end. [G. G. S.]

Obituary.

CHARLES JEWETT, M.D.

DR. CHARLES JEWETT, the most eminent obstetrical authority in Brooklyn, N. Y., died suddenly at his residence in that borough on Aug. 6. He was seventy years of age, and was graduated from the College of Physicians and Surgeons, New York, in 1871. For many years he was professor of obstetrics in the Long Island College Hospital, Brooklyn, and his services were largely in demand in consultation. His contributions to society proceedings and to medical literature were also most highly valued. During his professional career he held many hospital appointments, and at the time of his death he was surgeon to the Long Island College Hospital, consulting obstetrician to the King's County Hospital, consulting surgeon to St. Christopher's Hospital, and consulting gynecologist to the Bushwick, Swedish and German Hospitals and the Bushwick and Eastern District Dispensaries. In addition to membership in a large number of local and national medical societies, Dr. Jewett was a member of the British Gynecological Society and the International Congress of Obstetricians and Gynecologists.

Correspondence.

PARIS LETTER.

A NOVEL CURE FOR DIABETES.

[From Our Special Correspondent.]

PARIS, July 15, 1910.

Mr. Editor: It is held by some that medicine has advanced from the rank of an art to that of a science. But in spite of this assertion we seem still to have great difficulty in coming to an agreement on even fundamental facts.

Take, for instance, the artificial emptying and cleansing of the large intestine by means of purgation and enemas. This is a device that has been in use for thousands of years. Ever since anything has been known of medicine by record, certainly from Hippocrates downwards, and

most probably also among the Egyptians, have these therapeutic agencies been resorted to; and yet at the present day different authorities and different races hold views on the question that are totally opposed to each other.

Only last year, a physician of some standing in this city, Burlureaux, came out with a book entitled, "Un Danger Social — la Purgation"; on the other hand, another physician, belonging to the same scientific society has just published a book of three hundred pages, to be referred to at length farther on, — a Dr. Guelpa, — in which regular courses of severe purgation, combined with absolute fasting, nothing but water being allowed, are proved as a species of *fons juventutis*, besides being a means of curing various chronic disorders and among others, diabetes. Yet you would think that during all these centuries humanity has had opportunity enough to decide which of these two extreme opinions is the correct one.

Now take the question of races. The French have apparently always had a fondness for the artificial evacuation of the large intestine. Is it necessary to refer to the immortal Rabelais, or to Molière's comedies, to prove this point, as regards days gone by? Do you happen to have read the records kept by the three successive physicians to Louis XIV, whereby it appears that this long-suffering monarch was purged upwards of two thousand times, not to speak of enemas without number?

Louis XIII was purged 259 times in one year and bled 47 times; while during the next six months 220 enemas were administered to his devoted rectum. The mémoirs of the day show, as well, that these three means constituted practically the entire medical science of the time, and whether you had smallpox, syphilis, gonorrhea, pneumonia, inflammatory rheumatism, asthma, an accident or a wound, — whatever the variety of your complaint was, your treatment was certain and never varied. Montaigue, Madame de Sérigné and her daughter, Marie de Médicis, Cardinal de Richelieu, were all purged, repurged and purged over again *ad infinitum!* In fact, if the seventeenth century did not already bear the appelation of the *Siècle du grand roi*," it could very well be referred to as the period of the apothesis of the purge and of the enema. A very interesting thesis was presented last year to the faculty of Paris by G. Berthe (No. 179) entitled, "Historique de la Purgation," in which these facts are all related at length, and what has been termed the "*esprit ganlois*" deals in the main with this department of medicine. That this "*esprit ganlois*" is not yet extinct can perhaps be illustrated by a short play I witnessed recently at one of the well-known boulevard theaters, where one of Paris' favorite and prettiest actresses flourished about the stage for upwards of an hour with a pail supposed to be full of bedroom slops in her hand, while her partner juggled with a porcelain *vase-de-nuit*, to the entire delectation of the audience.

At the present time even among the best physicians here the purge and enema hold a preponderating place, while among the ordinary people to purge oneself occupies at least as important a position in domestic economy as to take a bath, — if anything probably a more important one. And to give you an idea of the prominent position that the question has held in French literature I can refer to the bibliography at the end of Berthe's thesis, which covers *thirty-six* printed pages!

On the other hand, in our own country I should say that purges and enemas, the latter in particular, hold a most subordinate rôle. In France, for instance, it is not at all an unusual thing among the common people to hear a woman say: "Oh, I'm to have a day off, on Saturday; I shall take advantage of it to purge myself," — just as though it were some enjoyable event to which she had been looking forward, — a sort of Sunday in the country. But I should think that this is something that would practically never occur with us, where people only resort to such measures when in trouble and under immediate medical advice.

In fact, living in France but moving mainly among my own people, I have been led to make a comparison that is not without its humorous side. The antipathy of the French for a bath is proverbial. When I first came to Paris very few houses had bathrooms; on the rare occasions where a bath was taken it was ordered in from one of the establishments *ad hoc* that used to exist all over town. It seems to me that bathrooms now existing in all of the better class new houses are the direct outcome of the demand for them on the part of the great foreign population that lives in this city. Among the most amusing scenes that I have witnessed in my medical career here have been those where a robust French peasant woman, introduced into an American family in the capacity of wetnurse, has been called on to take a bath and scrub and clean. Many of these women never took a bath in their lives.

The American, on the other hand, seems to me to be possessed of a bath mania. They are at it all day long, especially in certain classes, where two or three baths a day would not appear in the least out of the way. In a large hotel put up recently in the Champs Élysées for traveling Americans I was in a small suite the other day which comprised two bedrooms, one double and one single. For these two rooms were supplied *three* fine bathrooms, the two occupants of the double room not being able apparently to put up with a single bathroom. Whether the human skin was ever intended to stand this sort of discipline is a point on which my mind is not at all made up.

So this is the comparison I have arrived at between the two races. They both have a standard of cleanliness, but these standards are altogether different. A Frenchwoman, for instance, might take a cold enema every morning, and a purge from time to time, but would seldom bathe and would cover her face with lard and powder. Her American sister on the other hand, would only attend to her intestine under compulsion and medical orders, would shun lard and powder, but would spend a certain part of her existence, not immaterial, in her bathtub with hot water and soap. In short, it all comes to this: These people seem to concentrate on the endoderm, and let the ektoderm take care of itself; our people just the reverse, — *et voilà tout.*

Whether there is not a large part of truth in the French habit of clearing out the lower bowel at intervals is a point that can certainly be maintained. The waste-eliminating apparatus of the body provided with receptacles and closed orifices (intestinal, urinary) are admirable devices and work beautifully so long as the flow of the contents is regular and free and there is no delay or obstruction; when once the latter occurs, troubles begin, *vide* prostatic enlargement. Now one of the commonest ailments of our day, if not the commonest, is faulty elaboration and sluggish elimination of waste, due to our rich food, over-eating, and the artificiality of civilized life. What can you expect of an intestine that is treated as follows: I will cite two cases I have personally met. One woman, accustomed to every American luxury, went to Dieppe. Now Dieppe is quite an important seaside resort three and a half hours from Paris and has good hotels. But the dame in question found the sanitary apparatus supplied so far short of her own luxurious w. c., that after sticking it out for four days she took the train back to Paris to have an action! The other woman has built herself an arrangement for these matters in her house here that must be almost unique; and so spoiled is she that she laments that when she wants to leave town in the summer for a change, there are only three places *in Europe* where she can go to get the comfort she requires in these details!

From intestinal stagnation we now think arise a large number of the ills to which the flesh is heir, — v. Metchnikoff, etc., etc. Does it then seem illogical that since this condition is apparently inseparable from modern civilized life, the French should attach so much importance to its artificial relief? Possibly if the two races would each take something from the other they would mutually gain; if instead of concentrating on one coating and neglecting the other, they paid a moderate amount of attention *to both*, it would be more advisable. Is it an exaggeration to affirm that two out of three American women have chronic intestinal sluggishness and retention? There is a great deal more to be said on this question, but I must hasten on to Guelpa's book.

Guelpa is the man I referred to above, who has come as a twentieth century apostle of the purgatives. His opinion is categorical, and there is no beating about the bush: "purgation, well-understood and handled, is the most powerful, certain and frequently indicated means in the fight against disease and for the preservation of health."

Again: "Purgation is perhaps the most active means that nature has placed at our disposal to preserve good health and secure a favorable outcome in disease."

This interesting little book deals with two main points: One the manner in which the human system can be periodically rejuvenated by a three-day course of purgation and water diet; the other the extraordinary result that can be procured in an ordinary case of diabetes by the same practice. That Guelpa's views are not mere theory will be seen in the fact that he claims to have put himself through these purge-water fasting courses not less than fifty times, and for periods ranging from one to seven days, and has treated a large number of patients in the same manner, including nineteen cases of diabetes, with almost unfailing favorable results.

His plan is based on Dusjardin-Beaumetz and Stackler's recovery that in typhoid fever recovery is regular and rapid in direct proportion to the patient's loss in weight; that when this weight remains stationary, the fever is certain to be high; that when the loss in weight is not in proportion to the intensity of the pyrexin, the disease is always more serious and prolonged and the convalescence more difficult. These ideas Guelpa has found applicable to all febrile disorders, and he accounts for the fact in the following manner. The system is clogged and hampered by a mass of fluids, cells, old and decaying tissues, which it must get rid of in order that the disease may disappear; the quicker this end is accomplished the sooner perfect health is restored, — health even better than before the illness. It is perhaps interesting in this connection to note that it is not uncommon to hear a patient remark that after an attack of typhoid fever he felt better than for years previously!

His method then amounts in short to a vigorous spring cleaning of the economy, the only original point being the addition of the energetic and repeated purge to the fast and water diet often recommended for shorter periods by medical men, and, strangely enough, by the Church of Rome!

Guelpa thinks that in order to accomplish something worth having the diet ought to be maintained for at least three times twenty-four hours, though he himself has often gone for longer periods. Thus, during the discussion that was held on this subject before the Society of Therapeutics he on one occasion appeared before the members on the *seventh day* of one of his treatments, during which he had purged himself vigorously four times and taken nothing beyond four or five cups of an infusion of tea or coffee per diem. During that period he claimed that he had been able to work with the greatest ease until very late at night, and was again up and about by seven in the morning. He then informed his colleagues that the course he had just put himself through would place him in better health and enable him to do better intellectual work for several months to come.

On another occasion Guelpa made the journey from Tangiers to Paris (Thursday evening to Tuesday noon, — nearly five days) in very hot weather, on the following diet: Two purges, four cups of tea, four lemonades, two cups of coffee and a bottle of water; and so excellent was his condition on arriving in Paris Tuesday that after a bath he attended to his practice all the morning and did not take a meal until noon!

His course is as follows:

1. In two, three or four days take a bottle of Hunyadi János water heated each A.M.; or, 40 to 50 gm. ol. ric. (upwards of four tablespoonfuls) to be followed by a liter of herb infusion.
2. No food whatever during the treatment.
3. Drink ad libitum, Evian water, boiled water, or any herb infusion.

The curious part of the affair is that he claims that this purgation is a *sine qua son;* that it does away entirely with the sensation of hunger, which, he states, is not the outcry of the outraged system for food, but is due to the accumulation of waste-products and toxic materials eliminated into the intestinal canal demanding to be swept away! That *this* theory was not unanimously accepted by his colleagues, you can well understand.

He takes his hot bottle of Hunyadi at a single dose. Personally he gives it to himself through a stomach tube, and follows it up with something to remove the taste. He thinks that salts are far better than the other purges, and that they must be taken well diluted, otherwise they give rise to thirst. A powerful dose is necessary; it will act in a short time, producing two or three motions, whereas a smaller dose never gets through, but stirs up things in general and makes you uncomfortable throughout the day. The first day is the only disagreeable one; once the first big purge has acted, the sensation of hunger disappears and will not return if the purge is renewed each A.M.

The outcome of the course is a loss in weight of about 2½ lb. per diem, and the origin of Guelpa's enthusiasm for the method was his auto-observation, given at length, page 214.[1] After a succession of attacks of grippe he had been left in a condition of neurasthenia with increase in weight (22 lb.) that rendered reading, thinking and literary work next to impossible. One of these courses produced such marked improvement that he repeated it twice again at brief intervals, reducing his weight by 20 lb. and recovering all of his former mental energy and application to work.

The clinical side of the question is the application of this system to diabetes where Guelpa claims to have obtained over and over again the relief of most alarming conditions, in diabetic patients, and furthermore, the total disappearance of glucose in more ordinary cases. It is furthermore claimed in all seriousness that if the cure is repeated at proper intervals and the patient will follow a strict and sober régime in the meantime, *the sugar does not reappear!* Guelpa distinctly speaks of "lasting spinal cures in diabetes."

This naturally struck the Therapeutic Society as rather a large order, and Bardet immediately proceeded to Albert Robin's ward at Beaujon and put the system to what may fairly be called a crucial test. He took a patient of a serious type, long standing, with a loss of flesh, 12 liters of urine per diem and 760 gm. of sugar, — say a pound and a half. In twenty-four hours of water diet, without purgation, the urine fell to 2 liters and the sugar to 13 gm., and in forty-eight hours, the urine was 600 gm. and the sugar *zero!* So Bardet came back to the society, reported the case, and admitted that here was a factor that was altogether new and that would have to be studied. In the space at my disposal I shall not be able to cite the many case-histories in Guelpa's book; but after reading them it is impossible not to agree with Bardet that we have here something quite unknown and that is well worth our closest attention, — for instance, what will be the action of this treatment on such serious incidents as diabetic coma and diabetic gangrene, where we are practically disarmed at present?

It has seemed to me, in closing, that the final clause of Bardet's paper on this subject would well bear translation. It can hardly be called new, but the idea is always worth repeating: "Once again we are led to observe the strong influence exerted by excessive digestion over our physiologic reactions. In the state of nature, animals are rarely dyspeptic; and nutritive disorders which are the sad privilege of man, are almost unknown to them. It is indeed a melancholy fact that the brain development of the human animal, which in certain respects has produced admirable results, has unfortunately chiefly resulted in leading him to eat without hunger, to drink without thirst and to indulge in sexual intercourse at all hours, — all to help to ruin his system and shorten his days, for there is not the slightest doubt these three factors are the true origin of the chronic disorders that decimate the race."

Was ever a true saying better expressed?

"*S.*"

LICHFIELD AND ITS MEDICAL TRADITIONS.

[*From our foreign correspondent.*]

Lichfield, July 16, 1910.

Mr. Editor: When Johnson said of the inhabitants of Lichfield that they were "the most sober, decent people in England, the genteelest in proportion to their wealth, and spoke the purest English," he was not far amiss, though one is tempted to believe that his remark was prompted more by local pride than by unbiased judgment.

[1] Auto-intoxication et désintoxication, Doin, 1910.

For to-day the people of Lichfield seem particularly thrifty, intelligent, and contented, and their speech more like our own than one finds even in London or in many of the peripheral counties.

The town itself is situated in the pleasant valley of the "sunny and silver Trent," in the broad, fertile, inland district that has been called the heart of England. Architecturally, it is dominated by the cathedral, whose three beautiful spires, "the three ladies of the vale," — are mirrored in the unrippled surface of the minster pool, and whose row of stately old lindens shade the dean's walk and fill the close with the perfume of their blossoms. Historically the interest of Lichfield centers about Samuel Johnson, to whose birthplace all the street-signs point. The house, now in perpetual care, is open to the public, and contains many memorabilia of the great lexicographer. From the windows of the birth-room, or of the shop below, in which Samuel's father Michael sold books, one can look out on the cobble-paved marketplace at the statue of Dr. Samuel and beyond at that of his conceited, officious biographer, Boswell. It is interesting to conjecture whether Johnson ever dreamed, when as a barefoot boy in that market-place he was hooted at by his fellows for his ungainliness, that some day he should lie in Westminster Abbey while his monument and home in his native town should be a visiting-place for scores of literary pilgrims.

"Seven cities fought for Homer dead,
Through which the living Homer begg'd his bread."

Apart from Johnson and the minster, however, Lichfield is not devoid of other interests. Here for many years in a house hard by the cathedral, lived Erasmus Darwin, doctor of medicine, grandfather of Charles Darwin, who perhaps did more than any other man in his century to modify the scientific and religious thought of the future. Here, too, as dean of the cathedral, lived and died Launcelot Addison, father of the famous essayist. There is a tablet in the cathedral to Dean Launcelot and the more illustrious Joseph, and on the opposite side of the nave one to that "amiable, virtuous and distiguished" personage, — though perhaps readers of Pope would incline to dissent from the appropriateness of the adjectives, — Lady Mary Wortley Montague, "who happily introduced from Turkey into this Country the Salutary Art of inoculating the Small-Pox. Convinced of its Efficacy she first tried it with Success on her own Children, and then recommended the Practise of it to her fellow-Citizens. Thus by her Example and Advice we have softened the Virulence and escaped the danger of this Malignant Disease." Whatever the virtues or failings of Lady Mary, and whether or no she "robb'd the whole tree" of knowledge, she surely applied some of its fruits for the benefit of mankind; and in these days of anti-vaccination agitation it is pleasant, though perhaps mortifying, to find that these benefits were appreciated by an age that had not yet outgrown the vivid terror of epidemic smallpox.

Medically, Lichfield to-day seems well provided for in proportion to its population of approximately 10,000. Near the center of the town is the Victoria Nursing Home, a hospital of fourteen beds for both medical (non-contagious) and surgical cases, with a daily out-patient clinic, and provision for receiving and treating accidents or emergencies at any time. It is administered by a lady superintendent, under the direction of a visiting staff of local physicians and surgeons. There are also an infirmary for incurables, and a small maternity home, all open free to the poor. The term "home," or "infirmary" is used here apparently in distinction from the word "hospital," which means really an almshouse, like the celebrated Leicester Hospital at Warwick, where the aged and indigent are cared for upon a public foundation. There are two such hospitals in Lichfield, at opposite ends of the town, both of ancient establishment and endowment, one for "thirteen old poor men," the other for fifteen women. For some reason which does not appear, the former building is about twice the size of the latter, a fact which might be cited by the suffragettes as an ancient example of unjust sex discrimination.

To the east of Lichfield, by Stowe pool, stands the very old parish church of St. Chad, the patron saint of the town, who first brought Christianity among the inhabitants of this region. Near this church is St. Chad's well, now roofed over by a stone hut, and shown with great reverence as the spot where the good saint baptized the first Christians. Its waters are still and deep, but thick with green scum, and close to the churchyard.

"Where heaves the turf in many a mouldering heap," and the poor old woman who ran out with a dirty tumbler from the hut across the lane could not understand how we could refuse to taste the draught which she proffered and derive the benefit of its sacred properties. However, twopence consoled her, and she went back voluble in praise of the well, and probably happy, if not fortunate, in her ignorance of the bacillus of Eberth and of the reeking bacteria of decomposition. We preferred to walk home through hedge-bordered lanes across the meadows, and watch the swan sailing above her reflection in the pool, and listen to the minster bells chiming out of the gathering dusk, and smell again the faint perfume that lingered on the evening air till twilight slowly darkened into night.

MEDICUS PEREGRINUS.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, JULY 23, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,483	694	Waltham	7	1
Chicago	585	255	Pittsfield	9	1
Philadelphia	—	—	Brookline	—	—
St. Louis	—	—	Gloucester	5	2
Baltimore	—	—	North Adams	4	3
Cleveland	—	—	Northampton	7	1
Buffalo	—	—	Chicopee	11	7
Pittsburg	—	—	Medford	1	—
Cincinnati	—	—	Beverly	4	—
Milwaukee	—	—	Leominster	—	—
Washington	—	—	Hyde Park	5	3
Providence	—	—	Melrose	—	—
Boston	185	62	Newburyport	4	—
Worcester	39	21	Revere	5	4
Fall River	77	38	Westfield	6	4
Cambridge	31	18	Woburn	5	2
Lowell	58	30	Peabody	—	—
New Bedford	55	40	Marlboro	2	0
Lynn	21	3	Attleboro	7	2
Springfield	37	17	Adams	5	1
Lawrence	40	25	Clinton	7	1
Somerville	17	4	Gardner	5	3
Brockton	13	5	Milford	4	2
Holyoke	18	10	Watertown	3	2
Malden	8	4	Plymouth	—	—
Chelsea	6	1	Southbridge	3	—
Newton	2	—	Weymouth	2	1
Salem	11	4	Framingham	—	—
Haverhill	15	4	Wakefield	—	—
Fitchburg	12	8	Webster	3	—
Everett	6	1	Arlington	2	
Quincy	—	—	Greenfield	3	2?
Taunton	19	5			

RECENT DEATHS.

DR. SILAS S. CARTWRIGHT, of Roxbury, Delaware County, N. Y., died on July 31, at the age of seventy-seven years. He was graduated from the College of Physicians and Surgeons, New York, in 1853, and served as a surgeon during the Civil War. In 1884 and 1885 he was a member of the State Legislature. He retired from practice in 1907, and for some time had been postmaster of Roxbury.

DR. HENRY F. KOESTER, of New York, died on Aug. 7, at the age of forty-seven years. He was born and received his preliminary education in Germany. He was graduated from Bellevue Hospital Medical College, New York, in 1891, and for some time was a medical inspector in the Health Department and attending physician to the Willard Parker, Kingston Avenue, and Riverside Hospitals, belonging to the department.

DR. WILLIAM G. PERRY, of Exeter, N. H., who has recently died, had passed his eighty-ninth birthday. His father, Dr. William Perry, dying in 1907, at ninety-eight years, had for a period of four years been Harvard's oldest graduate. Dr. Perry was graduated from Dartmouth College and from the New York College of Physicians and Surgeons, and after a period of professional study abroad opened an office in 1847 in his institution where he quickly established a large practice. He remained at Exeter throughout his long and active life.

Original Articles.

WHAT IS THE EXPERIMENTAL BASIS FOR VACCINE THERAPY?*

BY THEOBALD SMITH, M.D., JAMAICA PLAIN.

THE historical development of the use of vaccines as defences in the struggle of man against infectious diseases may be considered as fairly well known. The observation made in early stages of civilization that one attack protects more or less securely against a following attack led the way to the practice of inducing mild cases by exposure and inoculation to prevent more severe ones later. Smallpox inoculation, practiced up to the beginning of the nineteenth century, gave way to cow-pox as a safer and easier way of acquiring immunity against smallpox. The many-sided life work of Pasteur was, in his later years, limited almost wholly to the practical application of the biological law that a mild attack of an infectious disease usually protects against a subsequent one. He devoted most of his time to the working out of methods of reducing the virulence of animal-disease germs so that they might safely be used to produce a mild type of disease which was to fortify the animal when continually surrounded by infection later on.

In 1885 Pasteur introduced a new idea in the use of antirabic vaccination after infection. The immunity was to be rapidly induced after the human being had been bitten by a rabid animal, not before. In 1890 Koch presented to the world his tuberculin as an aid in the cure of tuberculosis. Though at first misunderstood, the action of tuberculin is essentially protective or immunizing rather than curative.

In 1902 A. E. Wright took still another step in advance in advocating the inoculation of dead bacteria in various chronic affections due to these bacteria. So far as I am informed, Wright at first limited the application of his vaccines to chronic infections with well-marked and usually external localization of the infectious processes.

Very recently the practice of injecting dead bacteria has been extended to more acute diseases like typhoid, even to a disease of such relatively short duration as pneumonia, and to infections in which a general systemic intoxication and even bacteriemia exists.

This very brief sketch is significant in showing us the rapid march of events from vaccination before exposure to protect from any impending infection, to vaccination after exposure and even during the course of an acute disease.

Knowing how difficult it usually is to prove the efficacy of any therapeutic method, owing to the fact that cases of disease, even those complicated with infectious organisms, are individualized and, therefore, not comparable, we naturally ask the question whether there are many demonstrated guiding principles derived from laboratory and allied experimental work to assist us in estimating the value of vaccine therapy. The statistical method so often invoked in clinical medicine is slow and dependent upon the accuracy with which all case details have been worked out and classified.

At the outset I may state that experimental medicine has very little to offer us which is of service in deciding upon the efficacy or harmfulness of vaccination during disease. The practicing physician in co-operation with the clinical laboratory will have to work out his own salvation, and this can be done only with the aid of the most rigorous and painstaking methods which medical science can supply. Any other course is certain to lead astray.

In view of this situation I have very little of value to contribute to the discussion. There are, however, a few aspects which, though familiar, should not be lost sight of, and I shall briefly review these so far as they are the product of experiment rather than of observation.

Vaccine therapy or therapeutic vaccination is simply an offshoot of prophylactic vaccination. One shades insensibly into the other. The boundaries between what we call health and disease are clinically undefinable. In health we may harbor disease germs and we may be slightly infected without being aware of it. The principles underlying prophylactic vaccination are thus applicable to vaccine therapy.

Concerning the capacity of the individual to be protected by vaccination, at least for a time, against infectious diseases, there is no longer any reasonable doubt. All attacks of infectious disease, either artificial through vaccination, or spontaneous, lead to an immunity of longer or shorter duration. The occasional statement that certain infections predispose the individual to subsequent attacks may be true clinically, but the predisposing factor in such diseases will probably in all cases be found to be of a mechanical or physiological nature which interferes with the acquired immunity. The underlying generalization that all infectious diseases tend to raise the level of immunity of the individual after recovery is not invalidated by these apparent exceptions. Experimental medicine has supplied us with a large stock of information on this phase of the subject. The study of the great plagues of animal life and the suppression of them by vaccination has furnished the experimental basis for human preventive inoculation. Unfortunately, the most effective methods devised to protect animals cannot be safely used on the human subject, because they are too heroic and might, occasionally, jeopardize life. Our methods must be so toned down as to fit the weakest and most susceptible. In animal life this is not necessary, for it is desirable that the weakest be eliminated and that it shall not propagate its kind.

Experiments on animals have taught us that immunity and susceptibility are purely relative terms. They are matters of more or less. Frequently these terms are used as if they meant respectively the presence and absence of something which might be represented by the signs + and —. These latter conceptions are erroneous, for an immune animal simply possesses something more

* Read before The Massachusetts Medical Society, June 8, 1910.

than a susceptible one, or perhaps a greater capacity for acquiring something more. Hence when we induce immunity it is simply to stimulate the body to a higher level of resistance to any given infection rather than to put into it something that was never there before.

Man possesses already a high degree of immunity towards most infectious diseases, for after exposure not all individuals are attacked, and even under unfavorable conditions only a small percentage succumb. A complete absence of immunity would signify that all exposed would contract a given disease and die. How far we are from any such situation is a matter of daily experience in medical practice.

When immunity is induced artificially, it is raised by degrees. The animal that perhaps would have died very quickly without vaccination dies after a longer struggle. The one that might have succumbed to a chronic disease passes through a mild attack and recovers. Lastly, the one which would have had a mild attack does not become ill at all. It may be demonstrated experimentally that an animal made immune to a given fatal dose of bacteria inoculated into the subcutis is still susceptible when the same dose is injected into a serous cavity such as the peritoneal cavity, and least immune when the bacteria are introduced directly into the blood stream.

By repeated vaccination the animal which would have died of an acute septicemic attack may become so highly immune as to be completely protected against illness after exposure or inoculation of a fatal dose. This is not always possible, however, for the capacity of the animal to produce enough immune bodies may be limited individually as well as specifically, and no amount of treatment might avail in some cases.

By inducing immunity the type of disease may also be changed. In place of the septicemic type, the blood infection disappears and the virus becomes localized on serous membranes, in joints or in certain organs or in the subcutis and skin. The more localized the process, the higher the general immunity, which, as it were, crowds the invader into a corner. These modifications are producible at will in the laboratory, and are no longer matters of dispute. A localized infection, from the experimental point of view, may thus mean one of two things. Either the individual possesses already a relatively high degree of resistance, or else the micro-organism is of such a low order of virulence that it makes no headway against an average resistance.

Immunity is more easily acquired or raised towards certain micro-organisms than towards others. Thus it is relatively easy to protect against smallpox, but I doubt that complete protection against tuberculosis would be easy. This difference is inherent in the physiology and chemistry of the bacterial cell. On the other hand, certain individuals are more easily protected against infectious diseases by vaccination than others, probably because they start on a higher level. Let me illustrate. Certain individuals contract hemorrhagic types of infectious diseases — smallpox, for example — and die early in the disease. This means usually great susceptibility rather than a high degree of virulence, because such cases are rare among types of ordinary severity in the same outbreak. Now if we should vaccinate such a person, what would be the result? In the absence of any possibility to find out by actual trial, I venture to assume that such a person's immunity would be raised by ordinary vaccination only enough to escape the fatal disease. He would probably contract varioloid after exposure. In estimating the success of vaccination, we often blame the vaccine for failures without taking into consideration the very low resistance of certain individuals. In the laboratory, a small percentage of the animals used show a distinctly higher or lower capacity for immunization than the rest.

Another factor which must not be lost sight of is that of time in producing immunity. The rousing of protective machinery cannot be hurried. Each disease has its normal periods of incubation, of fever and of convalescence, to which there are, indeed, exceptions due to intercurrent causes. These periods are functions of sensitizing and immunizing processes. The so-called accelerated reactions brought out by repeated injections of tuberculin and repeated application of vaccine are due not to any greater promptness in the production of antibodies, but rather in their release or discharge, or else due to the interaction of vaccines with immune bodies already formed.

I have several times used the word "antibodies" as factors in immunity. It is well known that while the practical work of testing the efficiency of vaccines on man and animals has been going on in a more or less empirical, tentative manner, the analysis of the phenomena of infection and recovery has been going on in many laboratories, thanks to the impetus given by the discovery of antitoxin and by the establishment of laboratories supported by state and national resources.

Immunity has been shown to consist of a series of co-operating and interacting forces represented by antitoxins, bacteriolysins, opsonins, agglutinins and phagocytosis. The precise machinery which comes into play for any given micro-organism or any given species of animal is probably not identical with that in use for any other micro-organism or by any other host species. A complete explanation for the immunity which suppresses the invasion of any given organism, such as the plague or the tubercle bacillus, is not known. We know only details and fragments not easily pieced together. The discovery of the different antibodies has not thus far been of much assistance in practically gauging the value of vaccines or making them more effective, if we except the measurement of the opsonic index as devised by A. E. Wright. The various antibodies however, have been of very great service in diagnosis, and each one has now been harnessed to certain special methods of recognizing specific diseases, blood, toxins, animal foods, etc.

Another point of great importance is the temporary loss of protective substances, i. e., the lowering of the immunity level caused both by the disease and by vaccination. The lowering of the opsonic index after the injection of vaccines, of the antitoxic value of the blood in horses after injection of large doses of toxin, are illustrations of this condition. Each vaccination uses up some of the protective substances already present. It has been stated by several authors who have vaccinated calves against tuberculosis on a large scale that the treated animals are more predisposed to infection for a time after the injection of the vaccine.

Turning now to the application of vaccines where a diseased condition already exists, I have already stated that experimental medicine has not as yet cleared the way for a proper valuation of vaccine therapy. Few animal infections have been treated with vaccines. Only very few human diseases are transmissible to animals, and although much work has been done on small animals with such viruses as typhoid and cholera, these diseases are not contracted by animals spontaneously, and the results of experiments have only a limited application to human diseases, contracted in the natural way. Nor is there any encouraging outlook that in the near future experiment will take the place of bedside observation in this subject.

There are, however, a few theoretical considerations which may be of use in weighing the evidence for or against this kind of therapy.

At the beginning let us try to picture to ourselves, as clearly as our present knowledge will permit, the difference between prophylactic and therapeutic vaccination. If we inject into an animal once, twice or oftener a given dose of living or dead bacteria, we find that this animal is protected against a subsequent inoculation which would have been fatal to an untreated animal. The vaccination has put the body in a state of preparedness, probably by increasing the supply of suitable antibodies. The few invading bacteria are easily overcome, destroyed or else surrounded and gradually starved and asphyxiated. There is relatively little to do, and the prepared state of the body has made the task easy. Now, let us suppose that the body was not so well prepared; not so prompt in closing in upon the invaders. They then begin to multiply and when the body is roused a large number of bacteria are to be destroyed. A local process of inflammation and perhaps suppuration is the result. Suppose that the invasion extends beyond the place of entry, and the bacteria are carried some distance to establish many foci of multiplication. We have then a systemic infection. The process might have been nipped in the bud by vaccination or preparedness.

Now the success attending vaccinal prophylaxis has carried it as a practice into the heart of disease. The wholly different situation between vaccination during health and vaccination in disease has not, I presume, always impressed itself on the enthusiastic vaccinator. In the one case only a few bacteria are to be checked and disposed of; in the other myriads, with a body largely robbed of its store of antibodies. When we consider how difficult it is to protect the body against the future invasion of many diseases, it would seem almost hopeless to do anything with a similar procedure after such diseases have taken a good start. We are in danger of taking the ounce of prevention and using it as a pound of cure. This, it seems to me, is the situation as viewed from the experimental side. The presence of virulent living bacteria makes it seem absurd to add dead ones. Why is not the former stimulus enough?

In the case of chronic, localized affections in which vaccines have been much used, the justification for the use of vaccines is perhaps not so difficult as it seems. In the first place, the body already possesses a high degree of resistance, otherwise the process would not be localized and suppressed elsewhere. The infection is located, perhaps walled off in the disease foci with imperfect and interrupted relation with the fluid that eventually receives and redistributes all immune bodies, the blood. Again the bacteria themselves may have acquired enough immunity to the antibodies that reach them to resist lysis or phagocytosis. The process halts, immune bodies are no longer produced because the stimulus is lacking. The injected bacteria are now capable of raising the immunity of the body fluids, first by becoming themselves destroyed and furnishing the necessary stimulus, and second by arousing where the injection has been made, a larger territory of tissue to the production of antibodies. This bringing into play larger and larger areas of tissue I have used to explain certain phenomena in antitoxin immunity. If this view is correct, the continual change of the point of application of vaccines would greatly add to the productivity of the tissues in immune bodies.

The production of more antibodies by the tissues under the influence of vaccines leads to a disturbance of the established equilibrium between the bacteria and surrounding tissues in the local disease processes and to sufficient reaction to effect a cure. Where the capacity of the body for producing antibodies is low or exhausted, no cure can be hoped for. Surgical interference becomes here of the greatest value in opening up abscesses, incising indurated inflammatory foci, thereby giving freer access to the immune forces of the blood and causing auto-inoculation, i. e., the escape of bacteria and their products from the local process into the circulation and the establishment of other centers of antibody production.

The effectiveness of vaccines applied in the course of acute febrile diseases, such as typhoid fever and pneumonia, must be accounted for by principles of which experimental medicine has as yet no definite knowledge. The presence of fever is generally regarded as indicating bacterial activity with resulting toxemia. Theoretically no advantage can be expected from adding more toxins. Perhaps, according to the theory I advanced, by bringing into action more cell territories outside the organs and tissues immediately

affected, the disadvantages of the addition of toxin are outweighed by certain advantages.

The use of vaccines may be compatible with the existence of bacteria in the blood and internal organs whenever the infecting bacteria develop a high degree of parasitism with low degree of toxicity. Under such conditions the bacteria are immune against the existing forces, and the introduction, in vaccines, of bacteria more easily worked over by the body, may give the necessary impulse to a higher level of immunity. Or, the higher degree of parasitism may be associated with the usual toxicity, but owing to the fact that the bacteria are relatively immune, very little toxin is set free. Now, it might be interposed that under such conditions there is no reason why the blood should not sooner or later swarm with bacteria whose destruction would lead to dangerous toxemia when the immunity becomes raised by vaccination. To meet this objection another hypothesis would have to be interposed, one which has occupied my attention more particularly in tuberculosis. If the bacteria are well protected against destruction, they may at the same time be restricted, in multiplication, for their protecting envelopes or capsules may interfere with multiplication.

These suggestions indicate how complex the mutual relation between the tissues of the host and the parasite may be. It behooves us, therefore, to be exceedingly careful in the use of vaccines and not to lean too heavily on the repeated statements made that vaccines do no harm. They have introduced a truly experimental factor into clinical medicine and surgery, and no one should undertake their use in any but the superficial affections, who is unfamiliar with the principles of immunology and incapable of utilizing and exploiting all that is now well established experimentally concerning immunity and susceptibility. Each specific disease, each bacterial localization to be treated, must be considered a problem by itself, to which the experience gained in other types of infections may or may not be directly applicable. No vaccine should be administered simply because it produces an occasional drop in temperature and symptomatic improvement. Only the final outcome of the disease process should serve as a guide for subsequent cases.

DISCUSSION.

Dr. A. L. Chute, of Boston: My personal experience with vaccines has been limited practically to their use in suppurations in the genito-urinary tract.

These infections seem to fall naturally into three great groups, which, in order of frequency, are: The gonorrheal infections, the infections with the common pyogenic organisms and the infection with the tubercle bacillus.

It seems unwise at present to attempt to estimate the value of tuberculin in the treatment of tuberculosis of the urinary tract. The disease is often a very slow one, and perhaps sufficient time has not yet elapsed to allow us to draw accurate conclusions as to its value.

The infections of the urethra, prostate and epididymis with the gonococcus may be considered together. A considerable use of the gonococcus vaccines, both the autogenous and the stock, at the time when its use was first advocated, convinced me that it was powerless to influence the course of infections of this sort. In gonorrheal urethritis the intensity of the attack varies greatly as it also does in epididymitis and prostatitis. One sees cases in which the acute symptoms disappear under the use of vaccine, but as this is the usual course of the disease, this argues nothing for the efficacy of vaccines. In comparing, in the same clinic, a number of cases treated with vaccines, and a number treated with the usual methods by irrigation, my conclusion was that the vaccine treatment was not as effective as the older method; that it had no specific action. I think this is the conclusion that most men have reached regarding this method of treatment.

When one comes to the infections of the urinary tract with the common pyogenic organisms, the colon bacillus, staphylococcus, proteus, micrococcus ureæ, pyocyaneus, etc., one must consider the ordinary course of these infections in order to estimate the value of vaccines. The acute infections of this type tend to improve and to get well either without treatment or under very simple treatment, in cases where the drainage is efficient, that is, when the bladder and kidney pelves empty themsleves completely. When vaccines are used in such cases, their use in no way hinders the usual course of the disease and gives color to their apparent efficiency. The cases in which spontaneous recovery is not the rule are, for the most part, those in which there is poor drainage. I have treated a moderate number of such cases with autogenous vaccines, and have seen a much larger number. In none have I been able to see that the vaccine treatment produced any effect. The same thing applies to cases of bacteriuria.

At the meeting of the American Association of Genito-Urinary Surgeons in May of this year, this subject was taken up. O'Neil, who made a report on the status of vaccine treatment from a study of the literature, drew the conclusion that the use of vaccines in this class of cases was without effect. Geraghty, also, reported a number of cases of urinary infections with the various pyogenic organisms, in which he had followed up the vaccine treatment for a year or more, and in which the result was negative.

I feel that it remains to be proven that the use of vaccines affects in the slightest degree the natural course of infection of the urinary tract with pyogenic organisms. In such cases as I have tried them they have been unsuccessful. This method of treatment has also been unsuccessful in many cases that I have seen in which others have tried vaccines. Its successes, I believe, have been limited to the instances where it has been used in cases that would have gotten well without its use.

Dr. Timothy Leary, of Jamaica Plain, discussed Dr. Smith's paper, but did not care to have his remarks printed.

Dr. Lesley H. Spooner, of Boston: Dr. M. W. Richardson cannot be present and he has asked me to say just a few words on antityphoid vaccination. This subject I studied through Dr. Richardson's instigation six months ago, the investigation covering a period of six months at the Massachusetts General Hospital. The research was undertaken because of the relatively high morbidity of typhoid contracted in that institution, 2% of those exposed having developed the disease. The results were satisfactory in two ways: In the first place by the small doses of vaccine I was able to eliminate any constitutional reaction and reduce the local reaction to a minimum; in the second place, by producing Widal reactions in dilutions which compare very favorably with those produced by the disease itself. Lastly, I may state that no typhoid has been contracted

in the hospital within the last year. This is not absolutely conclusive, of course, but it is at least very encouraging.

From this work it seems to me that it may be concluded that typhoid vaccination should be utilized among those constantly exposed to the diseases, such as physicians and nurses. It should also be advised among those who are traveling abroad and, even more, through this country, where typhoid may be contracted easily, from water and milk supplies; and thirdly, that it may be encouraged in communities where typhoid is epidemic, also in families where a case is recognized early in the disease and where other members of the family have been exposed.

Other work has been done recently in America, and Major Russell, of the United States Army, has published an admirable report in the *Johns Hopkins Bulletin* of December, 1909, covering a very extensive work.

The salient facts which have been brought out in my own work are that I have been able to produce in a series of one hundred cases Widal reactions of such a high degree that they indicate an immunity against the disease by the use of small doses, frequently repeated. And that these small administrations of vaccine do not give rise to the violent constitutional reactions which have been so troublesome to the inoculated in England.

ON THE IMPORTANCE OF DETERMINING THE POTENCY OF DIGITALIS PREPARATIONS.*

BY JOSEPH H. PRATT, M.D., BOSTON.

(From the Department of the Theory and Practice of Physic and the Physiological Laboratory, Harvard University.)

No one can have read the case-reports in William Withering's "Account of the Foxglove and Some of its Medical Uses" [1] without having been struck with the remarkable efficacy of digitalis in his hands. It was Withering who discovered the diuretic properties of digitalis and introduced its use in the treatment of heart disease. His classical monograph is to-day, as it has been for over one hundred years, the best guide to the employment of digitalis. One hundred and sixty-three cases are described in which the drug was given under Withering's direction, and there are, in addition, notes on many cases communicated from correspondents. The entire work is a model of keen observation and sound reasoning, and one free from "any unjust predilection in favor of the medicine."

Digitalis, as Osler [2] says, is one of the dozen drugs the uses of which repay a lifelong study. There is truth in the German aphorism quoted by His [3] that the experienced physician can be distinguished from the inexperienced one by the way in which he uses digitalis.

The vital importance of having active preparations of this lifesaving drug does not need to be emphasized. Inert digitalis can be compared to a life preserver that will not float. The tragedies caused by the one in disasters at sea have been duplicated by the other in many a household.

Little attention has been paid by our physicians and pharmacists to the preservation of digitalis leaves, although excellent studies on the physiological standardization of digitalis and strophanthus preparations have been made in this country. (Houghton,[4] Famulener and Lyons,[5] Edmunds,[6] Hatcher,[7] Edmunds and Hale,[8] and Hale.[9], [10]) The statement is made in the last edition of the National Dispensatory (1909) [11] that there appears to be no foundation for the idea that the leaves deteriorate rapidly and are nearly or quite worthless after a year from the time of their collection.

Focke [12] has proved by biological tests that the presence of moisture in the leaves causes a rapid loss of the active principles. This is probably due to the action of ferments. Leaves which when dried contain 8% of moisture lost three fourths of their strength at the end of one year. On the other hand, leaves that were dried until they contained only 1.5% of moisture and then placed in airtight bottles lost practically none of their potency in a year. Focke asserts that improper drying of the leaf accounts for differences in strength amounting to 500% or more. Ziegenbein [13] has proved by physiological and chemical methods that the strength of the digitalis varies greatly with the locality in which it is grown. When the clinicians, Kussmaul, Naunyn and Krehl came to Strassburg as professors in the university, they each in turn discovered that the Alsacian digitalis was much stronger than that to which they had been accustomed and that it was necessary to use smaller doses in order to avoid marked toxic effects. Variation in the potency of digitalis obtained from apothecaries is due chiefly, as Focke says, to deterioration from age and moisture and not to the habitat of the plant. Focke,[14] in 1904, gave definite rules for the preparation and preservation of digitalis. The leaves should be dried as soon as gathered at a temperature below 100° C. After being well dried so that their water content is not more than 1.5%, they should be rubbed down to a powder while still exposed to a moderate heat. By the mixture of strong with weaker digitalis it is possible to obtain one of a standard strength as determined by the biological tests. The powdered leaf should be placed in narrow mouthed bottles not containing over 50 gm. Focke's method has been adopted by two firms, G. Schallmeyer, of Marburg, and Cæsar and Loretz, of Halle.

Recent scientific tests have shown that the drug is best preserved and administered in the form of powder. It is interesting to note that this was known to Withering. He gave the following definite directions for the preparation of the powder which differ in no essential from those of Focke. "The leaf-stalk and mid-rib of the leaves should be rejected, and the remaining part should be dried, either in the sunshine or on a tin pan or pewter dish before a fire. If well dried, they readily rub down to a beautiful green powder, which weighs something less than one fifth of the original weight of the leaves. Care must be taken that the leaves be not scorched in drying, and they should not be dried more than is requisite to allow of their being readily reduced to powder." These directions have been disregarded and for-

* Read before The Massachusetts Medical Society, June 6, 1910.

gotten. In 1905 I could not find that any digitalis was imported into this country in the form of powder.

Allen's English leaves have been held in high favor for many years and are largely used at the present time in Boston. They are sold in large tins, each containing a pound of leaves, including the leaf-stalk and mid-rib. The mouth of the can is a large opening, 3¼ inches in diameter, closed by a low tin cap. This original package is one that makes the proper preservation of the digitalis difficult and I know from personal observation that the cans are sometimes left open, exposing the leaves to the moisture of the air. A pound of digitalis often lasts the larger retail druggists from two to three years.

Prior to 1905 I used a number of different stocks of digitalis obtained from local pharmacists, but found none that yielded satisfactory results in the ordinary doses. I now know that this can be explained by the age of much of the leaf and by the fact that it was often insufficiently protected from the moisture of the air. I have seen digitalis offered for sale that had been in stock three years. Sometimes the leaf is already old when it reaches the city. A can of English digitalis with a potency certificate, date July, 1908, was not received by a Boston pharmacist until nearly eighteen months later. Improper drying of the digitalis may lead to rapid deterioration as Focke has shown.

I became convinced that the digitalis leaves, available in Boston, were of poor quality, so in 1905, Frank O. Guild, the pharmacist, at my request, imported from Germany some of Merck's powdered digitalis. This new powdered leaf exerted promptly the characteristic action, — slowing of the pulse and diuresis. I have repeatedly seen it act beneficially when other digitalis had failed.

The value of the German leaf was srtikingly shown in the first case in which I used it.

The patient was a middle-aged woman with chronic myocarditis. She had been under my observation since July, 1904, and was frequently seen by my colleagues at the Massachusetts General Hospital. Anasarca, dyspnea, recurring cough and scanty micturition were the chief symptoms. I had given her digitalis obtained from various local sources with no definite results. The following extract from my case-report shows strikingly the failure of the old digitalis to produce diuresis. Note made April 4, 1905: "Four days ago she was unable to void any urine. She states that for two weeks the quantity of urine has been scanty. Five days ago she consulted Dr. X., who gave the tincture of digitalis in 10-drop doses thrice daily. Yesterday he increased the amount to 12 drops. For the past three days the daily amount of urine voided has not exceeded half a pint." On the morning of April 6 she began to take 5 gr. of theocin three times a day. During the following twenty-four hours she passed nearly 4 liters of urine.

Symptoms recurred from time to time. Digitalis failed to lower the pulse-rate, or, in fact, to show any action. Early in June she was troubled with cough and dyspnea. Numerous medium-sized moist râles were heard over the lungs, and she raised considerable viscid frothy sputum. Her pulse was usually about 120 to the minute, weak, irregular and at times imperceptible. On July 24 the pulse-rate was 124 and so feeble that it could not be counted at the wrist. Note made September 20: "She has had severe cough for a week. Unable to sleep well for a month owing to nervousness; considerable dyspnea. She passes the normal amount of urine. Cough the chief symptom. *Status præsens.* Slight cyanosis of the lips; respiration a trifle labored and quickened, 32 to the minute. Cardiac impulse cannot be seen or felt. Only slight enlargement of the heart; no dullness to right of sternum; absolute cardiac dullness does not extend to the left beyond the parasternal line. Systolic bruit replaces the first sound at the apex. Both sounds heard at the base. Cardiac action irregular. Pulse at the wrist so weak that it cannot be counted. Many fine, moist râles heard over both lungs, especially at the bases behind. The patient raised during the night 150 ccm. of frothy serous sputum."

The first of December, 1905, she was given the powdered digitalis from Merck, which had just been received from Germany. On Dec. 8, 1905, I noted that "the new digitalis has helped her greatly. The cough is much less, the pulse is slow but irregular and varies from 16 to 20 to the quarter. The rate at the cardiac apex is the same as at the wrist. To-day is the first time in six months that I have found the pulse below 120. The cardiac dullness is greater than it has been. She has taken about 2.5 gm. of the digitalis which I discontinued to-day." When I saw her Jan. 25, 1906, she had been taking the powdered digitalis for five days. Her pulse was slow, 76 to the minute, and of good quality. During the following five months she was in excellent condition. She did not come under observation again until July, 1906, when I noted that the patient was looking well, and much younger than I had ever seen her. The pulse was not accelerated, but was somewhat irregular in rhythm, and she was beginning to suffer again from dyspnea and cough. Although she has had since then frequent attacks of cardiac insufficiency, she has always been benefited by the German powdered leaf and is still able to do light housework. (June, 1910.)

The strength of Merck's powdered leaf and the weakness of the tincture, employed in the usual dose, was shown in the following cases:

On Dec. 10, 1909, I saw in consultation, Mr. M., aged sixty-two, who was suffering from cardiac insufficiency, the result of coronary sclerosis. When first seen by his physician on Oct. 21, 1909, his pulse was rapid and irregular. There was swelling of the feet and edema of the lungs. Shortness of breath was the chief complaint. Rest was followed by marked improvement and at the time of my first examination there was no edema and he could walk without dyspnea. Although he had taken 15 drops of a tincture of digitalis three times a day for six weeks the pulse remained rapid. In my note I stated that the

rate over the precordium was about 130 and of very irregular rhythm. Some of the beats failed to reach the wrist. The radial pulse was small; the blood tension, 195. A tracing showed the arrhythmia to be of the absolutely irregualr type. The heart was dilated to the left. No murmurs were heard. After the digitalis was discontinued for about ten days, the patient was given a prescription for 2 gm. of Merck's powdered leaf divided into pills, each containing 0.1 gm. Without consulting his doctor, he had this refilled. After he had taken three of four of the additional doses, purging, nausea and vomiting developed but disappeared promptly when the digitalis was stopped. The pulse did not become rapid again as long as he remained under observation (one month). In this case the tincture (45 drops a day) showed no definite physiological action in six weeks, while the leaf (0.3 gm. daily) produced marked toxic symptoms in eight days.

A patient in my clinic at the Massachusetts General Hospital who suffered with chronic passive congestion of the lungs attended by cough and spitting of blood obtained no relief from a digitalis tincture in the ordinary dose. A few days after the administration of the active powdered leaf the cough and bloody expectoration ceased.

Some physicians have told me that they never see any benefit result from the digitalis they prescribe, and I know of instances in which the tincture has been given in large doses for a long time without toxic manifestations supervening. Dr. George C. Smith has related to me the case of a patient seen by him in consultation who had taken 30 drops of a digitalis tincture three times a day for six weeks without any apparent result.

Attention should be called to the fact that the tincture is generally given in too small doses to produce a prompt physiological effect. A tenth of a gram of digitalis is the usual dose of the powder. This corresponds to 1 ccm. (15 minims) of the tincture, but a cubic centimeter will be found to contain 35 to 40 drops of the tincture when the ordinary medicine dropper is used. Hirschfelder, [15] in his recent work on diseases of the heart, recommends large initial doses of digitalis. If Withering's directions for the administration of digitalis were followed, the use of an inert drug would readily be detected. "Let the medicine," he said, "be continued until it either acts on the kidneys, the stomach, the pulse or the bowels; let it be stopped upon the first appearance of any one of these effects."

Fraenkel [16] showed that six infusions obtained in Heidelberg and vicinity varied in toxic dose from 100 to 275%; six tinctures from 100 to 400%. Edmunds [17] in Ann Arbor, examined seventeen tinctures of digitalis and found great variation in strength. Two "standardized" preparations from one manufacturer were examined, and one was found to be twice as toxic as the other. Edmunds and Hale, in their admirable monograph, present a complete résumé of the literature dealing with the standardization of digitalis.

BIOLOGICAL TESTS OF DIGITALIS.

It is generally admitted that the value of digitalis preparations can be more accurately determined by biological rather than by chemical tests. The amount of digitalis required to stop the heart of a frog in systole is the most accurate indicator of its strength, and is the basic principle of various frog-heart methods.

Twelve-hour method. — This was introduced by Houghton,[4] 1898, for the physiological assay of strophanthus.

Twenty-four-hour method. — Buehrer [18] ascertained the smallest amount of the drug that produced systolic stand-still of the heart within twenty-four hours.

One-hour method. — This was first employed by Albert Fraenkel [16] working in Gottlieb's laboratory, in 1902. It is recommended by Edmunds and Hale,[8] who conclude from their study that it is superior to the perfusion method or to that of Focke.

Perfusion method. — Using William's apparatus, Santesson [19] determined the lethal dose by adding digitalis to the fluid used in perfusing the isolated heart. Edmunds and Hale [11] measured the time required to stop the isolated heart with digitalis contained in Ringer's solution.

Focke's method. — Focke [20] ascertained the amount of a 10% infusion that would cause the heart to stop in systole in a frog of about 30 gm. weight (*Rana temporaria*) within the time limit of seven to twenty-five minutes. The operating room was kept as nearly as possible at a constant temperature, whether the tests were made in summer or winter. Focke expresses the potency of the drug by the following formula: $V=\frac{p}{d\times t}$. The toxic value (V) is determined by dividing the weight of the frog (p) by the quantity (d) of the drug, — 10% infusion — multiplied by the time for systolic standstill of the heart to occur. For example $V=\frac{30}{0.6\times 10}=5$. According to Focke, good digitalis leaves give a value of 5 ($V=5$).

Thirty-minute method. — Gottlieb [21] and Fraenkel [22] now recommend the thirty-minute method, although in his early work Fraenkel used the time limit of one hour. They determined the amount of digitalis necessary to produce systolic standstill of the heart in exactly thirty minutes. They introduced the "frog unit" which is analagous to the antitoxin unit. Their frog unit is the amount of digitalis required to stop the heart in systole of a frog weighing 30 gm. in thirty minutes. Fraenkel states that a gm. of good digitalis should contain 50 frog units.

EXPERIMENTAL STUDY.

The thirty-minute method was used and an effort made to select frogs weighing 30 gm., but owing to the limited supply it was necessary to use lighter and heavier ones as well. The frogs were weighed to within the limits of one gm., and the dose of digitalis per gm. of body weight was calculated. With the aid of Professor Cannon, the experiments were made in the physiological

laboratory of the Harvard Medical School during the months of December and January. The frogs were brought to the operating room from the cold tank a few hours previous to the tests, and kept in a glass receptacle containing a little water. The temperature of the room was usually 20° C., and never varied more than 1°. A freshly prepared 10% digitalis infusion was injected into the ventral lymph sac. The frogs were then placed under bell jars containing pads of well-moistened filter paper. At the end of thirty minutes the animals were pithed, fastened to frog boards and the heart exposed in the usual manner. When the drug had exerted its characteristic toxic action the ventricle was found pale, contracted and motionless. If the heart was beating, larger amounts of the drug were given to other frogs; if in systolic standstill, smaller doses. My experiments were carried out on *Rana pipiens* as were those of Edmunds and Hale. The European observers have found *Rana temporaria* more susceptible to digitalis poisoning than *Rana esculenta*. I have reason to believe that the American frog (*Rana pipiens*) requires a considerably larger dose of digitalis to produce systolic standstill than *Rana temporaria*. A study of the tables published by Edmunds and Hale show that none of the digitalis preparations they examined by Focke's method had a value (*V*) of more than 3.8, although Focke has stated that a good leaf should yield the value of 5.

During the past winter I tested digitalis leaves obtained fron six of the leading apothecaries in Boston, and from one in a suburban town, and from the pharmacies of the two largest hospitals. I also examined some powdered digitalis recently imported by Parke, Davis & Co., and kindly furnished to me by that firm's department of experimental medicine. I used as a control in my work powdered leaf prepared by Cæsar and Loretz, of Halle, and the tests were made a short time after it was received from Germany.* The leaf had been standardized physiologically in Germany by Cæsar and Loretz, and its strength measured by Focke's method was "*V* = 5 or O. 4 *gm.* = 100 *gm.*" frog weight. This titrated leaf comes in small mouthed bottles containing only 50 gm. A conspicuous label cautions the dispenser to keep the powder in a dry place.

The powdered digitalis of Cæsar and Loretz was found to be the most active of any tested; 1.4 mgm. per gram of frog weight was found sufficient to produce systolic arrest of the heart in thirty minutes. As small a dose as 0.8 mgm. caused the death of a frog within one hour, as is shown in the accompanying table.

TABLE I.

THE DETERMINATION OF THE AMOUNT OF DIGITALIS REQUIRED TO PRODUCE SYSTOLIC STANDSTILL OF THE HEART OF RANA PIPIENS IN THIRTY MINUTES.

Protocol Number.	Amount of digitalis per gram of frog weight.	Results.
4	.0004	− 1 hr.
6	.0008	− + 1 hr.
10	.0008	− + 1 hr.
54	.0010	− + 1 hr.
68	.0010	− + 1 hr.
55	.0012	−
69	.0012	−
58	.0013	− (digitalis not well absorbed)
29	.0014	+
34	.0015	+
8	.0026	+

* This was obtained through the kindness of Dr. Leo Mueller, of the Heidelberg Medical Clinic.

By far the best preparation I found on sale in Boston was the leaf put up by Merck; 2 mgm. of this preparation was the lethal dose per gm. of frog weight, but 1.5 mgm. per gm. of frog weight was not sufficient to kill the animal. The powdered leaf recently imported by Parke, Davis & Co., killed a frog when 3.5 mgm. per gm. of frog weight were given.

TABLE II.

MINIMUM DOSE OF DIGITALIS LEAF PER GRAM OF FROG WEIGHT REQUIRED TO PRODUCE SYSTOLIC STANDSTILL OF THE HEART OF RANA PIPIENS IN THIRTY MINUTES.

Cæsar and Loretz: Powdered digitalis leaf,	.0014 gm.
Merck: Powdered digitalis leaf,	.0020
Parke, Davis & Co.: Powdered digitalis leaf,	.0035
Allen: Digitalis leaf, Hospital Y,	.0040
Squibb: Digitalis leaf, Apothecary D,	.0040

Five different lots of Allen's English leaf obtained from four druggists in Boston and from Hospital Y were tested. Not one of these samples exerted any digitalis action when 3 mgm. were given. The preparation obtained from the hospital gave a positive result when 4 mgm. were used. Two specimens of Allen's preparations digitalis were tested in still stronger solutions, and 5 mgm. per gm. of frog weight were not sufficient to stop a frog's heart. Without doubt the preparations were once active, but had lost their strength through age and exposure to the air. Deterioration may occur before a can is opened as the following shows: On Jan. 20, 1910, I examined a supply of digitalis that had just been received by a local druggist. On the outside of the tin was the printed statement that on July 23, 1908, this leaf had been tested at the pharmacological laboratory in Cambridge, England, and it was found that the lethal dose was .9 mgm. for each gm. of frog weight. I found that 3 mgm. per gm. of frog weight was not sufficient to produce systolic standstill in thirty minutes. The fact that more than three times the lethal dose as determined in England failed to kill the frog in my test can scarcely be explained by the difference in species. The can contained a pound of digitalis. As the leaves had already lost much of their activity when freshly opened, it would not be surprising if they become wholly inert before the last of the pound is sold.

TABLE III.

SAMPLES OF DIGITALIS THAT FAILED TO PRODUCE SYSTOLIC STANDSTILL OF THE HEART OF RANA PIPIENS WHEN GIVEN IN THE FOLLOWING DOSES PER GRAM OF FROG WEIGHT.

Allen: Apothecary A,	.0050 gm.
Apothecary B,	.0050
Squibb: Apothecary C,	.0050
Shakers of Ayer: Apothecary E,	.0050

Two preparations of Squibb's digitalis were tested. One did not have a lethal action when 4 mgm. per gm. of frog weight were used, and the other was inactive in amounts less than 4 mgm.

A sample of digitalis prepared by the Shakers of Ayer was examined, and did not produce systolic standstill when 5 mgm. were given. This was the only digitalis leaf carried in stock by a large drug shop.

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[6] Edmunds: Jour. Am. Med. Asso., 1907, xlviii, p. 1744.
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[17] Edmunds: Jour. Am. Med. Asso., 1907, xlviii, p. 1744.
[18] Buehrer: Inaug. Dissert., Basel, 1900.
[19] Santesson: Skandin. Arch. für Physiol., 1905, xvii, p. 389.
[20] Focke: Arch. der Pharm., 1903, ccxli, pp. 128, 669; Therapie der Gegenwart, 1904, p. 250; Berl. klin. Wochenschr, 1906, xliii, p. 642; Arch. der Pharm., 1907, ccxlv, p. 646.
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THE THERAPEUTIC USE OF ASCITIC FLUID A PRELIMINARY COMMUNICATION.*

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One of the writers has felt for a long time that ascitic fluid derived from cases of mechanical obstruction of the abdominal venous circulation (e. g. alcoholic cirrhosis of the liver — broken cardiac compensation) was a valuable human saline whose use from a therapeutic standpoint would furnish more effective stimulation than could be obtained from an artificial salt solution or from a similar solution produced by diluting sea-water.

The most important objection to its use lay in the belief that ascitic fluid from such source contained toxic agents derived, in the case of cirrhosis fluid, possibly from the toxic bodies responsible for the disease, or, in the cardiac cases, from the end products of destructive metabolism of tissues.

The most complete refutation of the claims that toxic agents were present in such fluids came from Hodenpyl's intravenous use of such fluid in cancer. Hodenpyl [1] has introduced into human beings as much as two quarts of this fluid intravenously at one time without evidence of toxic effects.

Gruner,[2] under the heading "poisonous effects of exudates and transudates when injected into the blood," says: "In cirrhosis of the liver the transudate is no more poisonous than the effusion of pleurisy, showing that the portal blood is not more toxic than the blood of the general circulation."

In February of this year, we, as the result of subcutaneous and intravenous injections of ascitic fluid in enormous quantities into guinea pigs and rabbits, without evidence of toxic action, had about concluded to determine its influence on diseased conditions in children when Hodenpyl's application of cancer ascitic fluid in cancer was published. It was evident that in laboratory animals not only would toxic activity such as might be exhibited in human beings appear, but also the added effects of a serum foreign to the animals in which it was used. No toxic action was discoverable in any of our experimental animals.

CONDITIONS UNDER WHICH THE FLUID WAS USED.

St. Mary's Infant Hospital receives, from its own maternity clinic, children, many of whom are illegitimate and a percentage of whom are premature, together with many children who are sent in from other sources after treatment has proved futile. These children often exhibit in the most marked degree the characteristic picture of infantile atrophy, with the typical senile fascies, withered limbs and shrivelled body. The types of cases which appear include very largely the forms of malignant marasmus (infantile atrophy), in which the clinician often refers to syphilis and tuberculosis as the important factors in the process, although post-mortem examinations reveal no evidence of either disease.

There have been many hypotheses advanced to account for the extreme asthenia which is so common, notably in institutions, among bottle-fed children.

The literature on this subject has been reviewed by Wentworth [3] and Denny [4] and leads to the conclusion that marasmic infants who are bottle-fed do not receive certain human ferments which are essential for the proper assimilation of food. It is recognized that atrophic infants, in addition to the nutritional disturbances which they show, are lacking in resistance to infection and are carried off in large numbers by terminal infections. It is a question whether the condition which we know as infantile atrophy is not always associated with low-grade infection or sub-infection of intestinal origin (*vide* Denny, *loc. cit.*, p. 1908). Pfaundler and More [5] have demonstrated that the complement content of the blood of bottle-fed and particularly of atrophic infants is low as compared with that of breast-fed infants.

* This paper is presented as a preliminary communication for the purpose of calling attention to the apparent therapeutic value of a substance hitherto discarded as valueless or toxic. The clinical results herein described are at least suggestive. It is our intention to carry out a wide series of observations on the value of ascitic fluid in nutritional disturbances, shock and infection.

[1] Med. Rec., vol. lxxvii, no. 9, Feb. 26, 1910, p. 359.

[3] Studies in puncture fluids. Blakiston, Philadelphia, 1908, p. 156.
[4] Jour. Am. Med. Asso., vol. xlv, 1905, pp. 579 and 771.
[5] *Ibid.*, vol. xlvii, 1906, p. 1904.
[5] Münch. Med. Wochenschr., no. 44, Oct. 29, 1907.

Wassermann [6] believes that the low resistance to infection shown by bottle-fed infants is exhibited because the antibodies which are produced are used up in transforming the cow albumin of the food into the human albumin of the infant, in order that it may be assimilated. The human albumin of breast milk can pass unchanged from the intestine into the circulation, requiring no intervention of ferments, which are left free to act upon invading bacteria.

Denny [4] was able to demonstrate that partial feeding with breast milk was followed by prompt improvement in two cases of atrophy and one of serious intestinal infection. He reaches the conclusion that too small amounts of human milk were used to furnish a food value which would account for the improvement. Ferments or proferments, which the infants needed and made use of, must, therefore, have been present in the human milk.

Breast feeding will, then, remove the difficulties in a large percentage of the cases. Wet nurses, however, are difficult to obtain in number sufficient to care for the large number of marasmic children who are found in a great clinic like that at St. Mary's Infant Hospital. It was, therefore, necessary to turn to other means of coaxing the nutritional apparatus of these children to do normal work.

Physiological salt solution has been strongly advocated for its stimulant action in this condition. Pfaundler has shown that its use is sometimes accompanied by increase in the complement of the blood. Since Simon [7] reported the remarkable success he had obtained with isotonic seawater in marasmic infants, we have been able to test its value on a large scale in comparison with artificial physiological saline.

It was claimed for isotonic sea-water that it contained the same salts as the blood. Simon refers to "*la presque identité de composition minérale du plasma sanguin*" which sea-water shows. The salts are in such relation that dilution to produce isotonicity is not accompanied by precipitation. This is in marked contrast to the precipitation which appears when an effort is made to produce an artificial saline by adding to water the blood salts in the quantities in which they occur in serum. The salts of blood serum exist in organic combination with the proteids of the serum, and disturbance of this organic combination gives rise to precipitation.

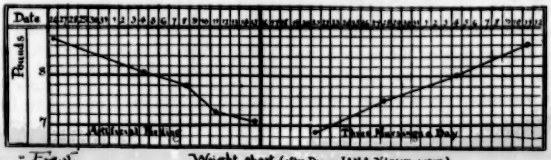


Fig 5.

The results from the subcutaneous injection of isotonic sea-water in our series [8] did not correspond to those obtained by Simon. They did not indicate that isotonic sea-water had a sufficiently greater value than physiological salt solution to justify the expense and the time consumed in obtaining and preparing it. Neither agent was satisfactory in advanced cases.

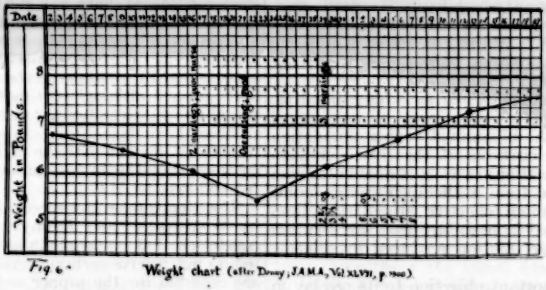


Fig 6.

CHARACTER OF ASCITIC FLUID.

Ascitic fluid is a human saline whose salts are those of the blood serum. It is usually isotonic with blood serum, the variations in freezing-point being no greater than blood serum may show. The salts are in organic combination with human proteids, which are readily absorbed.

In addition to the stimulant and food value of the fluid, it has other properties which make it desirable. It is richer in complement than is breast milk.

[6] Deutsche Med. Wochenschr., vol. xxix, 1903, p. 16.
[7] Applications thérapeutiques de l'eau de mer. Paris, Masson, 1908.
[8] Merrick: Arch. Pediat., July, 1910.

An observation extending over a long period has shown that it is practically impossible to cultivate pathogenic bacteria in the undiluted ascitic fluid. When diluted it makes a good culture medium for these organisms, but this is equally true of blood serum. Contamination with spore bearing, dust organisms (non pathogens) is followed by growth.

Opalescent (chyliform) fluids are particularly resistant to contamination. Their keeping qualities have been referred to by many writers. They are rich in globulins, the substances which in blood serum contain the antibodies. The natural freedom from infection of ascitic fluid in the abdomen is apparently due to these antibodies.

Ascitic fluid is a transudate produced as a result of local passive hyperemia. The Bier method of treating infections depends upon flushing the infected area with a transudate resulting from the passive hyperemia which is artificially produced. The antibodies in this transudate are of assistance in destroying bacteria in the local focus of infection.

THE PRACTICAL HANDLING OF ASCITIC FLUID.

The following methods of handling ascitic fluid have been tested now in over two years' work with such fluids and have made it possible to eliminate almost wholly contamination by dust or other organisms.

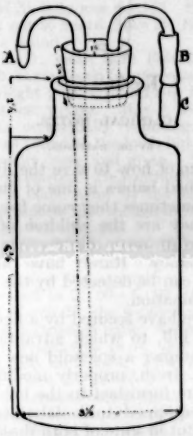


Fig. 1.

The fluid is received in a standard liter bottle (Figs. 1 and 2) supplied with a rubber stopper through which pass two glass tubes, which are bent down over edge of stopper. The tube (*A*) through which the fluid flows into the flask, runs to the bottom of flask. Its exposed end is guarded by a rubber tip. The other tube extends only to the bottom of the stopper and bears on its exposed end a cotton air filter. This consists of a piece of glass tubing filled tightly with cotton and attached to the exposed end of glass tube by a short piece of heavy rubber tubing (*B*). When receiving fluid, the rubber tip is removed from tube (*A*), to which is then fitted the rubber tubing connected with the trocar in the abdominal wall. The bottle fills by gravity. When filled, the rubber tubing is transferred to the glass receiving tube of another bottle and the rubber tip replaced, thus sealing bacteriologically the bottle. For transportation it is desirable that a pinchcock be placed on the rubber tubing (*B*) connecting the air filter with the glass tubing.

With this form of container it is possible to manipulate ascitic fluid with little danger or contamination. A tube connected with the foot pump is attached to the air filter, a delivery tube (*D*) consisting of a piece of rubber tubing and supplied with a pinchcock replaces the rubber tip on exposed end of receiving tube, and air pressure (the air passing through cotton filter) drives the fluid from the bottle into test tubes or other containers.

For injection purposes syringes which have a large capacity are expensive or unsatisfactory. We have, therefore, made use of a container adapted from the description of the container used by Dr. Robert Simon for isotonic sea-water. This consists of a glass tube of large caliber (Figs. 3 and 4) with ends drawn out, one end being bent back parallel to the main tube. To fill this, a second piece of glass tubing (*H*) is fitted by means of a rubber connection (*J*) to the end which is turned back. This piece of glass tubing is of sufficient length to parallel the main tube to its other end. The end of this tube is guarded with a

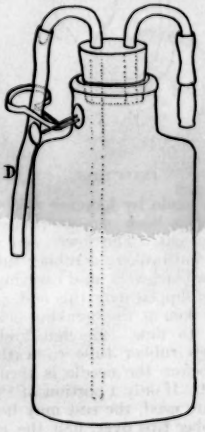


Fig. 2.

rubber tip. The end of the main tube is filled with cotton and the whole apparatus is sterilized in the autoclave.

Filling is accomplished by removing rubber tip and connecting by rubber delivery tube (*D*) guarded with a pinchcock, which is attached to the

bottle of ascitic fluid. By means of air pressure (foot pump) the container is filled to a proper level. The cotton in end (*M*) is flamed and removed and the end of tube sealed, being drawn out at one point for breaking. The rubber connection of other end is separated and this end sealed in like fashion.

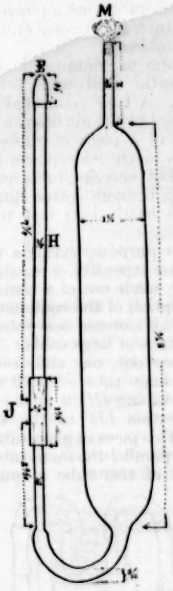


Fig. 3.

INJECTION.

Injection is made by hanging this tube by its curved end over a hook or other projection above the bed of patient. The lower end (*P*) having been flamed, and broken, a rubber tube of small caliber, with a pinchcock, and carrying the injecting needle, is slipped over this end. The upper tube (*O*) is broken at the breaking point and the fluid allowed to flow. Enough fluid should be passed through rubber tube to wash away all rubber dust before the needle is thrust through skin of patient. If only a portion of the contents of container are used, the rest may be conserved by fitting rubber tips over, first the curved end, and then, after the removal of the injection tube, over the straight lower end.

A large hypodermic needle is thrust into the subcutaneous fat or muscle. Injections have been made largely in the gluteal region, the back or the abdominal wall. One ounce of fluid has been introduced daily when the supply was obtainable. (This is probably too small a dose to use where the emergency is serious or where prompt results are desired. We are now using larger doses.)

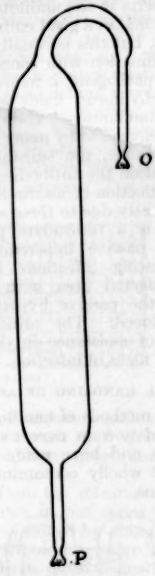


Fig. 4.

CLINICAL NOTES.

BY DR. HASTINGS.

The problem of how to save the lives of feeble, poorly nourished babies is one of our most difficult ones. Sometimes they come from the courts. More often they are the children of young girls who have lived in terror of detection during most of their pregnancy. Rarely have they any gross lesions which can be detected by the most careful physical examination.

Fresh air we have secured by a fine location on the top of a hill, to which advantage has been added this summer a splendid new suite of sun rooms. Pure, fresh, properly modified and prepared foods are furnished to the babies from one of the best-equipped milk laboratories in any institution. But in spite of both these advantages the diagnosis "marasmus" must often be put on a death certificate, and nothing more definite is possible.

New modifications of foods, preparations of digestants, digestive, nervous or general tonics or stimulants, and subcutaneous treatments, we have tried one after the other. Often a short series of cases have gained, but soon others precisely similar in appearance have failed to receive any benefit.

None of these agents has so continuously helped as ascitic fluid, so far as my records go. Though interrupted at times by failure to secure an ade-

quate supply, its administration has been followed by results which have amazed us.

Again and again, on successive visits, have I found babies whom I fully expected to find dead, not only holding their own, but making a small gain.

The cases are few in number and the report is only suggestive. There have been no failures of absorption, no local or general disturbance. These notes are brief, intended to cover only points of nutrition.

Case I. J. F., male, born Dec. 14, 1909. Admitted March 12, 1910. Weight 11 lb. 3 oz. Started on 1 : 50 – 6 : 00 – 0 : 50, increasing strength of food gradually to 2 : 00 – 6 : 00 – 1 : 00 on March 29. Curds appeared March 23, but disappeared after the addition of CaCl. gr. one t.i.d. Continued till April 15, but he lost in weight, reaching 8 lb. 15 oz. on April 13.

On 3½ oz. ten times a day of 2 : 00 – 6 : 00 – 1 : 50 he gained an ounce or two, but May 6 he weighed only 8 lb., 9 oz. Ascitic fluid was given ℥i daily from May 6. May 10 a bloody discharge from his nose was found to contain K.L. He was isolated. May 20, he developed bronchopneumonia and died May 27.

Case II. J. McB., male, born Feb. 28, 1910. Admitted April 1. Weight 7 lb. 14 oz.

Started on 1 : 50 – 6 : 00 – 0 : 50. Had an abscess of left breast. Food was gradually made stronger, but lost weight. Dejections became loose and green and April 28 dextrinised barley water was added to his food. Dejections became normal, but he continued to lose weight. May 16, his weight was 6 lb. 11 oz., and ascitic acid fluid ℥i daily was started. He gained 5 oz. and then went out to board May 25, 1910. June 15, he had gained a pound.

Case III. L. D., male, born Feb. 23, 1910. Admitted April 10, having been fed on equal parts of milk and water. Weight 9 lb. 2 oz. Took 1 : 50 – 6 : 00 – 1 : 00 well, but lost weight. May 2, weight was 8 lb. 2 oz. and was occasionally vomiting. Dextrinised barley water was added to the food, but the dejections continued generally loose and green. May 5, ascitic fluid ℥i daily was started. He continued to lose weight and May 23 was taken home by the mother weighing 6 lb. 14 oz. She reports that though feeble he is gaining a little in weight and strength.

Case IV. M. F., female, born Feb. 3, 1910. Admitted March 3, 1910. Weight 6 lb. 14 oz. Digestion was fairly good and the strength of her food was gradually increased to 2 : 00 – 6 : 00 – 1 : 00, but she lost weight till March 23, she weighed only 5 lb. 1 oz. The addition of dextrinised barley water had but little effect. May 24, weight 4 lb. 14 oz. She was started on ascitic fluid ℥i daily on June 4. June 10, weight 5 lb. She was taking well 15 oz. of 2 : 00 – 6 : 00 – 1 : 50 with 10 oz. of dextrinised barley water.

Case V. M. D., female, born April 15, 1910. Admitted April 21. Weight 6 lb. 12 oz.

At first she had poor digestion and sore eyes, and her weight dropped to 5 lb. 4 oz. on May 16. She took 20 oz. of 1 : 75 – 6 : 00 – 1 : 00, but became very weak, requiring brandy and strychnia. May 31, ascitic fluid ℥i daily was started. She has gained in strength, takes and digests 25 oz. of 2 : 00 – 6 : 00 – 1 : 00, though her weight June 10 was 5 lb.

Case VI. V. C., male, born March 13, 1910. Admitted March 25. Weight 6 lb. 3 oz. Took 1 : 50 – 6 : 00 – 0 : 50 and then 1 : 50 – 6 : 00 – 1 : 00, but lost weight. April 15, weight 5 lb. 13 oz. digesting well 15 oz. of 1 : 50 – 6 : 00 – 1 : 00, was started on ascitic fluid ℥i daily. Weight dropped to 5 lb. 4 oz. and then to 5 lb. 2 oz. The strength of the food was increased to 2 : 00 – 6 : 00 – 1 : 00 and dextrinised barley water added. From May 6 to 13 brandy and strychnia were



Fig. 9.

needed. June 10, has gained a little to 5 lb. 6 oz. and is taking well 25 oz. of 2 : 00 – 6 : 00 – 1 : 50 and 5 oz. of dextrinised barley water daily.



Fig. 10.

Case VII. H. H., male, born Nov. 18, 1909. Admitted March 7, 1910. Weight 11 lb. Started on 1 : 50 – 6 : 00 – 1 : 00, which he took well. Had eczema. Digestion was variable, occasional vomiting becoming more frequent. Dextrinised barley water gave no relief. May 10, weight 8 lb. 10 oz., was started

on ascitic fluid ℥i daily. Has had general skin infection and now a parotid abscess. Is taking well 40 oz. of equal parts of 2 : 00 – 6 : 00 – 1 : 50 and dextrinised barley water, but weight June 10 is 7 lb. 8 oz.

Case VIII. E. B., female, born Jan. 6, 1910. Admitted March 21. Weight 8 lb. 4 oz.

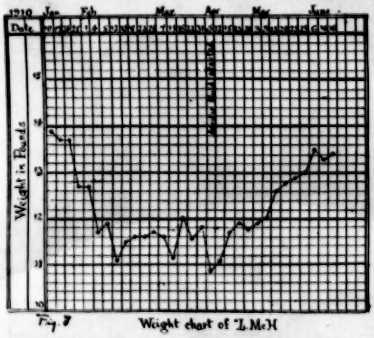
Digestion was poor, vomited all food except whey. Weight, April 19, 6 lb. 8 oz. and was started on ascitic fluid ℥i daily. Weight dropped to 5 lb. 10 oz. A little cream was added to whey and began to gain, reaching, May 20, 7 lb. 3 oz. Since then has not quite held her own. On June 20, weight was 6 lb. 13 oz., a gain of 6 oz. in ten days and was taking well 28 oz. of whey with 4 oz. of 10% cream daily.

Case IX. A. McN., female, born Feb. 25, 1910. Admitted March 15. Weight 5 lb. 15 oz. Digestion poor at first, gradually improved, till April 17 she was taking and digesting well 20 oz. of 1 : 50 – 6 : 00 – 1 : 00, but her weight was only 5 lb. 2 oz. She was given ascitic fluid ℥i daily, and has gained steadily though slowly till now she takes 35 oz. of 2 : 00 – 6 : 00 – 1 : 25 and June 10, weight was 6 lb. 2 oz.

Case X. A. G., female, born Jan. 20, 1909. Admitted April 27, 1909. Weight 10 lb. 9 oz. For a year weight fluctuated between 9 lb. and 10 lb., touching 11 lb. in September, 1909.

In December, 1909, had diphtheria, after which weight was 8 lb. 11 oz. Was started on whey, to which 10% cream was gradually added till April 8, 1910, when she was taking 35 oz. whey and 5 oz. 10% cream and weighed 9 lb. Was given ascitic fluid ℥i daily. May 16, weighed 9 lb. 12 oz. Food was changed to equal parts of whole milk and dextrinised barley water, gradually strengthened to milk 35 oz. barley water 5 oz. Weight June 10, 1910, 10 lb. 2 oz.

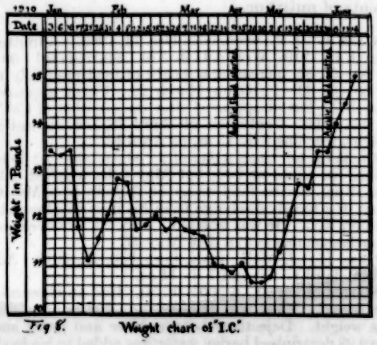
Case XI. L. McH., female, born April 27, 1909. Admitted Jan. 10, 1910. Weight 13 lb. 12 oz. Was given whole milk 30 oz. and barley water 10 oz. She



did well till Jan. 26, when she began to vomit. Food was diluted and digestion improved, but she lost weight till Feb. 11 it was only 11 lb. Stronger food resulted in loose dejections. April 5, she was taking well whole milk 35 oz., barley water 5 oz., but weighed 10 lb. 14 oz. Therefore ascitic fluid ℥i daily was given. Has gained steadily. Now on whole milk and cereals and weighed, June 10, 13 lb. 6 oz.

Case XII. I. C., female, born Nov. 9, 1908. Admitted Jan. 3, 1910. Weight 13 lb. 7 oz.

Started on whole milk and barley water. Lost weight till Jan. 21 she weighed 11 lb. 3 oz. She then gained to 12 lb. and remained there for two months. Had skin infections and March 17 to 26 bronchopneumonia. Became very much exhausted. April 7, weight 10 lb. 12 oz. Digesting well 35 oz. whey and 5 oz. 10% cream, was started on ascitic fluid ℥i daily. Lost a little weight, but gained strength. April 26, food was made whole milk 30 oz. and barley water 10 oz. Soon began to gain rapidly. May 13, weight 12 lb., was put on whole milk and cereals. May 31, weight 13 lb. 6 oz., ascitic fluid was omitted. Has continued to gain. June 11, weight 14 lb. 7 oz.



We desire to obtain ascitic fluid in quantity for the purpose of carrying on this work. Physicians in Boston and suburbs who are about to tap cases of alcoholic cirrhosis are requested to notify the laboratory (Telephone, Back Bay 3491 or 3492). A physician will be sent who will assist in collecting the fluid.

ILLUSTRATIONS.

Fig. 1. Bottle for aseptic handling of ascitic and similar fluids (sealed).
Fig. 2. Ditto, with discharging tube and pinchcock attached.
Fig. 3. Container for injecting fluid as prepared for filling.
Fig. 4. Ditto, sealed.
Fig. 5. Weight chart (Denny, *loc. cit.*, p. 1907,) showing improvement of atrophic infant under partial breast feeding.
Fig. 6. Weight chart (Denny, *loc. cit.*, p. 1906) showing similar improvement in a second case.
Fig. 7. Weight chart of Case XI, our series.
Fig. 8. Weight chart of Case XII, our series.
(It should be noted in comparing our charts with those from Denny that only the weight days are recorded in our charts, while Denny's charts are spaced daily.)
Fig. 9. Photograph of Case VI, our series.
Fig. 10. Photograph of Case V, our series.
These photographs are reproduced merely to indicate the type of cases treated. Unfortunately, photographs were not made in the beginning of treatment of cases which have shown marked improvement.

MEDICAL SOCIAL SERVICE WORK.

BY WILLIAM R. WOODBURY, M.D.,
Head of Department for Nervous Diseases, Boston Dispensary.

A new vocation is open to women and men — medical social service work. This vocation offers to those who have the right qualifications a broad and interesting field of usefulness. It brings fair remuneration; in executive positions, a generous salary is given.

In the practice of medicine the real test is in the handling of the case. Naming the disease is but the beginning. To feel through the facts for the human story, and straightway to get down to

a practical working basis, a common point from which the patient and the physician can begin to co-operate intelligently and fully, are important factors in correcting and relieving the conditions which cause sickness and distress. The successful physician is to be the man or woman who has close acquaintance with human nature, broad sympathies, and power to make practical use of his knowledge of economic, family and social conditions. To obtain desired results with no loss of time and effort, all these factors should be set working concertedly in a carefully ordered way. To accomplish this with the large and pressing demands of a hospital service, and particularly in an out-patient service, requires the help of wise and tactful visitors who can aid in establishing in the home and its every-day family and individual life the conditions which make for health; who can help encourage the practice of that daily care which assures physical, mental and moral well-being.

The physician and his visitor should know the whole story. Sympathetic inquiry into home and living conditions is necessary; it shakes down useful facts. Too frequently people are creators of their own mental and physical misfortunes; they create, too, the misfortunes of those with whom they live. Most people need applied hygiene; and they need it most who through unwholesome or careless living are compelled to seek in hospitals and dispensaries relief from physical suffering. For those who acquire nervous diseases or conditions which result in disturbed nervous balance, this is particularly true. The presence of the medical social service visitor at the consultations of the physician and the patient establishes at the very beginning a feeling of good fellowship. The patient is assured that a sincere personal interest is being taken by the physician; that he is using his fullest power to help the patient help herself. To the visitor it gives a thorough knowledge of the physical condition of the patient; it reveals facts which the visitor should know and cannot discover easily without the physician's help. The patient and the visitor start with a mutual understanding; and follow-up work at the clinic and in the home is not confronted with suspicions or doubts. The patient feels that she has a genuine friend and helper in the visitor; and both of them know that they have in the physician a common, just and sympathetic counsellor. Straightway effective work is set going.

The visitor's work is to obtain accurate information of the manner of living, home and working conditions, and of the environment of the patient. Not infrequently facts which are of importance, which bear closely on the illness, are ignored or overlooked. She imparts to those whom she seeks to help knowledge which they can use; aids them to appreciate its practical and economic value; and shows them how to make the best application of it.

A medical social service worker should possess the qualifications of a social worker and a nurse. It is not necessary that she be a trained nurse, but she should have some knowledge of practical home-care in sickness. The ideal visitor is one who has had a social worker's and a nurse's training, with a not too great inequality on either side. First of all, she should have those womanly qualities which always make her a welcome, trusted and helpful visitor in the home. She needs close and sympathetic acquaintance with all kinds of people, and the broadest sympathies; these come from practical working experience as a social worker. She must know how to make wise application of first-hand, practical knowledge of economic and social conditions; mere impulsive sympathy generously spent is not social service. She should have the capacity to understand human nature; a frank sympathy combined with good judgment is an essential part of her equipment. With patience, tact and a habit of making haste slowly, the wise visitor helps the physician secure the willing co-operation of the woman, child or man who seeks relief. Good physical health is required of the medical social service worker, for the work is not easy. Many discouragements are sure to be met — discouragements which can be met successfully only with abundant health, generous optimism, and an abysmal sense of humor. Many of the problems which fall to the hospital visitor are difficult. Success comes only through organized effort; and the visitor must have the capacity and willingness to do good team work.

In every form of physical or mental incapacity the tactful visitor can accomplish much good. She is indispensable in helping the physician secure for those who are afflicted with chronic sickness positive and useful relief and larger comforts. She can bring to the family and to the patient many kinds of substantial assistance in adjusting themselves to conditions so that the burden of the sickness may be carried more comfortably. Knowing the organizations and institutions for providing relief and assistance to those in need, and being in close working relations with them through their executive heads, the medical social service worker secures promptly the assistance needed; and its proper use is safeguarded.

The medical social service worker is the one person who should best be able to give the right assistance to the unmarried woman who is pregnant. Work with these young women makes large demands on patience, tact and good sense. There is no form of practical philanthropy which calls for more painstaking and sympathetic consideration than the much-needed aid offered these girls. They should receive in the right way more real help than is generally given them. The price in suffering exacted from them in a natural way demands that the world's rough hand should not fall too heavily on them; the misfortune is not their fault always. During this stressful period lofty moral talk which humiliates and emphasizes a human weakness does not help. The young woman should be encouraged to meet as cheerfully as she can and in a practical self-respecting way her immediate serious condition. This the medical visitor does by dissuading the girl from

deliberately wrecking her health for all time; by offering congenial refuge and work until the time comes for going to a hospital; by helping the mother find for herself and her child a right kind of home; and by trying to bring her to the right point of view towards sex relations. The medical social service worker is a real friend to these young women — a friend whom they never forget.

Hospitals and dispensaries, realizing the necessity of following-up those who come to them for relief, are beginning to establish social service departments as essential and organized part of their equipment. No medical institution does its full work towards relief of sickness and physical incapacity when its interest in the patient ends at the hospital door. All-round help and effective relief demands at least some first-hand knowledge of the conditions which obtain for the patient in the home, and the demands and environment of the working hours. The one department of a hospital or dispensary which does the most to help the physician complete his work is the medical social service department. Its usefulness and its need are fundamental. Without such a department the efforts of an institution are crippled and imperfectly effective. This department should be a structural part of the institution, directed and managed by the governing board; and organized and equipped to give ready co-operation with all the departments of the hospital and dispensary; and to exchange co-operative effort with the executives of other institutions working to promote physical and social efficiency. The two years' experience with its medical social service department at the Boston Dispen leaves nosary doubt as to its meeting a long-felt need, and as to its practical usefulness. More thorough work is now being done at the Boston Dispensary than ever before, and the results both for the institution and those who seek its help are made more permanent.

THE METEOROLOGIC AND HYGIENIC ASPECTS OF THE FLOODS IN FRANCE IN 1910.*

BY GUY HINSDALE, M.D., HOT SPRINGS, VA.

Fellow of the Royal Society of Medicine, Secretary of the American Climatological Association.

The flood of the river Seine in January, 1910, was so extraordinary and produced such widespread distress and world-wide sympathy for the sufferers that a record of this event should be made in the Climatological Society's transactions. The writer was in Paris throughout the flood and watched the river rise for ten days before it reached its maximum. During this period there were some rainy days, and the rainfall had been considerably above the average. In 1909 the rainfall recorded at Parc Saint Maur Observatory was 26.5 in. and there was a great deal too much proportionately in the last three months of the year. The average annual rainfall for Paris is 22.50 in., or 574 mm. The average for January is 40 mm., or 1 in. For January, 1910, the rainfall amounted to 74 mm., or nearly 2 in.

The rainfall for Paris is thus about five eighths that of New York or Philadelphia. We may note, in passing that the snowfall in France was very light during January and was scarcely sufficient to insure good winter sports in the French Alps. The temperature in France was unusually mild during the past winter and well above the freezing point through January. The grass, as usual, remained green in Paris and its environs. Conditions were, then, favorable to thawing and not to freezing even in the higher portion of the Seine.

Paris is about 110 miles from the mouth of the river, which is navigable to the sea. The watershed of the Seine reaches a height of not over 700 to 800 meters (2,500 ft.) and covers about 80,000 sq. km. Some of this watershed is permeable, but about a fourth of it is only partly permeable, and hence lends itself rather easily to quick and torrential drainage. In the permeable area the water is first completely absorbed by the soil and then oozes out to collect at low-lying points and from water courses, the floods of which rise gradually and, though not very high, are of long duration.

The Seine watershed is classified under both characters, and it is shown that in times of continued rain, such as occurred in January, the torrential tributaries are the first to fill and their floods reach the main stream before those of the slower tributaries. But as the rain continues, the latter swell gradually and continuously, while meantime the torrential streams rise several times their natural size, until their floods add themselves to the waters of the slow streams now swollen to the greatest extent. Thus the geographic conditions of the Seine basin in continued rainy weather permit the coincidence of the successive floods of a certain number of tributaries, and sometimes, as has been the case this year, of most of them.

These coincidences, which depend on the simultaneous occurrence of prolonged rains throughout the basin, are evidently somewhat uncommon. Such floods as we saw in 1910 we shall probably in the nature of things never see again; at least such a flood has not been witnessed since 1658.

We have, then, a rainfall slightly in excess of the normal; a mild winter and imperfect drainage of the Seine, and the result is a stupendous flood. We confess that, on superficial view, the apparent causes seem greatly out of proportion to the tremendous results, and we cannot see why such floods may not easily be repeated.

The Seine at Paris is formed by the union of the Yonne, the Marne and the Upper Seine. The latter is a slow river; the Yonne is decidedly torrential; the Marne drains a basin which is partly permeable and partly impermeable. But in times of freshet the whole area is well saturated and the distinction between permeable and impermeable areas is very indefinite.

It has been calculated that a flood in the

* From a paper read at the twenty-seventh annual meeting of the American Climatological Association, May 4, 1910.

torrential streams reaches Paris in three or four days from the more distant parts of the basin,[1] while the corresponding flood of the lower streams is at least three or four days later.

These meteorological and geographical features must be reckoned with if Paris is to be spared another disaster.

M. Camille Flammarion, the French astronomer, has recalled what the late emperor of the French, Napoleon III, wrote in his essay on the extinction of pauperism: "The sun absorbs vapors to distribute them as rain over places which need water. When this restitution takes place regularly, fertility is the result; but if the sky in its wrath sheds partially in storms and tempest the vapors which it has absorbed, the germs of production are destroyed and sterility is the result. The distribution makes all the difference. If it is equitable and regular, it creates abundance. If it is prodigal and partial, it brings on a dearth." In fact, it is the irregular distribution of rain that brings on disaster.

Under Napoleon III, M. Belgrand, the engineer of the water and sewers department of Paris, established a hydrometric service which enables one to foretell the state of the river twenty-four to forty-eight hours in advance.

How much deforestration has influenced the recent flood is not clear. As far as I have been able to learn, the watershed of the Seine has not undergone marked alterations by deforestration in recent years. The Seine basin is shallow and there is no permanent snow; the steeper slopes are occupied by vines and pastures. There are some large areas of soil of calcareous oölite which are well suited for the growth of pine-trees. As a preventive measure afforestration affords some hope. On Jan. 31 a resolution was adopted by the Council General of the Marne Department urging the government to prevent further deforestration by imposing prohibitive taxes upon timber cutting in the nature of deforestration, and by freeing plantations of young trees from existing taxes. Replantation has been successfully accomplished in the desolate tracts of Champagne-Ponilleuse, where large groves of pine are in vigorous growth.

It will be a very interesting thing to watch the effect of this flood on the occurrence of disease. It must be understood that the waters encroached on some two thousand acres in Paris, along seven miles of the course of the Seine, and many hundreds of square miles above and below the city. Aside from the encroachment of the river, extensive areas filled with water from the sewers. There are hundreds of miles of sewers and two partly underground rivers, the Bievre and Grande Botel Betliere in Paris.[2] When the river Seine rises to an unusual level there is a back pressure into these sewers and a difficult or sluggish exit of contents; add to this the drainage from streets and houses, and it is not surprising that breaks occur, the contents flooding thousands of cellars, emerging in the streets and at their subsidence leaving a nasty, foul-smelling deposit, implanting in thousands of homes the danger of disease.

What diseases may we expect? Time only will determine. The French have instituted very active and extensive methods of disinfection and will certainly handle this matter on the best scientific lines.

We naturally first think of epidemic diseases like typhoid fever. We remember the great amount of typhoid that followed the flood at Johnstown, Pa., in May, 1889. It is a matter of record, also, that in Rome, in 589, a great pestilence followed the inundation of the Tiber.[3] Instances no doubt could be multiplied.

Bacteriologists state that the vitality of the typhoid bacillus is comparatively small in the presence of the innumerable organisms always present in sewage and sewers. This would seem to minimize the danger from sewage deposits as far as typhoid fever is concerned. It would not, however, be safe to rely on such assurances. The vigorous sanitary measures adopted by the French include wholesale disinfection of all inundated premises by state authorities as well as by private organizations. The Société de Secours aux Blessés Militaires, with its thirty-six branches and one hundred and fifty nurses, are doing everything possible to assist the stricken inhabitants to set their houses in order and begin life again under hygienic conditions.

Paris toward the end of winter is damp at the best, and the access of so much water into cellars will probably increase the amount of illness from influenza, tonsillitis, rheumatism, pneumonia, pleurisy, bronchitis and possibly other diseases. It would be expected that some diseases like neuralgia, gout and diarrhea or dysentery may originate or be aggravated by the cold and wet surroundings in which many thousand Parisians must live and work for months to come.

Since the above was written I have reports from Paris on good authority that no unusual sickness has occurred and that this is attributed to the very energetic methods adopted by the French authorities in meeting the conditions; the underground railway has been fully restored to use, although it was filled with water, and Paris seems to be enjoying its usual state of health.

[1] For a review of this subject, see the *Times*, London, Feb. 2, 1910.

[2] The sewers of Paris converge into large collecting sewers which discharge into the Seine at Clichy, below Paris.

[3] On the Castle St. Angelo, at Rome, is a large figure of an angel sheathing a sword in commemoration of the staying of the pestilence. The latter was very fatal, but its exact nature is not known.

Reports of Societies.

CONNECTICUT STATE MEDICAL SOCIETY.

ONE HUNDRED AND EIGHTEENTH ANNUAL MEETING. NEW HAVEN, MAY 25–26, 1910.

(Concluded from No. 6, p. 262.)

DISCUSSION.

DR. PHILIP D. BUNCE, Hartford: In general surgery, if the patient dies, he dies in an orthodox manner; and that is the end of him. If he has a fracture, however, and he has any final disability or deformity, the surgeon is judged to be the cause; and a monument

of his skill exists as long as the patient lives. In general, accurate replacement of bones gives the best results, regardless of particular kinds of splints. Severe laceration of the soft parts often makes the application of splints and supports very difficult. Sutures of soft parts should practically never be used in compound fractures. In my opinion, any method of fixation in which nails or drills are allowed to remain projecting through the skin is bad. I believe that x-ray pictures should usually not be shown to the patient.

Dr. William H. Carmalt, New Haven: I am rather surprised at the pessimism of Dr. Hawley compared with the optimism that I feel with regard to our success in the treatment of fractures. The principles of the care of fractures have not changed; we have simply got to restore the parts as nearly as we can. In these days of antiseptic surgery, there is no reason to hesitate to attack a bone that is not in good position and that you think will have a bad functional result. It is not worth while to cut down on every bone that the x-ray shows is not in perfect apposition; if, from experience, you feel that the limb is going to be useful, let well enough alone.

Dr. Samuel M. Garlick, Bridgeport: It is all very well to take the public into our confidence, provided that everything is all right, but sometimes you discover that some things are not so right as you would like to have them. Professional confidence is wise and safe, but public confidence must be very carefully scrutinized.

Dr. Hawley: We certainly see that there are a large number of deformities following fractures, and it has been impressed upon me that a large proportion of them are unnecessary. In some fractures, too much treatment is done. I think that in a good many cases, little or no treatment other than protection is necessary.

SOME PRINCIPLES OF INTRACRANIAL SURGERY.

Dr. William H. Verdi, New Haven: The greatest difficulty encountered is not in the surgical technic, but in the cerebral localization. One should not wait too long after making a diagnosis of increased pressure before decompressive measures are instituted; otherwise there is danger of a loss of vision. I do not consider operations upon the brain and cord any more dangerous than operations elsewhere. The most troublesome thing encountered is hemorrhage; and infection is the second chief factor in the mortality of these operations. In my whole series of cases, however, I was obliged to stop only once on account of hemorrhage; and the only case of infection was that of a child operated on for a tumor of the cerebellum that at the time of operation proved to be a tuberculoma. This operation was performed in a private house, and the patient afterward became infected. There is nothing to be gained by the introduction of needles into the various parts of the brain in the exploration of tumors, as they usually have a consistency not very different from the brain itself. An operation for decompression is indicated in all cases that cannot be localized. I have seen the administration of iodides and mercury to patients with symptoms of intracranial pressure kept up until the patient's vision was destroyed. The use of chloroform or ether as the anesthetic is a mere matter of individual choice. While the results of operations for tumor of the brain are not so satsifactory as they should be, I consider the operation itself comparatively devoid of danger.

DISCUSSION.

Dr. Leonard W. Bacon, New Haven: What little I have to offer in the way of remarks is based upon a case of brain tumor in which the author of the paper was kind enough to assist me. The interesting part of the condition was the after-progress of the case. A hole was left in the brain substance as large as a turkey-egg. When we came to withdraw the last piece of gauze, and there was nothing left in the cavity to act as a cushion, we had a repetition of the pressure symptoms. For an interval of three or four days the progress of the case was somewhat in doubt. After that, the woman went along very nicely to recovery, and she is well to-day. So far as I know, this was the first case of brain tumor removed in this city with the survival of the patient. Another case was one of the largest brain abscesses that I have ever seen. There was almost complete blindness when the operation was done, and there was entire recovery except for the sight. If the operation had been done a week earlier, I think that the girl would not have been blind to-day. This emphasizes the fact brought out by the author, that when cerebral compression exists, interference must not be too long delayed.

Dr. Max Mailhouse, New Haven: I suggested to Dr. Verdi that in a case of cerebellar tumor in which there was marked bulging of the cerebellum from the great intracranial pressure, a slight incision be made between some of the laminæ, thus possibly permitting the pressure to extrude the growth. This actually took place, and the patient was saved the loss of any material amount of brain substance. This same procedure might equally well be pursued in other areas of the brain. Opinions as to the presence of neoplasms based solely upon the appearance of choked disk and pain are sometimes erroneous, as specific disease at the base may give this picture; yet when in doubt, and the optic disks are in such a condition as to threaten vision, the safest procedure for the patient is at least a decompression. In cases of fracture without extreme evidence of local injury, when the symptoms indicate increasing hemorrhage, the unilateral dilatation of the pupil is often an aid in localization. Of greater value, however, is the occurrence of unilateral convulsions on the contralateral side. That convulsive phenomena indicate cortical irritation was evidenced by the case reported by Dr. Verdi, in which, also, immediate incision of the dura at the time of the operation, in order to relieve pressure, was indicated. In the prognosis of the results after operation, one should be guarded.

Dr. William H. Carmalt, New Haven: The last sentence of Dr. Mailhouse's remarks, which was all that I heard, leads me to speak of a case of operative infiltrating glioma of the cerebellum in a patient previously operated upon unsuccessfully for decompression, the boundaries of the tumor not being made out. There has been no recurrence of the tumor since, and I think that these cases are worth putting on record.

THE TREATMENT OF TUBERCULOUS PATIENTS OUTSIDE THE SANATORIUM.

Dr. Dudley B. Deming, Waterbury: Tuberculosis is a disease that needs careful medical attention and nursing. The attempt to treat outside of sanatoria patients in the social station in which the disease abounds is a poor substitute for sanatorium treatment. The disease, however, will not be eradicated by the establishment of sanatoria that admit only incipient cases, while rejecting the advanced cases and discharging cases that they fail to improve. The latter will become advanced cases, and thus spread the disease among others. Tuberculosis may be prevented, but not without the expenditure of vast sums of money to care for advanced and chronic cases in sanatoria,

and to aid the different families thus deprived of their wage-earners. The giving of employment to uncured patients discharged from sanatoria is not unattended with danger to the community. The first and most important factor in the treatment of tuberculosis is to prevent its communication to others, and the second is to benefit the patient. Both these factors are, with the vast majority of patients, more advantageously carried out in a sanatorium than at home.

DISCUSSION.

Dr. David R. Lyman, Wallingford: There is no case of tuberculosis that does not have to be treated outside the sanatorium. Practically all that the sanatorium does is to arrest the disease. Every tuberculosis patient needs treatment for years after he gets home. The most dangerous point in the case is when the patient has got where he looks and feels perfectly well. He then has an anatomical tuberculosis, but not a clinical one; but he must be watched for several years in order to make certain that the anatomical disease does not become clinical. We often see cases of tuberculosis carried on to arrest by the general practitioner as thoroughly as in any sanatorium, but this is not enough. He should be instructed to come back for examination at regular intervals, whether he is feeling badly or not. I do not believe that a good, light, indoor occupation is as bad for such persons as it is considered to be. If you can regulate the patient's life during the fourteen hours when he is not at work, you can very often get him well. If he has a sleeping-porch, you are sure that he is out of doors a good part of this time. I do not believe in forced feeding or in over-feeding. Most of the stomach symptoms are due to this.

Dr. Henry F. Stoll, Hartford: There are a good many people who can work, and get well from tuberculosis; and a good many people who can play, and get well; but very few who can both work and play, and get well. If the patients will go to bed at half-past seven, a good many will get well and stay well under home treatment. With private patients, you can get extremely good results with tuberculin. It relieves the toxic symptoms, and that is a great help. Patients that take tuberculin relapse less frequently and live longer than those that do not take tuberculin; but great harm can be done, if it is not used properly.

Dr. I. E. Brainard, Wallingford: The handkerchief that is held before the patient's mouth when he coughs should be well taken care of afterward, and not stuffed into his pocket with damp sputum on it.

Dr. Erastus P. Swasey, Hartford: Outdoor treatment is not possible in our part of the country in certain seasons. In March we had high winds, and the atmosphere was filled with dust. A great many persons, unless especially instructed, would keep the patients outside in such weather, thinking it was beneficial for them.

Dr. Deming: The matter of climate and location must be taken into consideration; but one of the greatest advantages of keeping the patient out of doors, even when it injures him, is the decreased risk of exposure to the other members of the family. A piece of gauze, sufficiently thick not to wet through, is better than a handkerchief, as it can be burned.

SOME FEATURES OF RECTAL ALIMENTATION.

Dr. Louis M. Gompertz, New Haven: There is a wide difference of opinion among investigators as to the absorptive power of the rectum. In some experiments that I conducted in order to determine this point, I found salt to be absorbed almost as completely as when given by the mouth. Dextrose was either completely absorbed or was made to disappear through fermentation. As all authorities agree that there is practically no absorption of fat from the rectum, no experiments in this direction were made. If nutrient enemata do not reach the small intestine, proteins not predigested, when injected into the rectum, simply putrefy in the large intestine and pass out with the feces. Of the carbohydrates, dextrose was selected because the bulk of carbohydrate food reaches the blood as dextrose. If absorbed in sufficient quantity, it would take the place of protein. From these experiments, it was evident that only a little over one third the necessary amount of calories to sustain the body at rest was daily furnished by the dextrose solutions. Although the experiments were limited to the use of water, sodium chloride and dextrose solutions, we must conclude that the rectum is capable of absorbing these in the form of rectal enemata; furthermore, that such substances, when absorbed, are helpful in nourishing the body and in supplying fluids and salts to the tissues. Therefore, I consider rectal enemata as useful in sustaining the body in emergency circumstances, preventing complete starvation for a short period.

DISCUSSION.

Dr. Lafayette B. Mendel, New Haven: The earlier favorable impressions of rectal feeding have largely been replaced by a skeptical attitude on the part of clinicians, and properly so. Our knowledge of the physiology of the alimentary tract has been greatly extended. It ought, therefore, to be possible to introduce anew such features of rectal alimentation as are promising in principle and susceptible of clinical application. Observations like these emphasize the helpfulness that comes from being able to measure in some way the results that any therapeutic procedure can accomplish.

Dr. Charles J. Foote, New Haven: A nutrient enema is a makeshift, designed to meet an emergency, and cannot be continued for any length of time. It is not intended to furnish proteid or build up the body, but merely to furnish heat and energy and to prevent retrogression. This can be done by using dextrose in the enema. Dextrose is absorbed rapidly and furnishes energy; proteid is absorbed less rapidly and does not furnish energy so quickly. I cannot, therefore, see the advantage of using it, even when predigested. Alcohol fills very much the same place as dextrose. As for the absorption of salt, we should be on our guard in certain cases. I have seen instances in which saline was taken readily in cases of uremia, and large quantities were given; but, at the same time, there was a small excretion of urine, so that a great deal was retained in the system. The patient, in such circumstances, becomes waterlogged and develops edema of the lungs.

Dr. Frank P. Underhill, New Haven: Most of the physicians with whom I have talked seem to think that because we cannot supply the entire 1800 calories, there is no use in employing rectal feeding. I think, however, that it is much better to give half a loaf than to give none. Under the conditions that I have worked with, the carbohydrate rectal feeding has been very successful.

Dr. Walter L. Barber, Waterbury: On one occasion, my wife could retain nothing on her stomach but water. For over a week I kept her up on rectal alimentation, using milk, beef-juice, whiskey and quinine. I do not know whether the rectum received these or the lower intestines, but she recovered.

Dr. J. F. Caley, Middletown: I believe that in cases of the vomiting of pregnancy of the severe type,

there is, more than is usually apparent in any other disease, a reversed peristalsis which may carry rectal alimentation more readily to the stomach than in any other case, for I am sure that in one case that I had, a very small portion of milk was carried up into the stomach.

Dr. Elias Pratt, Torrington: I should like to ask Dr. Gompertz to state whether he has made any experiment with predigested protein in connection with the dextrose.

Dr. Gustavus Eliot, New Haven: You have all had experience with the difficulty in getting these enemata retained in some cases. It seems a very useful preparation to have the milk partly peptonized by the addition of bicarbonate of soda and extract of pancreas. I have used this, at times, with beneficial results.

Dr. Gompertz: I have given predigested protein in days gone by, but have had no analysis of the feces made in these cases, so I do not know whether these enemata were absorbed or not. Patients can live for weeks with only water by rectum, but they are in the beginning stage of starvation, as they live on the tissues themselves. As no accurate measurements were made in the case that Dr. Barber spoke of, I think it very doubtful whether any nutrition was furnished by the milk. With the dextrose solutions, we were able to supply nutrients.

CHRONIC FAMILY JAUNDICE.

Dr. Wilder Tileston, New Haven: The disease is characterized by chronic icterus, of moderate intensity, with enlargement of the spleen and anemia. It is usually hereditary; less often familial or acquired. Males and females are affected with equal frequency. The jaundice is of the non-obstructive type, with well-colored stools and absence of bile in the urine. There is usually a marked urobilinuria. The blood shows the presence of bilirubin and a considerable degree of anemia of the secondary type. The spleen is markedly enlarged; the liver, only slightly so. The patients suffer frequently with "bilious attacks," gallstone colic and nose-bleed, but are otherwise fairly healthy and often live to a good old age. The red corpuscles are abnormally fragile and readily destroyed; hence, the anemia and an increased formation of bile pigment from the hemoglobin thus set free. This leads to the icterus, which is pleiochromatic in origin. The prognosis is good for life; absolutely bad for recovery. Treatment should be confined to general hygiene. Iron may be tried for the anemia. The presence of colic is an indication for the operative removal of the gallstones. I have reports of 13 cases, occurring in four families.

DISCUSSION.

Dr. George Blumer, New Haven: When the patients are first seen at night, they ought to be seen again in the daytime in order to make out the jaundice. I should like to ask Dr. Tileston whether he has seen any suggestion of a relation between this disease and paroxysmal hemoglobinuria, another disease in which there is excessive fragility of the red blood corpuscles.

So far as I know, although other varieties of hemolytic jaundice have been described, there is no statement to the effect that there is an absence of bile in the urine in these other forms. Another point that might cause confusion is the so-called Gaucher's disease, in which there is family enlargement of the spleen, but not usually associated with jaundice. It is interesting to consider whether, if there were actual obstruction from gallstones, as well as the other type of jaundice, the urine would contain bile. One other point that should be emphasized is not to remove the spleen in such cases.

Dr. Tileston: There was one case in which there was a condition of paroxysmal hemoglobinuria associated with the family jaundice, but there is not a very close relationship between the two diseases. Regarding the absence of bile in the urine in other types of hemolytic jaundice, there was usually no bile, but only urobilin, although in some cases there was a small amount of bile. Eleven of the twelve reported instances of Gaucher's disease were in females, so it would be unlikely to have been Gaucher's disease in our cases. When the patients get obstruction with gallstones, they also get bile in the urine, with increase of jaundice.

PERIODIC ATTACKS OF INDIGESTION IN CHILDREN.

Dr. Walter G. Murphy, East Hartford: Diacetic acid is one of the highest chemical compounds associated with acetone, and is the result of intestinal decomposition of food. Various theories have been suggested associating diacetic acid with cyclic vomiting and recurrent attacks of indigestion. The exciting causes of the attacks of vomiting are fright, excitement, fatigue, anger, exposure to cold and similar influences acting through the nervous system. Many argue, also, that the attacks are not due to errors in diet. Acetone may be present in other conditions, and the neurotic and rheumatic aspects must be recognized as contributing causes. The condition is, I believe, a neurosis, toxic in character, based upon a defective nervous control, the result of an inherited, unstable and irritated nervous system. If this idea is correct, treatment should be directed to the cause and not to the result. Most of the children are neurotic and anemic. On account of their digestive troubles, they are often underfed. A full and generous diet should be given them, and general care of the hygienic conditions. On the appearance of symptoms of an attack, stop food and thoroughly clean out the digestive tract with castor oil, and give repeated doses of sodium bicarbonate.

DISCUSSION.

Dr. Frank P. Underhill, New Haven: There is little doubt that the symptoms described by Dr. Murphy are dependent on defective nervous control. It is well known that a child is much more easily put into a condition of defective nervous regulation than is an adult. Excessive putrefaction in the intestine may serve as a stimulus in these neurotic and undernourished subjects. I do not think that the presence of diacetic acid in the urine in these cases should be over-emphasized. Acetone bodies probably arise within the body as the result of the incomplete combustion of fats. I believe that diacetic acid is neither the cause nor the direct result of the pathological condition under discussion; indeed, I should ascribe the presence of this substance in the urine to the condition that accompanies the abnormal manifestation, viz., the under-nutrition, in which it may be easily demonstrated that diacetic acid is always present. Young children are thrown into a condition of acidosis with extreme ease, and a moderate degree of acidosis, especially in children, should not be regarded as a grave symptom.

Dr. Charles A. Goodrich, Hartford: We should also bear in mind certain intestinal disorders in children in which there is, besides cyclic vomiting and convulsions, a certain nervous phenomenon resembling the beginning of diabetic coma in adults. These cases should be included in considering this matter. Inas-

much as in a good many cases the diet apparently does not influence the attacks, these children become increasingly malnutrient. The suggestion of such a simple clinical test as a considerable aid in certain of these intestinal disturbances, and also the point of considering the patients' well-being between these attacks, are of great value.

THE RELATIVE VALUE OF SYMPTOMS, PHYSICAL SIGNS, TUBERCULIN AND THE X-RAY IN THE DIAGNOSIS OF TUBERCULOSIS.

DR. HENRY F. STOLL, Hartford: In tuberculin, we have a diagnostic aid of accepted value if used in conjunction with the symptoms and physical signs. The x-ray is of a great deal of assistance in the diagnosis of pulmonary conditions. The negative must not only be perfect, but the interpretation thereof is of value only when made by one who has had a large experience in this particular field, as it is the most difficult of all x-ray work. Incipient cases that have been carefully examined come to post-mortem but rarely, and much more can be learned by a comparison of the physical signs and the x-ray findings in a series of early cases than by the autopsies of advanced cases. There is no better way to ascertain one's diagnostic ability or limitations than to compare the physical signs in one's cases with the x-ray plate. In deep-seated lesions, especially of the lower two thirds of the lung, the x-ray will sometimes demonstrate a lesion that does not give physical signs. When the involvement is slight, it may be necessary to make several plates before a diagnosis can be given. If we are to detect incipient tuberculosis, we must inspect, palpate, percuss and auscultate our patients. We must also question them at length. An incomplete examination gives the patient an unwarranted sense of security.

DISCUSSION.

DR. WILLIAM B. BARTLETT, Hartford: There is a great difference between clinical tuberculosis and anatomical tuberculosis. The relative value of symptoms, physical signs, tuberculin and the x-ray is very different in the two forms of the disease. It is, however, with the diagnosis of clinical tuberculosis that we are concerned. Physical signs, tuberculin and the x-ray, if without symptoms, may all three be disregarded; with symptoms, the diagnosis of tuberculosis may be made, even though signs, the x-ray and the tuberculin test are negative. When obtainable, the history of exposure to infection from some tuberculous relative or friend is important. It is, however, surprising how seldom such a history can be obtained. The importance of malaria in the past history should be emphasized. Among symptoms, pain is very important. I should like to add to Dr. Stoll's statement that râles at the apex may be due to other causes the statement that râles at the base most frequently are due to other causes. A positive tuberculin reaction does not mean clinical tuberculosis. Notwithstanding the many new and simple tests with tuberculin that have been introduced, we are gradually coming back to a dependence upon the subcutaneous method as the most reliable, and even this may occasionally be at fault.

DR. DAVID R. LYMAN, Wallingford: Dr. Stoll's comparison of the relative value of these four means of diagnosis shows that not one of them is of such supreme value that we can afford to leave everything else out of consideration. About the only thing that he did not mention was the constant occurrence of little localized dry pleurisies in the chest in these cases. Tuberculin is one of the most powerful poisons that we have. I have never seen ill-effects from its subcutaneous use in small doses. I do not, however, think it necessary to employ it, if you have made your diagnosis without it and the patient is willing to accept your opinion and act upon it. I have never felt like using the eye test when I could use the subcutaneous test, which is free from danger. I do not think that there is any question but that an expert can discover with the x-ray deep-seated lesions that an ordinary person would miss.

DR. F. S. CROSSFIELD, Hartford: On behalf of the laryngologist, I would say that in the early stages of pulmonary tuberculosis there are no absolutely pathognomonic symptoms in the larynx.

DR. J. B. GRIGGS, Hartford: While the positive tuberculin test is not valuable, the negative test is. The negative test is particularly valuable in adults, while the positive test is of value in children.

DR. STOLL: As I said in my paper, if the tuberculin test is negative, the possibility of the presence of tuberculosis is very slight, but it does not exclude the disease. Long before the stethoscope was invented, and purely and solely by means of the symptoms, physicians diagnosed tuberculosis. After a careful history has been obtained, it is unusual to have the physical signs not agree with the diagnosis made from the history and the symptoms.

The President's annual address was delivered by DR. SAMUEL D. GILBERT, of New Haven.

The following officers were elected to serve for the ensuing year: President, Dr. Frank K. Hallock, of Cromwell; Vice-Presidents, Dr. Edmund P. Douglass, Groton, and Dr. E. T. Bradstreet, Meriden; Secretary, Dr. Walter R. Steiner, Hartford; Treasurer, Dr. Joseph H. Townsend, New Haven.

The Society will meet next year at Hartford, on the fourth Wednesday and Thursday in May.

Book Reviews.

The Health of the City. By HOLLIS GODFREY. Boston and New York: Houghton, Mifflin Company. 1910.

This volume is a collection and expansion of a series of eight essays on familiar topics of public hygiene published during the past four years in *The Atlantic Monthly*, to which are added two chapters on city housing abroad and in America, presenting the result of personal investigation by the author in Europe and in the Unites States. The subjects of air, milk-supply, food, water, sewage, ice, plumbing and noise are successively considered in non-technical, emphatic form such as should carry the important points of these problems home to the intelligent lay citizen interested in the hygienic welfare of his family and of the community. Mr. Godfrey's position as head of the department of science of the Mechanics Arts High School in Boston has given him first-hand opportunity of studying and teaching the application of the sciences to the concrete necessities of domestic and municipal life; and his professional training as a chemist affords him the technical knowledge essential to

reliable popular scientific writing. The book closes with a useful selected bibliography on the subjects under consideration.

A Synopsis of Surgery. By Ernest W. Hey Groves, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng., Assistant Surgeon to the British General Hospital; Surgeon to the Cossham Hospital; Senior Demonstrator of Anatomy at the Bristol University. Second edition, revised and illustrated. New York: William Wood & Co. 1910.

It is too bad, in these days of Carnegie reports on medical education, that synopses of surgery, or of any other great scientific subject, should still find favor with serious teachers and students.

Clinical Obstetrics. By Robert Jardine, M.D. Edin., Professor of Midwifery in St. Mungo's College, Glasgow. With 108 illustrations, 4 colored plates. Third edition. New York: William Wood & Co. 1910.

This book has reached its third edition in England and now is published here in America. The author has departed much from the usual form of obstetrical textbooks, and in the reviewer's opinion it is of no marked advantage. The clinical histories many times lack the exactness which is so necessary for the complete understanding of these cases. There are many statements with which the obstetricians of this country will not agree. The author's reasons for them are not convincing. His advice to scrub the hands and forearms carefully and then soak them in an antiseptic for several minutes simply for the external examination of the patient (palpation and auscultation), followed a few pages later by the remark that the use of rubber gloves is not necessary and that he prefers bare hands, is a fair example of the statements he makes. Another is one on page 537, where he says sewer gas caused a temperature of 103° though the treatment was intra-uterine douches, the patient later developing a phlebitis. Three years later the same patient, he says, was again confined in the same house, and as there was no escape of sewer gas she made a normal convalescence! His last chapter, on infant feeding, is most crude and superficial and either should be eliminated entirely or rewritten in a future edition. The reviewer cannot see that this book will fill any gap in the American obstetrical textbooks of to-day. From the bookmaker's point of view it is an excellent production.

The Pathology of the Living and Other Essays. By B. G. A. Moynihan, M.S. Lond., F.R.C.S. Leeds. Philadelphia and London: W. B. Saunders Company. 1910.

Moynihan has collected into a convenient little book of some 260 pages a series of nine admirable occasional addresses. Much of what he says here he has said before in other writings, but these collected essays are pleasant, suggestive and effectively combined. They are well worth reading.

Living Anatomy and Pathology. The Diagnosis of Diseases in Early Life by the Roentgen Method. By Thomas Morgan Rotch, M.D. Three hundred and three illustrations. Philadelphia and London: J. B. Lippincott Company. 1910.

This new work by Dr. Rotch is a contribution of great value to the science of pediatrics, as an exposition of the methods of application of the x-ray to the diagnosis of diseases in early life. After an introduction on the general principles of interpretation of x-ray plates, and a description of living normal anatomy as illustrated by them, the author expounds his theory of anatomic age, and then proceeds to a systematic regional consideration of the diseases whose diagnosis may be facilitated or made perfect by means of the Roentgenogram. This study is profusely illustrated by 303 figures, comprising 264 full-page plates, composing a series of Roentgen pictures of unsurpassed excellence, the credit for which belongs to Dr. Arial W. George, by whom they were taken. These plates, with the accompanying legends, complete the purpose of the admirable text and help to make the volume not only illuminating, but of unique merit.

A Practical Treatise on Fractures and Dislocations. By Lewis A. Stimson, B.A., M.D., LL.D. Yalen., Professor of Surgery in Cornell University Medical College, New York; Surgeon to the New York and Hudson St. Hospitals; Consulting Surgeon to Bellevue, St. John's and Christ Hospitals; Corresponding Member of the Société de Chirurgie of Paris. Sixth edition, revised and enlarged. With 361 illustrations and 65 plates in monotint. New York and Philadelphia: Lea & Febiger. 1910.

Stimson's book is a pleasant and discursive book; it should be far more generally owned and read, for it does more than present the subject of treatment only in dreary detail. We wish it were better illustrated. This sixth edition has some additional matter, the results of the author's studies on injuries of the carpus and tarsus and on midcarpal fracture-dislocations. The author has added sections on fractures of the floor of the acetabulum also, and of the internal epicondyle of the femur and on backward dislocation of the lower jaw. Stimson's work continues to be the best work of its kind known to us in English.

Studies on Immunization and Their Application to Diagnoses and Treatment of Bacterial Infections. By Sir A. E. Wright. Octavo. Pp. xv, 489. William Wood & Co. 1910.

This book has already been reviewed in these columns (1910, clxii, 330) as published in London by Archibald Constable & Co. The American edition differs in no respect from the English edition of last year.

Prevention and Treatment of Abortion. By Frederick J. Taussig, M.D., Lecturer in Gynecology, Medical Department, Washington University. Fifty-nine illustrations. Pp. 179. St. Louis: C. B. Mosby & Co. 1910.

Taussig is to be congratulated on having written such an interesting and excellent work. The book consists of three parts with an appendix. The first part is taken up mainly with general considerations and statistics of abortion, pathology, etiology, symptoms, diagnosis and prognosis. The second part deals entirely with the prevention of abortion. The final part deals with the treatment and operative technic. All aspects of abortion are fully and adequately treated. The rules Taussig lays down for the treatment of abortion are conservative, but as he is writing to guide the general practitioner, such treatment is much the wiser course to pursue. His descriptions of the instruments used and the operative technic is excellent. For the general practitioner it will prove a book of immense service and to the specialist there is much that will help him. The book is well illustrated by diagrams and photographs and it should have a wide sale.

An Outline of Individual Study. By G. E. Partridge, Ph.D., formerly Lecturer in Clark University. New York: Sturgis & Walton Co. 1910.

This volume presents an outline of pedagogic methods in the study of individual characteristics in children. After an introduction on the history and theory of individual study, a careful exposition and illustration is given of the simpler, practical procedures for prosecuting such study in the class room. Psychologic tests are for the most part little employed, but reliance is placed on direct observation of physical, mental and moral qualities. As might be expected, the book is weakest in its medical aspects, and betrays the attitude of one who knows something about medicine, but is not at home with it as a science. Nevertheless, it is an interesting and useful manual for such as are concerned with the education of children, in which it is coming to be realized that means must more and more be adapted to specialized needs and that for the best results to himself and the community, the child should have his variations studied and encouraged or repressed, and should be treated and trained not as a unit, but as an individual.

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A COMMUNITY'S WASTE.

The two-years' controversy in the United States Supreme Court between the National Government and the state of New Jersey, over the discharge of Passaic Valley sewage into New York Bay, has been settled by this State's concession of all the important Federal requirements for the protection of navigation, and for the preservation of the purity of the great body of water in question. The agreement reached provides for the most extensive plans of sewage treatment that have as yet been projected in the United States. After passing through coarse screens, grit and sedimentation basins, etc., the sewage will be pumped under pressure through a tunnel to a point in the Bay, for disposal through a series of outlets.

This judicial proceeding will surely have far reaching consequences for the future of American national sanitation; it should serve for a precedent establishing that hereafter, as a principle of law, no commonwealth nor any community can (unless it first be rendered innocuous) burden an adjacent community with sewage. And it is most gratifying to note, in these premises, that applications made by cities in New York State to the State Department of Health for the necessary approval of sewage plans, are repeatedly being denied, pending measures to be taken by these municipalities for making their sewage harmless beyond their borders. In that state, under the able Commissionership of Dr. Eugene H. Porter, the Department's consistent movement during several years past to protect national water courses from undue pollution, is rapidly gaining from its citizens the active support and co-operation it so eminently deserves.

The *Journal of the American Medical Association* very pertinently observes that the disposal of a city's waste has a most important bearing on disease; any city's waste products should, in behalf of its own citizens, be made innocuous. An American city of half a million population has some 300,000 tons of refuse of all kinds (garbage, swill, ashes and miscellaneous rubbish) that is, about three tons per annum for a family of five. Boards of Health are indeed justified in formulating the strictest regulations concerning the handling of such material — fermenting, decomposing, malodorous masses, food for rats and other disease-breeding vermin, breeding places for flies and other infection-spreading insects.

Since the treatment and collection of garbage in the household are even more important for sanitation than its ultimate disposal, housekeepers must keep their kitchen refuse in tightly covered cans, which should be emptied at least daily and scalded frequently. A garbage-can is thoroughly disinfected by burning it out with old paper.

The municipal collecting-cart should be carefully-covered and water-tight; metallic carts now generally prevail to the exclusion of the old, disgraceful, leaking and reeking wooden vehicle. The employees are now the decently-appearing and self-respecting "white wings" or "brown wings."

Incineration is unsatisfactory, and a nuisance that has been abandoned as intolerable in about half of the 225 American communities in which it has been tried. The chief reason of this failure is the low temperatures at which the garbage has been burned. British and Continental cities have been more successful because they have burned garbage at a high temperature (above 1,250 F.) under forced draft. No neighbors have complained of this system, which fact is peculiarly advantageous in that these "destructors," being unobjectionable, are placed in the municipal interior, thus shortening the haul and diminishing the cost. In the English "destructor" the ashes and garbage are burned together: thus collection is simplified, the ashes absorb the moisture from the swill, a process of desiccation which retards or restrains fermentation; whilst on the other hand the moisture from the swill wets the ashes and prevents them from blowing about. The resultant ash is mostly vitreous clinker, splendid material for filling, paving or concrete.

Again, the caloric value of mixed garbage and ashes is enormous; and the best may be used for civic purposes, such "destructors" are now successfully operated in at least three American communities — New Brighton, Staten Island, N. Y., Seattle, Washington and Milwaukee, Wis. (the largest of its kind); and in two Canadian cities — Montreal and Vancouver, B. C. Cleveland and Columbus, Ohio, use the "reduction" method, which yields a profit from the grease and the tankage — the latter being a valuable fertilizer. About five per cent. of garbage may readily be extracted in the form of grease: the remaining refuse, consisting largely of paper, cardboard, twine, boxes, wood, old shoes, rubbers, rags, tin cans, and bottles, has all a market value; about 90 per cent. of such waste may be reclaimed for commercial purposes.

THE POLIOMYELITIS SITUATION.

We publish in another column a resolution of the American Orthopedic and Pediatric Associations regarding means of investigating and combating the spread of poliomyelitis. It is certainly advisable that the suggestion contained in this action should be widely and conscientiously followed. Evidence is rapidly accumulating, unwelcome as it may be, that poliomyelitis is becoming endemic in certain rather widely separated portions of the country, and also that it is increasingly appearing in epidemic form. Not many years ago the affection was little known by the profession at large, for the reason that it was rarely met and recognized by general practitioners: it should not, however, be supposed that its increase has been proportional to the general interest it has excited. Undoubtedly, many cases formerly ran their course undiagnosticated, just as many now are diagnosticated, which the sequel shows to be a totally different infection. From the most conservative standpoint, however, it cannot be denied that the disease, especially in its epidemic form, has increased within the past few years. Unfortunate as this may be, it has at least served to stimulate investigation, which has already proved fruitful and which is sure to lead to more definite results in the future.

We now know, through the researches of Flexner, Lewis and others, that the disease is due to an infection, and that it is presumably very mildly communicable. Nothing definite is known of its epidemiology, and the treatment as yet remains empirical. In view of these facts a very grave

responsibility naturally rests upon all physicians and particularly upon those, who are the appointed guardians of the public health. It is no doubt wiser to err on the side of safety, than of laxity in the handling of epidemics, such, for example, as has recently visited Springfield in this state. Physicians who are in contact with early cases of the disease should take certain precautions in regard to changes of clothes and disinfection. Certainly a modified quarantine should be enforced, and every possible means taken to trace the source of the disease in its inception and in its possible transmission from person to person. All of these things and others of similar sort should be done, in the hope that some added light may be thrown upon the obscure etiological problem. We, therefore, heartily commend the attitude of the committee to which we have referred, in promulgating a policy of investigation which will leave no stone unturned, in the effort to disclose the secret of this strange malady.

A word of warning, however, may not be out of place against permitting a feeling of panic to develop, which the facts do not in any way justify. Few situations have arisen in late years demanding so high a degree of judgment, on the one hand to provide for the utmost safety of the community, and on the other to prevent an undue anxiety always detrimental to the public health. We must await, with what patience is possible, the decision as to the degree of communicability of the disease. In the meantime there should be comfort in the fact that the evidence heretofore is largely against the theory of direct transmission, except under certain peculiarly favoring, but as yet unknown, conditions.

AMERICAN ASSOCIATION FOR THE STUDY AND PREVENTION OF INFANTILE MORTALITY.

A meeting of this association will be held in Baltimore from Nov. 9 to 11 of this year. The objects of the association are to study the problem of infant mortality in all its relations, to disseminate knowledge concerning the causes and prevention of this mortality and to encourage methods of prevention. Previous investigation has been sufficiently encouraging to render it probable that if a large and representative body of persons can approach the question in a comprehensive spirit a very great reduction in the death rate of infants might be secured. As the prospectus of the forthcoming meeting states, "The blame in the present situation has shifted to society and to social conditions." The solution, therefore, must be undertaken by a broadly conceived movement regarding the matter from varied standpoints. This the association has attempted to do by dividing the subject matter under discussion into various sections. At the coming meeting for example, Dr. W. H. Welch of Baltimore is to preside over the section on municipal, state and federal prevention, Dr. L. Emmet Holt over medical prevention, Dr. Helen C. Putnam over the section on educational prevention and Dr. Hastings H. Hart, Director of the Department of General Helping of the Russell Sage Foundation over the section on philanthropic prevention. An exhibition is also to be held in connection with the meeting in accordance with the well recognized principle that what may be definitely seen is often of more educational value than that which is merely heard. This society should have a large membership and should by degrees enlist the interests of most varied classes in the community. By this means alone, which should be somewhat readily attainable, a campaign of education may be initiated which will go far toward reducing the present appalling and unnecessary infant mortality.

MEDICAL NOTES.

Death of Florence Nightingale. — Florence Nightingale died in London on Aug. 13, at the age of ninety. Extended notice of her life and work will follow in a later issue.

Sleeping Sickness. — It is reported through Bordeaux that sleeping sickness has gained a foothold in certain regions heretofore uninfected in equatorial Africa.

Cholera in Russia. — Cholera has reached alarming proportions in Russia as shown by the fact that the estimated death list for 1910 is about 57,000, as compared with 28,000 in 1909, and still fewer in 1908.

The epidemic has appeared not only in the larger cities, but also in remote districts which adds to the difficulty of its control. Germany has taken precautions against its spread across the frontier.

The Late Dr. F. A. Hesler. — According to correspondence recently made public, it appears

that the memory of the late Dr. Frederic A. Hesler, of the United States Navy, has been honored by the citizens of Guam in recognition of his admirable work in sanitation while stationed in that island.

Dr. Hesler worked particularly for the segregation of lepers and the establishment of a leper colony. He also initiated the building of the first hospital in one of the provinces.

Suicide. — A recent statistical investigation appears to show that suicide is increasing in the United States. The number of persons dying by their own hands in 1909 is estimated as 12,500. In general, there has been a steady increase in the number of cases since 1890.

Figures for certain of the Massachusetts cities in 1909 are as follows: Boston, 124; Springfield, 15; Worcester, 10; Holyoke, 10; Lowell, 18; Lawrence, 9; various smaller cities, 8 or less.

Precautions Against Cholera. — By order of the Public Health Service, American Consuls in the large European ports are detaining for five days prior to sailing, those emigrants who come from the cholera-infested districts of Russia. Even cabin passengers who cannot show that they have not been exposed are detained, and all baggage is being disinfected. The ease with which communicable diseases are passed along among the emigrants is shown by the fact that on the slower steamers, west bound, measles appears on practically every trip on the eighth or ninth day. The steerage passengers so afflicted contract the disease, as the doctor on one of the liners explained, during the railroad journey previous to embarkation.

The Investigation of Epidemic Poliomyelitis. — At the recent meeting of the Congress of American Physicians and Surgeons held in Washington in May, 1910, a joint session of the American Orthopedic and American Pediatric Societies was held and the subject of epidemic poliomyelitis was discussed. The following resolution was adopted:

"It having been shown by recent epidemics and investigations connected with the same that epidemic of infantile spinal paralysis is an infectious communicable disease that has a mortality of from 5 to 20%, and that 75% or more of the patients surviving are permanently crippled, state boards of health and other health authorities are urged to adopt the same or similar measures as are already adopted and enforced in Massachusetts for ascertaining the modes of origin and manner of distribution of the disease with a view of controlling and limiting the spread of so serious an affection."

A committee with Dr. Robert W. Lovett, president, Boston, Mass., Dr. Irving M. Snow, secretary, Buffalo, N. Y., was appointed to urge the various state and municipal health authorities to take up the work of investigation of the various foci of epidemic poliomyelitis, to study its epidemiology and to instruct the public that the disease is at least mildly communicable.

Boston Milk Fund. — During the hot months of summer the capacity of the Boston Hospitals, including the Floating Hospital is not sufficient to provide for the needs of the sick babies of the city. The Milk Fund has cared for 125 babies up to this time, but further support is needed if this work is to continue during the remainder of the summer. By means of this fund many babies may be saved who would otherwise die for lack of proper hospital treatment.

An Appreciation of Medical Investigators. — In the British House of Commons, June 29, Colonel Seeley, under-secretary for the colonies, mentioned appreciatively the heroism of the investigators of sleeping-sickness, especially of Sir David Bruce, who had gone with his wife into the heart of the disease-ridden section where nearly every one was sick and no patient recovered. There were many other investigators, some of whom had succumbed in their efforts to find out the cause and remedy for the plague. Colonel Seeley said that when the history should be written of what had been done by these brave men it would perhaps be considered "as giving more striking proof of the ability of men to overcome natural fear than almost anything else in the annals of mankind." It is pleasing to see such recognition of the heroism of medical men from high official sources. Such deeds are not done under the excitement of battle. The risks are deliberately taken for human good and the danger fully appreciated, but too seldom are they thus publicly honored. — *Journal of American Medical Association.*

The Harvey Society Lectures. — At a meeting of the Harvey Society held in April, 1910, the following officers were elected for the year 1910–1911: President, Dr. Simon Flexner; Vice-President, Dr. John Howland; Treasurer, Dr. Edward K. Dunham; Secretary, Dr. Haven Emerson; Council, Drs. Graham Lusk, S. J. Meltzer, and James Ewing.

The following program for the next series of lectures has been arranged for:

Oct. 15, 1910: Prof. Dr. H. Chiari, of Strassburg, Germany, on "Die Bedeutung der pathologischen Autopsie und sonstiger pathologisch-anatomischen Untersuchungen."

Nov. 12, 1910: Prof. W. E. Castle, of Harvard University, on "Unit Characters in Heredity."

Dec. 10, 1910: Prof. Harvey Cushing, of Johns Hopkins University, on "Certain Clinical Aspects of Dyspituitarism."

Jan. 14, 1911: Prof. Arthur R. Cushny, of the University of London. (Subject to be announced later.)

Feb. 4, 1911: Dr. Thomas B. Osborne, of the Connecticut Agricultural Experiment Station, New Haven, on "The Chemistry of the Proteins."

Feb. 25, 1911: Prof. Jacques Loeb, of the Rockefeller Institute for Medical Research. (Subject to be announced later.)

March 18, 1911: Prof. H. Gideon Wells, of the University of Chicago.

These lectures are open to the public and are given on Saturday evenings at the New York Academy of Medicine.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Aug. 16, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 35, scarlatina 14, typhoid fever 19, measles 19, smallpox 0, tuberculosis 94.

The death-rate of the reported deaths for the week ending Aug. 16, 1910, was 17.80.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Aug. 13, 1910, was 190, against 221 the corresponding week of last year, showing a decrease of 31 deaths and making the death-rate for the week 15.73. Of this number 96 were males and 94 were females; 188 were white and 2 colored; 127 were born in the United States, 62 in foreign countries and 1 unknown; 31 were of American parentage, 126 of foreign parentage and 33 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 32 cases and 2 deaths; scarlatina, 23 cases and 2 deaths; typhoid fever, 18 cases and 1 death; measles, 22 cases and 1 death; tuberculosis, 102 cases and 13 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 6, whooping cough 1, heart disease 12, bronchitis 2. There were 7 deaths from violent causes. The number of children who died under one year was 69; the number under five years, 87. The number of persons who died over sixty years of age was 44. The deaths in public institutions were 91.

Cerebrospinal meningitis, 1 case. Anterior poliomyelitis, 5 cases and 2 deaths.

Of the above infectious diseases the following were non-residents: Consumption, 4 cases. Diphtheria, 1 case and 1 death. Typhoid fever, 1 case

Deducting deaths of non-residents, the total is 166 and the death-rate is then 13.74.

Typhoid Fever in Worcester, Mass. — It is reported that up to Aug. 14, about forty-five cases of typhoid fever had appeared in Worcester, presumably as a result of infected milk.

Nurses' Home for the Quincy, Mass., Hospital. — Mr. Henry M. Faxon has given money for the erection of a Nurses' Home in connection with the Quincy City Hospital. There has long been need for such a building, which is now for the first time rendered possible by Mr. Faxon's gift. The estimated cost is about $15,000. It is proposed to erect a building of brick, with accommodations for twenty nurses. Other improvements are also to be made on the hospital grounds.

NEW YORK.

Advisory Executive Committee for Health Department. — The State Commissioner of Health has named the following experts as an Executive Committee of medical officers to act in an advisory capacity to the Health Department: Drs. F. C. Curtis, of Albany; Edward Clark, of Buffalo; F. D. Earl, of Ogdensburgh; W. B. Gibson, of Huntington; A. D. Lake, of Gowanda; D. C. Moriarta, of Saratoga Springs; Joseph Roby, of Rochester; D. M. Totman, of Syracuse. From the first of August to the end of the year two laboratory courses at the State Hygienic Laboratory in Albany are offered to the health officers of the state every week. One of these is devoted to sanitary water analysis, and every health officer is invited to attend either course, or both, if possible. By an act of the last legislature a deputy commissioner of health was provided for, and the commissioner has appointed Dr. William A. Howe to that position. For fifteen years Dr. Howe has been medical officer of the town of Phelps, in Ontario County, and during the past year has served as director of the Division of Communicable Diseases of the State Department of Health.

Current Literature.

MEDICAL RECORD.

AUG. 6, 1910.

1. PARKER, G. M. *Hysteria under Psycho-Analysis.*
2. GIBSON, C. L. *External Urethrotomy without a Guide.*
3. SILL, E. M. *Vaccines in the Treatment of Various Bacterial Infections in Infants and Young Children.*
4. ATCHERLEY, J. *A Theory as to the Origin of Leprosy.*
5. WILLIAMS, T. A. *Genesis of Hysterical States in Childhood and Their Relation to Fears and Obsessions.*
6. WIENER, J. *An Unusual Case of Congenital Absence of Anus and Lower End of Rectum.*

NEW YORK MEDICAL JOURNAL.

JULY 30, 1910.

1. KINCH, C. A. *Lichen Planus.*
2. CRISPIN, A. M. *Spondylitis Deformans.*
3. HILL, R. *The Borderland between Medicine and Surgery.*
4. WERDER, X. O. *The Diagnosis and Treatment of Cancer of the Uterus.*
5. WRIGHT, H. W. *The Spirit of Prophylaxis in Relation to Psychiatry.*
6. GLEASON, J. H. *A Method of Anesthetizing to be Employed in Operating on the Aged.*
7. ILLOWAY, H. *Two Cases of Non-Traumatic Gingival Hemorrhage.*
8. COUGHLIN, R. E. *Does Internal Medication Tend to Abort or Cure Abscess and the Tendency Thereto?*

AUG. 6, 1910.

1. GARRISON, F. H. *Medical Allusions in "Hudibras" and Butler's Remains.*
2. *SOLIS-COHEN, M., AND STRICKLER, A. *A Study of the Leucocytes in Pulmonary Tuberculosis.*
3. KEYES, J. M. *Ectopic Gestation from the Standpoint of Clinical Experience.*
4. SMITH, H. *A Case of Laryngeal Syphilis.*
5. SOPER, H. W. *A Case of Concomitant Epigastric Hernia and Gastric Ulcer.*
6. COOKE, A. B. *Lane's Conception of Chronic Constipation and Its Management.*
7. KNOTT, J. *Medical Theory and Practice of the Natives of the Heart of Africa.*
8. SENSENEY, E. T. *The Sound Block.*

2. Solis-Cohen and Strickler studied the leucocytes in a large number of consumptives. They found that the total white count was highest (a high normal) in cases which were improving. In incipient and moderately advanced cases, and in improving cases, the percentage of lymphocytes was greatest and that of polynuclears least. The percentage of eosinophiles was greatest in incipient cases and least in moderately advanced cases. Large mononuclear and transitional cells were most numerous in incipient cases and in cases which were improving.

[L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

AUG. 6, 1910.

1. *CLARK, J. G. *The Surgical Consideration of Congenital and Developmental Defects Leading to Obstinate Constipation.*
2. *LYON, E. P., AND QUALLS, G. L. *Experiments with "Cactina" and "Cactin."*
3. MANTON, W. P. *The Rôle of Obstetrics in Preventive Medicine.*
4. *ATWOOD, C. E. *Idiocy and Hereditary Syphilis. Study of 204 Cases with the Serum Diagnosis Test.*
5. KYLE, J. J. *The Rôle of Otology and Rhinology in Preventive Medicine.*
6. *ROY, D. *Nasal Diphtheria.*
7. JACKSON, E. *Tests of Visual Acuity and Cards for Subjective Correction of Ametropia.*
8. CARSTENS, J. H. *The Uselessness of Local Treatment in Puerperal Sepsis.*
9. *MADISON, J. D. *Chronic Influenzal Bronchitis.*
10. DAVIS, A. E. *Concomitant Squint, with Some Remarks on Its Etiology and Treatment.*
11. *MACCARTY, W. C. *Classification of Appendicitis.*
12. POTTS, H. A. *The Teeth as a Factor in Pathogenesis.*
13. MOOREHEAD, F. B. *The Teeth and Alveolar Process as Points of Entrance for the Tubercle Bacillus.*

1. Clarke emphasizes the fact that developmental anomalies are at the bottom of many cases of chronic constipation; posture is frequently a result rather than a cause of this ptosis; congenital potential factors are present in many individuals which become active through accident, such as traumatism, rapid and badly cared-for childbirth, habitual constipation, operative adhesions, etc.; neurasthenia often dates from childhood or puberty; operation, therefore, in the adult may give only partial relief; various suspension operations are valuable in properly selected cases, but disappointing in the remainder; at best, these fixation points may be unstable. Radical excision of obstructive portions of the large bowel may give the highest operative mortality, but the best ultimate results in the survivors. A well-taken skiagraph is of the greatest diagnostic value.

2. Lyon and Qualls find from clinical experiments that the preparations cactin and cactina have absolutely no therapeutic effects.

4. Atwood, studying 204 cases of idiocy with the serum tests for syphilis, found it positive in 14.7% of his cases, a high enough percentage to warrant every case of idiocy having a test made to ascertain whether the etiological factor was syphilis.

6. Roy emphasizes epistaxis as one of the first symptoms of nasal diphtheria in many cases. That together with a prolonged irritative nasal discharge is often diagnostic.

9. Madison draws the very vivid picture of that type of case caused by a predominence of the influenza bacillus. These cases are characterized by cough for many months or years, thick, tenacious, mucopurulent sputum, rather profuse, often accompanied over the space of many years by repeated hemorrhages, presence of a diffuse bronchitis and at times bronchiectasis, frequent recurring attacks, often asthmatic seizures and always absence of tubercle bacilli in the sputum or by guinea-pig inoculation. This type of case was found by Lord in 186 cases to be mixed infection, with predominence of the influenza bacillus. The cases are better in the summer, but repeatedly aggravated in the cold or damp weather. They, however, do not differ materially from chronic bronchitis caused by other organisms. They are of greatest importance in their resemblance to tuberculosis, in which many of them differ in no wise except by the absence of tubercle bacilli. Undoubtedly many of them find their way to tuberculosis institutions and there swell the percentage of recoveries. The prognosis in long-standing cases is bad; but the patient may enjoy very good health aside from his bronchitis. Change of climate may cure the shorter cases. Treatment in the majority of cases is of little avail.

11. MacCarty concludes from his analysis that of all appendices removed at operation 23.5% are partially or completely obliterated; the process may be complete at ten years of age; the obliteration does not occur as a physiologic involutionary process, but is dependent on a definite inflammatory reaction. In a series of 2,000 specimens 0.6%, or about 1 in every 175 removed at operation, is malignant. In a series of 5,000, 44%, or about 1 in every 225 is malignant. In a series of 2,000, 2.2%, or about 1 in every 40 partially or completely obliterated appendices is malignant. In a series of 5,000, 1.6%, or about 1 in every 53 partially or completely obliterated appendices, is malignant. Carcinoma of the appendix may occur as early as five years of age and as late as eighty. In this series 77% were not capable of being diagnosed from the gross external appearance. [E. H. R.]

ANNALS OF SURGERY.

JULY, 1910.

1. *EISELSBERG, F. V. *Operations upon the Hypophysis.*
2. *MIXTER, S. J., AND QUACKENBOSS, A. *Tumor of the Hypophysis (with Infantilism).*
3. *ELSBERG, C. A. *Clinical Experiences with Intratracheal Insufflation (Meltzer), with Remarks upon the Value of the Method for Thoracic Surgery.*

4. Lilienthal, H. *The First Case of Thoracotomy in a Human Being under Anesthesia by Intratracheal Insufflation.*
5. *Meyer, W. *Some Observations Regarding Thoracic Surgery on Human Beings.*
6. *Green, N. W., and Janeway, H. H. *Artificial Respiration and Intrathoracic Esophageal Surgery.*
7. *Janeway, H. H., and Green, N. W. *Cancer of the Esophagus and Cardia.*
8. Carrel, A. *On the Experimental Surgery of the Thoracic Aorta and the Heart.*
9. Kirchner, W. C. G. *Treatment of Wounds of the Heart.*
10. Armstrong, G. E. *Abnormal Position of the Duodenum.*
11. Gibson, C. L. *End-to-End Intestinal Anastomosis by the Invagination Method.*

1. Eiselsberg, considering a rapid subcutaneous deposit of fat, a persistence of juvenile type in younger individuals and decrease or loss of genital function in the adult, dependent upon diminished function of the anterior portion of the hypophysis, and gigantism and acromegaly upon increased function of this portion, reports his operative experience with 3 cases of the former type, 2 cases of the latter and 1 case of mixed types. The pathological report of the first 3 cases was epithelial carcinoma, angio-sarcoma and benign cyst; of the second 2 cases, sarcoma and sarcoma or carcinoma; and of the last case, epithelial carcinoma. The first 3 cases have shown decrease in obesity, reappearance of hair and sexual function and improved vision; the second 2 cases (acromegaly) both died of meningitis two and three days after operation; and the last case (mixed type) has shown marked diminution in size of hands, feet and head, reappearance of sexual function and some amelioration of vision. Eiselsberg gives his method of operating. It is essentially Schloffer's. Iodoform gauze is preferred to vioform or isoform gauze as a nasal pack.

2. Mixter and Quackenboss report a case of hypophyseal tumor with infantilism successfully operated upon by Kanaval's method. Nothing but the vomer had to be removed in order to reach the sphenoidal cell. All other parts, including the turbinates, were easily held back with retractors. There have been in three and one half months gradual improvement in vision and increase in weight; sensation of the upper lip is lost and occasionally there is some watery nasal discharge. An exhaustive report of the cyst fluid and tissue from the cyst wall is given by Verhoeff (congenital epithelial tumor with cystoid degeneration) ("congenital epithelioma").

3. Elsberg had used Meltzer's intratracheal insufflation method in three human beings at the time of publication of this communication. The method of introduction of the tube is described. Two assistants are required, — one controls the pressure by the manometer and interrupts the stream every few minutes; the other manages the anesthesia and watches the patient's general condition. Case I was a myasthenia gravis and was kept alive for five hours. Before insufflation, patient was pulseless, deeply cyanosed and unconscious. Within a minute the color was good and pulse appeared at the wrist. Case II was a thoracotomy and aspiration of lung performed by Lilienthal and reported by him in this journal (4); there was immediate cessation of mucus, no cyanosis, excellent pulse, consciousness four minutes after operation. Case III was a rib resection and drainage of pleural cavity.

5. Although the thoracic work of Willy Meyer on human beings has not been brilliant from the viewpoint of recoveries, it is a very valuable contribution on account of many important facts and suggestions which have been developed by a careful analysis of each case in an endeavor to ascertain the causes of imperfect results or failures. He reports 3 cases of acute empyema, 3 of lung abscess and 4 of esophageal cancer. He uses positive differential pressure apparatus. One of the empyema cases was too profoundly septic to be saved. The other two have convinced him of the value of dressings under positive pressure and daily treatments with breathing under pressure. The cases of lung abscess were treated in one instance by incision and drainage and in two by partial pneumectomy. The first died of brain abscess and the other two shortly after the operation. His experience convinces him of the value (1) of superficial anesthesia throughout the operation to enable the patients to expectorate, preferably nitrous oxide and oxygen to minimize cardiac depression; (2) of careful separation of the vagus branches and division perhaps after cocainisation of the vagus as high up in the thorax as possible, rather than crushing or ligation; of preliminary external drainage of abscesses to avoid aspiration. His experience with three exploratory thoracotomies for esophageal cancer has convinced him of the value of the Schede incision for large skin-muscle flap to get the scapula out of the way, incision in third intercostal space for treatment of upper portion and second incision in sixth or seventh spaces for treatment of the lower stump. His experience with one case of esophageal resection for cancer, which died shortly after operation, convinces him that (1) the first step after entering the thorax should be examination of both pneumogastrics; for, if both are inseparably connected with the tumor, resection must be abandoned, and (2) shock is of twofold origin; interference with the system of vagus nerves and their anastomoses with the sympathetics by blunt manipulation and CO_2 accumulation in the blood regardless of the type of differential pressure. To guard against the latter he advises the interposition at regular intervals of brief periods of artificial respiration, allowing the lungs to collapse.

6. Green and Janeway present a new cabinet for anesthetization of thoracic cases (surgical procedures and respiratory embarrassment from morphine, illuminating gas, ether or smoke). The special advantages of their cabinet are portability, inclusion of pump and motor beneath box, and a valve mechanism permitting rhythmic rise and fall of pressure (artificial respiration). The frequency of artificial respirations can be regulated as well as the ratio of duration of inspiration and expiration. Different types of apparatus are discussed. They believe with their cabinet the patient absorbs less ether than with any other. An improved button for esophagogastrostomy is reported, but their recent excellent results with the suture have led them to doubt the advantage of the use of the button for union of resected stomach and esophagus.

7. Janeway and Green demonstrate from an extensive study of statistics the surgical importance of the cardia and necessity of early diagnosis of cancer in this region and the esophagus. They advise the use of the gastroscope, with removal of pieces of growth for examination. After a study of the lymphatics of the stomach they are persuaded that radical operation must mean the resection of most of the lesser curvature and, to be practical, an end-to-end union is necessary. They have had 10 out of 17 dogs recover, 5 of the last 6, but none lived over two months. Death was due to insufficient food passing pylorus on account of loss of propulsive force of stomach and unrelaxing pylorus due to section of the vagus. They have apparently overcome the trouble by incising the pylorus down to the mucosa and suturing as in pyloroplasty. Their operation, which is described and well illustrated, is a resection with end-to-end anastomosis with suture, the stomach being delivered into the thorax through an incision in the diaphragm between the esophagus and left crus.

[T. W. H.]

The Quarterly Journal of Medicine.

Vol. 3. No. 12. July, 1910.

1. *Beddard, A. P. *Ochronosis Associated with Carboluria.*
2. *Lewis, T. *Bigeminy of the Ventricle and Auricular Fibrillation.*
3. Williams, T. A. *A Simple Clinical Method to Demonstrate and Measure Dysergia.*
4. *Brochbank, E. M. *Modern English Cardio-vascular Teaching.*
5. *Hertz, A. F. *The Motor Functions of the Stomach. Part I. Physiology.*
6. *Meek, W. O. *Some Morbid Histological Changes met with in the Lymphatic Glands; Especially in Connection with the Formation of "Hemolymph" Glands.*
7. Rywfel, J. H. *Critical Review. Lactic Acid in Metabolism. Part II.*

1. Beddard's patient with ochronosis had used carbolic acid for four years, as a dressing for ulcers of the legs.

As in several similar instances, alkaptonuria could be excluded as a cause of the pigmentation of the cartilages of the ears and sclerae. The method of production of the pigment remains obscure. It appears certain that ochronosis may be the result of either alkaptonuria or chronic carbolic acid poisoning.

2. In four cases of absolute irregularity of the heart, associated with fibrillation of the auricle, Lewis has observed at times the occurrence of bigeminy; in which the smaller beat regularly appeared at a constant interval after the larger, while the interval after the smaller beats was not regular. From the appearance of the electro-cardiograms, he concludes that the smaller beat was of ventricular origin.

4. This article is an extensive critical review of recent English work on the heart in connection with the use of the polygraph, and is not suitable for abstraction.

5. Hertz reviews the recent work on the motor functions of the stomach, especially with regard to the use of the x-ray, in which he has had a large personal experience.

6. As a result of the study of a large series of acute and chronic infections and anemias, Meek concludes that any lymph node is potentially a "hemolymph gland," i. e., may show blood instead of lymph in the sinuses. He found "hemolymph" nodes very frequently in the above conditions, and considers that there is no good reason for putting these structures in a separate category from the ordinary lymph nodes. Nucleated red cells in large numbers were found in hemolymph nodes in 3 cases, viz., pernicious anemia, sarcomatosis, and acute lymphatic leukemia: in the first there was a striking resemblance to the structure of the bone marrow. These findings render it probable that in rare instances red cells may be formed in the lymph nodes. With regard to the histological picture of the lymph nodes, degeneration of the germ centers was almost always met with, and very frequently proliferation of the endothelial cells. These latter were very often phagocytic, especially for red cells. Polynuclear leucocytes and rare myelocytes were sometimes present, and in two cases (sepsis and diphtheria) eosinophiles in large numbers. The writer's conclusion that the lymph nodes may serve as sites of formation for most of the varieties of leucocytes found in the blood is open to some question, as it is possible that the leucocytes, with the exception of the lymphocytes, were deposited in the nodes from the blood stream, as is known to occur, for example, in the case of eosinophiles in cancerous growths. [W. T.]

Deutsche Medizinische Wochenschrift No. 28.

July 14, 1910.

1. Rumpf. *Diagnosis of Heart and Vessel Neuroses. Clinical Lecture.*
2. *Hoffmann. *Application of the Uhlenhuth Method for the Detection of Rare Tubercle Bacilli in Pieces of Tissue.*
3. Kappis, A. *Essay on Traumatic Tuberculosis.*
4. *v. Zebrowski, E. *Subcutaneous Lymph Glands of the Thorax with Pulmonary Tuberculosis.*
5. Berblinger, W. *Incomplete Traumatic Heart Rupture and Tear of the Mitral Valve.*
6. Günzburg. *Diagnosis of Duodenal Ulcer.*
7. *Klingmüller. *Tissue Growths with Gonorrheal Infections.*
8. Steiner, P. *Torsion of the Omentum.*
9. Herzen, P. A. *Leucoplacia of the Urinary Bladder.*
10. Lindner, K. *The Nature of Trachoma Bodies.*
11. Tsunoda, F. *An Acarus of the Glyciphagus Group Occurring as an Endo-Parasite.*

2. The method introduced by Uhlenhuth for the detection of tubercle bacilli consists in dissolving out the other substances of a sputum with antiformin, to which the tubercle bacilli are resistant. Hoffmann has applied this method to the detection of tubercle bacilli in tissues such as glands, etc., from animals, and thinks it of great value. He describes his technic.

4. v. Zebrowski has noticed that the glands in the axillary line are apt to be enlarged chiefly in the fourth and fifth interspaces in cases with pulmonary tuberculosis. Although he has only found this condition in about 20% of the cases, he has only found it in 2.58% of other diseases. The enlargement is usually on the side with the tuberculosis.

7. Klingmüller reports a few cases showing that the gonococcus can frequently cause direct warty growths of tissue. These are especially frequent around the anus in rectal gonorrhea in women. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 27.

July 5, 1910.

1. *Morawitz, P. *Studies on Chlorosis.*
2. Schreiber and Hoppe. *Treatment of Syphilis with the Ehrlich-Hata Preparation of Arsenic (No. 606).*
3. Meyerstein, W., and Rosenthal, L. B. *Methods of Blood Culture.*
4. *Steirlin, E. *Influence of Infusion of Senna on the Movements of the Intestine.*
5. Codivilla, A. *Förster's Operation.*
6. Flörcken, H. *Treatment of Tabetic Crisis by Resection of the Posterior Roots.*
7. Bürker, K. *A New Theory of Narcosis.*
8. Ramsauer, C., and Caan, A. *Excretion of Radium in the Urine.*
9. Görner. *Use of Radium in Rheumatic Diseases.*
10. Dakin, H. D. *Formation of B-Oxybutyric Acid in the Animal Organism.*
11. Klansner, E. *Drug Eruptions as an Expression of Idiosyncrasy and Anaphylaxis.*
12. Meirowsky. *Simple Methods of Staining Living Spirochetæ.*
13. Hindenberg. *Two Cases of Mild Gangrene after Disinfection by the Gross Method.*
14. Henssen. *A Case of Pocket-Like Dilatation of the Parotid Gland.*
15. Blecher. *Use of Spiral Metal Spring Instead of a Rubber Tube for Blood-Letting.*
16. Konrich. *A Disinfecting Thermometer Case.*
17. Wessely, K. *Growth of the Eye after Operations for Cataract in Youth.*
18. *Werner, R., and Caan, A. *Effect of the Röntgen Rays on Tumors.* (Concluded.)

1. In summarizing, the writer states the following views: That cases of chlorosis are not rare in which the blood is practically normal, but that these cases are as much helped by iron as are those having anemia; that anemia is not essential, but merely one symptom among others; that disturbances of menstruation, venous hum, retention of urine, and most of the subjective symptoms are not dependent upon anemia; that it is unlikely, inasmuch as iron is useless in most other forms of anemia, that the iron exercises a special influence on the formation of hemoglobin: and that the effect of the iron is to be sought in the underlying cause of chlorosis which is still unknown. He mentions the hypotheses of others that the internal secretions of the ovary or perhaps that of other glands may be at fault.

4. By studying the passage of food through the intestines by means of the x-ray, the writer discovered that when senna enters the cecum the colon empties itself rapidly.

18. Werner and Caan report the results of treatment of 255 cases of malignant tumor by means of Röntgen-rays. Their final conclusions are that this treatment should be used in connection with other methods, and that it is destined to fill an important place. It has a serious drawback in the fact that when the patient gets worse it is hard to know whether this is due to over or to under-dosage of the rays, and "apparently for some tumors there is no right dose." Generally, however, systematic and moderate dosage brings about relief of pain, limits the growth of the tumor, or improves the general condition and raises the spirits of the patient.

No. 28. July 12, 1910.

1. z. Busch, J. P. *Diagnosis and Treatment of Duodenal Ulcer in the Absence of Perforation.*
2. Kohn, A. *The Hypophysis.*
3. Müller, C. *A New Treatment for Malignant Tumors.*
4. v. Arlt, B. R. *Our Experience with Spinal Anesthesia.*
5. Rothmann, J. *Technic of Local Anesthesia in Minor Surgery for the Practitioner.*

6. Strauss, P. *Diagnosis and Treatment of Congestion in Dermatoses.*
7. Ohm, R. *An Apparatus for Registering Movements Photographically.*
8. Ramsauer, C. *Construction of a Kreuznach Activator.*
9. Kolaczek, H. *New Instrument to be Used in the Radical Operation for Hernia.*
10. Kümmell. *Treatment of Blennorrhea with Blennolenizet Ointment.*
11. Hindenberg. *Untoward Effects of Ergot.*
12. Hilbert, R. *Drug-Eruption from Hexamethylentetramine.*
13. Sternberg, W. *Anesthetics as Food and Drugs in Dietetics.* [G. C. S.]

Berliner Klinische Wochenschrift. No. 28.

July 11, 1910.

1. Strauss, H. *Chronic Ulcerated Proctosigmoiditis with Fever.*
2. *Timmer, H. *The Results of Serum therapy in 1,231 Cases of Diphtheria Requiring Tracheotomy or Intubation Compared with 605 Similar Cases before the use of Serum.*
3. Dobrotin, A. N. *Collection of Illustrative Cases in the Diagnosis of Multilocular Echinococcus Cysts by Means of the Biologicial Reaction (after the Type of the Wassermann Reaction).*
4. Meyer, K. *Serum Diagnosis in Echinococcosis.*
5. Ephraim, A. *Endobronchial Therapy.* (Conclusion.)
6. Emmerich, R. *Nitrite, Nitric Acid and Nitric Oxide as Cholera Poisons.*
7. Schüler, L. *Inactive and Dextro-Rotary Arabinose Excretion in Urine.*
8. Adler, M. *Further Contribution to the Study of Lipemia.*
9. Helbron. *The Influence of Modern Illumination on the Sight.*

2. The author presents the reports from the hospitals in Amsterdam before and after the introduction of antitoxin in these institutions in 1894.

Of the severer cases of diphtheria, those requiring operative interference, the mortality has dropped from 55.2% to 26.8%. One hospital reports a mortality for all cases of diphtheria of 37.8% for the five years previous to the introduction of antitoxin, while the average mortality for the fourteen years since it has been in use is only 9.7%. [J. L. H.]

Deutsches Archiv für Klinische Medizin. Bd. 99.

Hept 3–4. June 15, 1910.

1. *Ellinger, A., and Scholz, H. *Peptic Ferment of the Urine and Its Diagnostic Importance in Disease of the Stomach.*
2. Port, F. *Saponin Hemolysis and Its Check by Serum.*
3. Laissle, H. *Severe Anemias with Atypical and only Slightly Typical Blood Pictures.*
4. v. Hösslin, H., and Kato, K. *Uric Acid Excretion in Gout and Articular Rheumatism.*
5. *Fischer, W. *The Lighting up of Tuberculosis in Tumor Cachexia and Chronic Diseases of Old People.*
6. *Askanazy, M. *Vessel Changes in Acute Tuberculous Meningitis and Their Relation to Brain Lesions.*
7. *Kämmerer, H. *The Leucocyte Picture in Variola.*
8. Bie, W., and Maar, W. *A Case of Congenital Heart Lesion with Cyanosis and Polycytemia.*
9. *Plesch, J. *Determination of the Functional Capacity of the Hemoglobin.*

1. There is a theory that the excess of pepsin from the stomach is absorbed again in the gastro-intestinal tract and excreted by the kidney as urinary pepsin. In cases where the stomach pepsin is much diminished or absent, and the urinary pepsin high, the supposition is that cancer is present. In uncomplicated achylia no such relation exists. Such were the findings of these authors, although on a limited number of cases.

5. Contrary to the belief of some, Fischer finds that during wasting diseases old and apparently healed tubercular processes are apt to flare up. This flaring up consists of a not very severe activity of the process around the old site or extension, with not very virulent bacilli, into other organs or lymph nodes. These patients rarely die of the tuberculosis.

6. Askanazy gives a very excellent histological description of the vessel changes in the brain and meninges which occur during tuberculous meningitis and shows clearly their relation to hemorrhagic softening of the brain.

7. Kämmerer, reporting 4 cases of smallpox in which he studied the blood picture carefully, decides that there is a leucocytosis during the vesicular stage of smallpox of from 10,000 to 20,000. This disappears very slowly as convalescence supervenes. Upon a differential study he finds the lymphocytes are actually and proportionally increased and large lymphocytes are common early. The other cellular elements remain about as usual except that the polynuclear leucocytes are apt to be diminished.

9. Plesch carefully describes a new apparatus and the method of working it, by which he learns the functional capacity of the hemoglobin. [C. F., Jr.]

Correspondence.

LONDON AND ITS HOSPITALS.

[*From Our Foreign Correspondent.*]

London, July 28, 1910.

Mr. Editor: Voici le centre du monde! one surely feels inclined to exclaim on entering this great, grey, ancient metropolis, the symbol and incarnation of a world-wide dominion. Nor would such an expression be far amiss. Other cities are doubtless more magnificent than London. Paris dazzles one with the white and gold of its imperial splendor; New York stuns with its sheer economic and architectural mass; Edinburgh captivates with its romantic beauty: but London dominates with its immense and immemorial significance. Not only is it inconceivably vast — nearly twenty miles long now, — the only city beyond whose confines one cannot see from a high vantage-point at the center; not only does it present the sign and evidence of colossal wealth and vested power; but it represents, — from the tower that still stands guard at the east to the hoary pile of the parliament buildings that crown the waters of the river at Westminster, — the center and hearth-stone of all the heritage and tradition of our great English-speaking race, whose children turn back from every quarter of the globe to

"The hush of the Abbey that makes us We."

If England be still

"Model to her inward greatness,
Like little body with a mighty heart,"

London is surely that heart, and "out of the heart are the issues of life." Indeed, it is this humanly and racially representative character which makes London great in spite of its size, which saves it from becoming a mere sordid bulk, which makes it, for one New Englander at least, the most homelike city in Old England.

There is so much to see and to do in London that one might spend a lifetime here and know as little of it as we easterners in America do of the great west of our own country. London has boroughs by the dozen, churches and theatres by the score, hospitals and railroad stations by the hundred, streets and houses by the thousand, and inhabitants by the million. In its profusion one can only gather a bit here and there, see something, ponder much and remain in reverent stupefaction at the last.

Our first medical experience in London was a visit to one of its old hospitals, recently rehoused in new and splendid buildings in connecton with the University College Medical School. The intimacy of relation between school and hospital is as noteworthy here as in Ireland, an ideal towards which we in America are working but as yet have by no means fully attained. Five years of medical study are required in all the London schools, of which the first two are spent in laboratory, the remainder in clinical work. Following this, ambitious men who can afford it take a

further service as residents, corresponding to our house-officers, in the hospitals, for terms varying from six months to two years. In London these positions are unpaid, but in many of the county hospitals, as we learned, small salaries are offered to attract good men. The complaint of young doctors is everywhere the same: "Practise is rotten and living is high." "A fellow can't afford to marry here, don't you know," said one London surgeon, not so young or unsuccessful a man either.

Other hospitals that we visited in London showed much that was interesting, little that was startlingly novel. A striking thing in all was the importance attached and the attention paid to pathology. Restrictions on autopsies are not nearly so stringent as with us, and a full *post-mortem* examination is made as a routine on every case dying in hospitals, unless objection is lodged by the patient's relatives within a few hours after his death. The obtainment of written and witnessed consent is unnecessary, and never troubles the souls of pathologists or superintendents. Moreover, governing boards show an intelligent appreciation of the value of pathologic research, and appropriate liberal funds for the equipment and maintenance of laboratories. The result is not only that there is a large amount of pathologic material but that extensive use is made of it, and every hospital of any size has a museum of considerable extent and value.

Clinically, English methods and technic do not differ widely from our own. London obstetrics as we saw it at the large lying-in hospitals, is even more like our own than that of Dublin. In the treatment of contracted pelvis, pubiotomy, so much in favor at present at the Rotunda and on the continent, is disapproved by the majority of London obstetricians, who seem to be divided into two camps, one preferring Cæsarian section, the other induction of labor at the thirty-fifth week for all cases on the borderline of possibility. Surgery differs little from that in our own country. There seems to be a widespread distrust of catgut for fear of tetanus and other infections, so that silk is much more extensively used than is now the custom with us. Moreover, simple boiling is not considered sufficient for its sterilization, but it is also steeped many hours in carbolic acid and used impregnated from a carbolic solution.

The great medical event of our stay in London has been the annual meeting of the British Medical Association, held in the buildings of the Imperial Institute at Kensington. To visit this immense pile, of great architectural beauty and magnificence and covering many blocks with its allied museums and schools, is in itself a bewildering and impressive revelation. And the special exhibitions, of specimens, instruments, books, drugs, foods, electrical apparatus and appliances of all sorts, arrayed there for this occasion, were enough to have occupied many hours with pleasure and profit. Where life is too rich one sometimes gets less out of it than when its possibilities are limited and its issues more clearly defined.

Apart from the general and representative meetings of the association, there were twenty-one sections, covering the whole field of scientific and practical medicine, among which it was almost as hopeless to choose as among the riches of Midas. The JOURNAL will of course have a full official account of the proceedings, which must relieve your correspondent of the duty of reporting them. Decidedly the most interesting of the few sessions we could attend was that of the section in surgery, under the presidency of Sir Victor Horseley, which considered the operative treatment of simple fractures. The discussion was opened by Mr. Arbuthnot Lane, who advocated, as he has done for some years, early, fearless operation, under the most rigorous asepsis, on cases of simple fracture in which perfect reposition of the fragments, as tested by the x-ray, cannot be readily obtained by the usual manipulative measures and maintained by splints. He believes that our standards of satisfactory anatomic and functional result should be much higher than they are, and that our functional results after fracture will become perfect only when anatomic results are perfect. In all cases, after incision and correction of displacement, he secures fragments in position by means of steel plates and screws, which are left to heal permanently in place, except in epiphyseal separations, when they are subsequently removed for fear of interference with growth. Wire he has abandoned, as not affording sufficiently secure fixation. Mr. Lane showed a large series of beautiful x-ray plates, which were an admirable illustration of his results and strong argument in favor of his method, as were also his cases to be seen at Guy's Hospital and Great Ormond Street. There was much further discussion, in which men of eminence in England and from the continent took part, and although some opposed Mr. Lane's contention in whole or in part, the majority favored his conclusion, though recommending great discretion in the selection of cases and, as some one happily added, of the operator.

Apart from medical meetings, visits to hospitals, and operating clinics, which have claimed most of our time, there have been few objects of special interest. We have read some headlines about the terrific heat-wave in the States, while we were shivering in the rain with the thermometer at 50°, and about the Crippen murder, whose horrid details have doubtless been served up with the usual disgusting minuteness in America. It is gratifying to find that "Dr." Crippen is not here considered in any sense a representative of the American profession.

Just at present there is some excitement over a recent outbreak of foot-and-mouth disease near Ripon in Yorkshire. Parliament, already distracted by the suffragettes (of whom, by the way, we have seen and heard not a few), by the income tax, by free trade and protection, and by the oath of accession, has had to turn its attention to this episode also, and has ordered a large number of cattle in the infected region killed, and others isolated to prevent extension. The department of agriculture of Ireland has also forbidden the importation of cattle and sheep from Great Britain into Ireland. Twenty-seven years ago, when the disease first broke out in England, thousands of cattle died of it or were killed in the effort to stamp it out, and the loss and expense of this epizoötic were estimated at over $12,000,000. There have been since two small outbreaks, one in Kent in 1902, and one in Edinburgh in 1908, both of relatively slight extent and destructiveness. It is hoped that the rigorous measures now adopted will soon check the present eruption of the disease. A new form of parasitic mange has also been reported among horses in East Suffolk, and steps are being taken to prevent its further spread.

But though there are parasites a plenty for man and beast, the vegetation of these blessed islands seems entirely free from them. There are no gipsy moths, brown-tails, leopard-moths, elm-leaf beetles, army worms, or any of the thousand and one scourges that afflict our trees like the hosts of the Philistines. Here everything flourishes like the green bay of Scripture, even in the city, from the great elms to the ubiquitous ivy and the grass and flowers that sprout without visible sustenance from roofs and wall-tops. The flora imbibes moisture perpetually from the continuously oozing atmosphere, and grows so vigorous in consequence that no worm can afflict it. For the same atmospheric reason there is no dust in the streets, and singularly enough there are no mosquitoes. We have seen only three house-flies since landing.

In connection with the meeting of the British Medical Association, there has been a curious resurrection of that apparently unlayable medical ghost, the question whether or no Napoleon died really of cancer of the stomach. Whether the fact were pathologically proved or not, it might seem sufficient that the great Corsican has been satisfactorily dead for nearly eighty years, and that even his memory has ceased to trouble the peace of Europe. But someone has recently unearthed in the Museum of the Royal College of Surgeons two specimens purporting to be secondary carcinomatous growths from the emperor's intestine. Microsopic examination of these, however, now shows them to present merely "enlarged lymph follicles, containing extravasated blood," and upon this discovery is based the surprising contention that Napoleon did not die of cancer. Aside from question as to the value or interpretation of this evidence, there seems as little profit in further discussion of the matter as in the query whether Cæsar and St. Paul were epileptics or Joan of Arc a paranoiac. Peace to their dust. We shall all soon be as dead as they, and in spite of their afflictions they managed to become a deal more famous than most of us will ever be, who make question about them.

After all, the greatness of London, in retrospect, seems

to consist less in what it is than in what it represents. In itself, the city is

"All valiant dust that builds on dust,"

but that dust is the dust of Nelson and Wellington and Cromwell and Gladstone and hundreds of their mighty peers. And out of that dust goes forth an inspiration of power to those who derive the English blood and speak the English tongue, from Labrador to Australia, from Gibraltar to the Golden Gate.

MEDICUS PEREGRINUS.

DEATHS UNDER ANESTHETICS.

CITY CORONER'S OFFICE AND COURT,
LONDON, E. C., ENGLAND,
Aug. 5, 1910.

Mr. Editor: An inquest was held by the city coroner in his Southwark Court on Friday last the 29th of July, 1910, relative to the death of Wm. Jno. Faulkner, aged thirty-one, a tramcar driver, of Thorburn Square, Bermondsey, who died in Guy's hospital under ether, given for the purposes of an operation. The coroner, Dr. Waldo, on opening the case, told the jury that the house-surgeon who gave the anesthetic had written to him and offered to certify the cause of death as a natural one from peritonitis. He (the coroner), however, was obliged under the provisions of the Coroner's Act to hold public inquiries on all cases reported to him when there was a reasonable presumption that the death was a violent or unnatural one; and in all such cases it was his custom to order an autopsy to be made by an independent skilled pathologist.

The widow stated that on the 2nd instant her husband who was a strong, healthy and sober man, after partaking of fried fish and chips the previous day, had complained of pain in his stomach. A local doctor, who was called in, sent him to Guy's hospital where he arrived the same day at 4 P.M. Not being satisfied with the stated cause of death she had asked the coroner to hold an inquest. Mr. Claud H. Mills, house-surgeon at Guy's Hospital said the case was one for immediate operation, and witness gave ether by the "open method." Five minutes later the patient died suddenly, the abdomen having been shaved preparatory to a section of the abdomen for appendicitis which operation had not been commenced. Prior to giving the ether (made from rectified spirit and not from dutiable ethylic alcohol) he had injected strychnine. Without an operation the deceased had only "a 1% chance." Asked by the coroner why the giving of the anesthetic had not been undertaken by one of the ten visiting special anesthetists at Guy's Hospital considering the fact that the patient was suffering from frequent vomiting and the seriousness of the case, the doctor said the patient was prepared for the operation at 6 P.M., by which time all the specialists had left the hospital.

Before entering office as house surgeon, witness had produced satisfactory evidence of knowledge in the administration of anesthetics which he had given on 380 occasions without any previous fatality. Mr. Ernest C. Hughes, acting resident surgeon at Guy's Hospital, said he did not think the case required any very special skill and the previous witness was a highly competent anesthetist. The visiting anesthetists at Guy's Hospital were looked upon more as teachers than as actual administrators of anesthetics.

The coroner remarked that with regard to Guy's hospital he noticed that in nearly every one of the 44 cases of those reported as having died under anesthetics during the past nine years — on all of which he had held public inquests — the anesthetic had been given by junior residents. In another great general hospital during the same period where it was the custom for the anesthetic in serious cases to be given by visiting and resident specialists there had been fewer fatalities, and very few indeed, not more than two or three in number at the hands of the junior residents.

In difficult cases he could not help feeling that it would be better if anesthetics were administered either by seniors or if by juniors at least in the presence and under the guidance of specialists. In October, 1907, a Southwark jury inquiring into the death of a young married woman, (Mrs. Morgan) who died under chloroform given by a junior resident for an operation for the cure of exophthalmic goiter, recommended this reform to the authorities at Guy's hospital, also that in future full details of all administrations of anesthetics should be kept in proper registers by the hospital authority. In reply Mr. Hughes said that the jurors' rider in question had resulted in a full inquiry by the hospital authority. As a practical outcome of such inquiry the four following reforms had since been introduced:

(1) The appointment of two additional teaching visiting special anesthetists, now making ten in all at the hospital.

(2) The requirements that all candidates should, before appointment on the junior staff, produce evidence of special practical knowledge in the administration of anesthetics.

(3) The keeping of a full register of all administrations of anesthetics.

(4) The introduction of the administration of ether by the "open" method, such as was in use on its first discovery and at the present time largely practised in the United States of America.

Dr. Bernard Spilsbury, lecturer and pathologist at St. Mary's Hospital, who had made an autopsy in the presence of Mr. Mills, the anesthetist, said death was due, in his opinion, to the rupture of a small ulcer in the intestine which had led to peritonitis. This had caused vomited matter to regurgitate and lodge in the air-passages whilst the patient was under the influence of the anesthetic, thus producing suffocation. He did not think death had been hastened by the ether. In any case the patient would probably have died within a short time as a result of the peritonitis. He could not say whether or not the fried fish and potatoes or other food taken by the deceased had any connection with the fatal result. In answer to the coroner, the witness said they had a resident special anesthetist at St. Mary's Hospital which was the case also at a few of the other big metropolitan hospitals.

The surgeons agreed with Dr. Spilsbury as to the cause of death.

In summing up, the coroner said he felt sure all would be pleased to hear of the reforms introduced and of the decrease of late in the number of deaths under anesthetics at Guy's Hospital. Sonce 1907 in which year there were 11 fatalities the deaths reported were few and far between. Two deaths had been inquired into during the present year. In the first of these — a death under ether given by the "open" method — the verdict was to the effect that the cause of death was not in any way influenced by the anesthetic. The second case, the one now under consideration, seemed on the evidence to be a similar one to the former death. As a result of inquests referred to, questions had from time to time been asked in the House of Commons. This had led to the late Home Secretary (Mr. Gladstone) referring the matter to the Departmental Committee appointed to inquire into the law relating to coroners and the practise in coroner's courts. The first recommendation of this committee in their report was to the effect that "Every death under an anesthetic should be reported to the coroner, who, after inquiry, should determine whether it is desirable to hold an inquest or not."

With the first part of this suggestion he heartily agreed, since it was a well-known fact that only a small proportion of deaths under anesthesia in private practise including nursing homes ever came to the notice of registrars or of coroners. With the latter part of the recommendations, however, he disagreed — since he did not think such a change in the law at all favorable to the public interest. He preferred the English open method of inquest by coroner and jury to the private inquiry as held by the procurator-fiscal in Scotland into violent or unnatural deaths. Such secret investigations were, he thought, hardly favorable to a full statement of the facts with regard to so delicate a matter as that of fatal anesthesia.

The jury returned a verdict in accordance with Dr. Spilsbury's evidence.

F. J. WALDO, M.A., M.D.,
H. M., Coroner for the city of London and Southwark.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 6, 1910.

CITIES	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,344	614	Waltham	6	1
Chicago	605	234	Pittsfield	15	8
Philadelphia	—	—	Brookline	3	—
St. Louis	—	—	Gloucester	5	1
Baltimore	—	—	North Adams	7	5
Cleveland	—	—	Northampton	8	1
Buffalo	—	—	Chicopee	13	6
Pittsburg	—	—	Medford	6	1
Cincinnati	—	—	Beverly	6	3
Milwaukee	—	—	Leominster	5	1
Washington	—	—	Hyde Park	2	—
Providence	—	—	Melrose	1	0
Boston	195	82	Newburyport	5	2
Worcester	49	21	Revere	4	3
Fall River	51	36	Westfield	12	3
Cambridge	35	15	Woburn	4	2
Lowell	38	25	Peabody	—	—
New Bedford	41	29	Marlboro	4	1
Lynn	18	7	Attleboro	6	5
Springfield	32	15	Adams	7	6
Lawrence	39	21	Clinton	1	—
Somerville	17	9	Gardner	6	5
Brockton	7	2	Milford	5	6
Holyoke	—	—	Watertown	5	4
Malden	10	5	Plymouth	—	—
Chelsea	14	4	Southbridge	3	1
Newton	6	2	Weymouth	—	—
Salem	8	—	Framingham	3	0
Haverhill	10	6	Wakefield	—	—
Fitchburg	—	—	Webster	5	3
Everett	9	4	Arlington	—	—
Quincy	—	—	Greenfield	2	1
Taunton	25	16			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED AUG. 3, 1910.

BANKS, C. E., surgeon. Granted seven days' leave of absence from Aug. 1, 1910.

WERTENBAKER, W. P., surgeon. Directed to proceed to Richmond, Va., upon special temporary duty. Aug. 2, 1910.

FOX, CARROLL, passed assistant surgeon (on leave). Directed to report at the Bureau upon special temporary duty. Aug. 1, 1910.

KORN, W. A., passed assistant surgeon. Directed to proceed to Point Pleasant, N. J., for the purpose of making examination of keepers and surfmen of the Life-Saving Service. July 30, 1910.

SWEET, ERNEST A., passed assistant surgeon. Granted four days' leave of absence from July 21, 1910, under paragraph 191, Service Regulations.

SPRATT, R. D., passed assistant surgeon. Granted five days, leave of absence from July 23, 1910, on account of sickness.

FROST, W. H., passed assistant surgeon. Directed to proceed to Des Moines, Iowa, upon special temporary duty. July 25, 1910.

MULLAN, E. H., passed assistant surgeon. Granted two days' leave of absence from July 30, 1910, under paragraph 191, Service Regulations.

PREBLE, PAUL, assistant surgeon. Granted one month's leave of absence from Aug. 8, 1910.

KEARNY, RICHARD A., assistant surgeon. Directed to proceed to San Francisco, Cal., and report to the medical officer in command for duty and assignment to quarters. July 21, 1910. Directed to report to the medical officer in command at Chicago, Ill., for temporary duty en route to station. July 25, 1910.

DRAPER, WARREN F., assistant surgeon. Directed to proceed to Angel Island, Cal., and report to the medical officer in command for duty and assignment to quarters. July 21, 1910.

GILLESPIE, JULIAN M., assistant surgeon. Directed to proceed to Honolulu, Hawaii, and report to the chief quarantine officer for duty. July 25, 1910. In addition to present duties, directed to report to commanding officer Revenue Cutter "Thetis" from time to time for temporary duty. Aug. 3, 1910.

STILES, CH. W., professor. Detailed to represent the Service at the meeting of the International Zoological Congress at Gratz, Austria, Aug. 15-20, 1910. July 27, 1910.

BLANCHARD, J. F., acting assistant surgeon. Granted three days' leave of absence from July 11, 1910.

CLEAVES, F. H., acting assistant surgeon. Granted three days' leave of absence from July 28, 1910, under paragraph 210, Service Regulations.

DELO, J. M., acting assistant surgeon. Granted seven days' leave of absence from July 16, 1910, under paragraph 210, Service Regulations. Granted seven days' leave of absence from July 24, 1910.

DUFFY, FRANCIS, acting assistant surgeon. Granted six days' leave of absence from Aug. 3, 1910.

HARKIN, F. MCD., acting assistant surgeon. Granted fourteen days' leave of absence from Aug. 1, 1910.

HAMILTON, H. J., acting assistant surgeon. Leave of absence for four days from July 19, 1910, amended to read four days from July 26, 1910.

ONUF, B., acting assistant surgeon. Granted seven days' leave of absence from July 22, 1910, under paragraph 210, Service Regulations.

SCOTT, J. T., acting assistant surgeon. Granted twenty-four days' leave of absence from June 3, 1910.

STEVENSON, J. W., acting assistant surgeon. Granted thirty days' leave of absence from Aug. 3, 1910.

MACDOWELL, W. F., pharmacist. Granted twenty-eight days' leave of absence from Aug. 10, 1910.

MAGUIRE, E. S., pharmacist. Granted thirty days' leave of absence from Aug. 6, 1910.

RYDER, L. W., pharmacist. Granted one day's leave of absence July 25, 1910, under paragraph 210, Service Regulations.

STIER, C., pharmacist. Granted one day's leave of absence July 8, 1910, under paragraph 210, Service Regulations.

BIERMAN, C. H., pharmacist. Granted fourteen days' leave of absence from July 26, 1910. Leave of absence for ten days en route to station amended to read nine days en route to station.

CANNON, CLAUDE C., pharmacist. Directed to proceed to Vineyard Haven, Mass., and report to the medical officer in command for duty and assignment to quarters. Aug. 2, 1910.

RECENT DEATHS.

DR. SEYMOUR J. NOLLEY, an old practitioner of Brooklyn, N. Y., died on Aug. 9. He was born in Dorset, Vt., and served as a surgeon in the Army during the Civil War. For twelve years he was a medical inspector in the Brooklyn Health Department.

DR. WILLIAM HENRY HULL has recently died in Essex, Mass., at the age of seventy-eight. He was born in Groveland. Received his early education in Georgetown, and later in Dartmouth Medical School. During the Civil War he served as surgeon to two Massachusetts regiments, and at its conclusion took a degree in medicine from the Harvard Medical School. After twenty-two years of practise in Essex, he settled in East Boston where he remained in active practise for nearly thirty years, with certain intermissions.

DR. JOHN BRUIN RICH, a retired New York dentist, died on Aug. 12, in his one hundredth year. He was a native of New York City, and was educated at the military academy of St. Cyr, France. Later he studied dentistry, and began practising in New York in 1833. He was one of the founders of the American Dental Association, and among the organizations of which he was president were the American Microscopical Society, the Bailey Microscopical Society, the Physical Culture Club, and the Hundred Years Club. He was remarkable for his physical powers, and it is stated that as early as 1830 he had the reputation of being the strongest man in the world.

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Original Articles.

A REPORT OF THE SCOLIOSIS DEPARTMENT OF THE CHILDREN'S HOSPITAL, BOSTON.

BY JAMES WARREN SEVER, M.D., BOSTON,

Junior Assistant Surgeon, Children's Hospital; Member American Orthopedic Association.

INTRODUCTION.

For the past sixteen years there has been special provision made for the treatment of scoliosis in the Out-Patient Department of the Children's Hospital, that is, a special room has been set apart for use as a gymnasium, and such essential apparatus as was needed has been supplied. It was found necessary to run the department as a separate clinic, not only on account of the special character of the work, and the large attendance, but also on account of the necessarily frequent and careful individual attention of each case.

AIMS.

The scoliosis clinic has been conducted so that any child, boy or girl, applying there for treatment, and a suitable hospital case, may be received. The supply of patients is beyond our capacity, however, so that we always have a large waiting list to draw from as needed. We propose to conduct the clinic so that each child may have frequent individual attention, exercises and such apparatus as braces or jackets which may be essential to its progress.

ATTENDANCE.

We insist on regular attendance at the clinic after admission, and each case is given a card which states that, if there are two successive absences without a satisfactory written excuse, they will be dismissed from the department; also that patients who are tardy to their appointments six times during the year without written excuses will be dismissed. Each absence or tardiness must be explained.

It is necessary to be strict in these rules, for otherwise we cannot get results. To get results, both patients and attendants must be on hand promptly and mean business. Any department conducted on any other lines is most unsatisfactory.

From the middle of June to the first of August the clinic is run at a much reduced size by volunteer assistants, and from August first to the last of September is closed, for it has been found by experience that it is not well to work children already delibitated through the hot weather. In proper apparatus, that is, jackets or braces, they lose nothing by this short period of rest.

The clinic is open for three days a week from 2 to 5 P.M., and one morning from 10 to 1 P.M. Difficulties in administration have so far prevented us from making it a daily clinic.

CONDUCT OF CLINIC.

The clinic is under the direction of the senior out-patient surgeon, and he is assisted by one of the junior assistant surgeons, who does the actual work of the clinic and sees all of the cases at regular intervals of not more than two weeks. All new cases are seen by him and put on the waiting list, if there is no room for them in the clinic. When formally entered, they have photographs taken, are x-rayed and such measurements as are necessary are taken. All old cases have measurements and photographs taken at definite intervals, usually about one month apart. One day a week is usually devoted to the application and fitting of plaster jackets.

Photographs are taken under fixed conditions. The patient stands at a distance of seventy inches from the camera, and all pictures are taken by daylight after experimenting for a year with an arc light, which was not found to give satisfactory pictures owing to too great lack of contrast.

ASSISTANTS.

One of the greatest difficulties we have to meet in the conduct of a successful clinic is that of efficient assistants, i. e., properly trained persons who give and conduct the gymnastic exercises. Formerly the gymnastic work of the clinic was given by volunteer assistants, eight to ten in number, under the charge of a graduate of one of the normal schools of gymnastics. These assistants were usually graduates or advanced students, who served three months at a time and who had no previous theoretical or practical training in corrective gymnastic work. This arrangement was not satisfactory, for they were under no control as to discipline, attendance or conduct. Their work was on a most informal basis, and they received but scant instruction in scoliosis.

The difficulties under this plan were as follows:

(*a*) Lack of regular attendance on the part of both assistants and patients.

(*b*) Lack of punctuality.

(*c*) Inadequate knowledge of the treatment of scoliosis.

(*d*) Impossibility of discipline over volunteer workers.

The lack of efficiency resulting fron these conditions represented poor administration and a consequent lack of results in the treatment of scoliosis.

This question of proper assistants can best be solved, I believe, by an alliance with some educational institution which will provide regular assistants, who come to the clinic as a part of their school work, and who are, therefore, under discipline as to attendance and conduct. Some years ago we made such an alliance with the Boston Normal School of Gymnastics (now affiliated with Wellesley College) by means of which students were sent to the clinic to give the necessary exercises to the cases, in return for which they were to receive clinical instruction in scoliosis from some of the members of the staff. These students receive a lecture on scoliosis once in two weeks from the senior out-patient surgeon, with a demonstration of cases and an analysis of the different types of scoliosis. These lectures last through the school year.

Two methods have been tried in regard to the work and attendance of the students. At first they came for periods of a week at four intervals during the year. This proved most unsatisfactory on account of the following reasons:

(*a*) Frequent change in patients.

(*b*) Loss on continuity in the treatment of any given case, and consequent lack of interest.

(*c*) Too long periods between instruction and opportunities to apply their knowledge.

The plan was changed for the following one:

(*a*) The students to come daily for two months at a time.

(*b*) Each student to have her own case and to follow the case and to assist in the treatment of it in every particular.

(*c*) To have daily instruction in the practice and theory of scoliosis besides the lectures.

and record of each case besides a practical knowledge of the corrective treatment.

These students have been under the charge of a teacher from the school, who also acts as administrative officer of the clinic generally, and it has been clearly understood and faithfully carried out that the direction of the treatment was to lie wholly in the hands of the staff. This question has never offered the slightest difficulty. The presence of these students has been of great help to the clinic in enabling us to treat more cases than we otherwise could and in giving us most satisfactory assistants. Their presence has been a great incentive to keeping up a high standard of efficiency. Owing to the various administrative difficulties which developed following the affiliation of the Boston Normal School of Gymnastics with Wellesley College, our connection with that

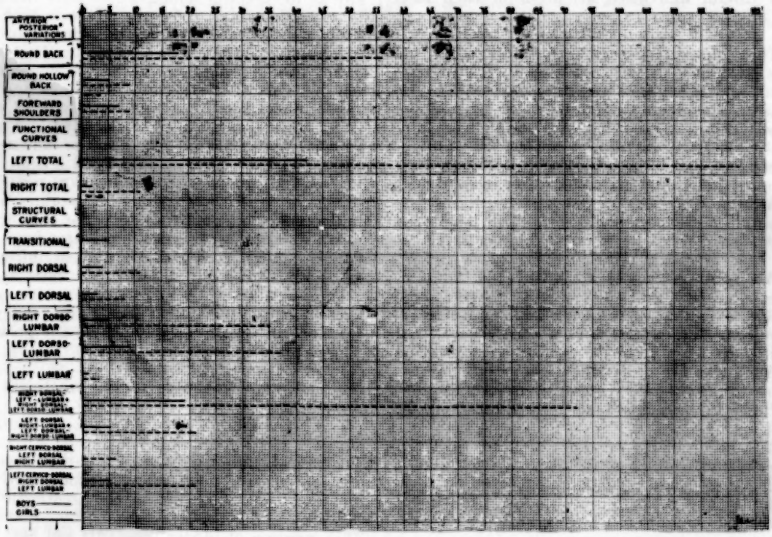


Chart I shows totals of boys and girls in each class.
(Figures at top show number of cases.)

This plan has been found much superior to plan one, better results are obtained and more interest shown. A number of the students who have desired post-graduate work are retained to act as assistants to the administrative affairs of the clinic.

It is the purpose of this clinic, first, to improve our cases, and, second, to teach our students to recognize simple and compound cases of scoliosis, to become familiar with measuring and keeping adequate records of cases, to assist in photographing and in the application of jackets and braces. In other words, they are given a definite analysis and routine to follow in the examination

institution had to be severed, and the department is now ably looked after by a paid administrative officer, a graduate of the Boston Normal School of Gymnastics, who has under her charge and instruction the senior class of Dr. Dudley Sargent's School of Physical Education.

Records of Cases.

All cases are recorded in a routine manner on a suitable record card. The order of examination I will outline to give an idea of our routine and also for the reason that it may be of help to others who may wish to establish a similar plan. It is not perfect, but is sufficient, gives one an ade-

quate picture of the case and usually establishes a diagnosis and, therefore, suggests the treatment.

General conditions: Development. Height and weight as compared to age.
Nutrition.
Deviation in frontal plane.
Girth of chest { Expanded. / Contracted.
Displacement of trunk.
Curve of spine.
Length of legs { Standing. / Lying.
Height of shoulders.
Deviation in horizontal plane.
Feet { Weak. / Pronated.
Rotation of shoulder girdle.
Rotation of thorax.
Rotation of lumbar vertebræ.
Heart { Sounds. / Area.
Lungs.
Deviation in sagittal plane.
Physiological curves.
Forward shoulders.
Pelvis. Abdomen.
Head. Position.
Flexibility:
Forwards.
Sideways.
Power of correction.
Diagnosis.

HISTORY OF CASE.

In taking the history of the case the following points are noted:

Obstetrical history.
Infancy, teething, feeding, walking.
Vital resistance:
Liability to fatigue or colds.
Children's diseases, injuries, hereditary diseases.
Mentality: Grade in school, home study.
Deformity: Heredity, appearance, development, treatment.
Personal hygiene:
Daily routine; clothing, how worn; appetite.
Conditions of sleep.
Conditions of eyes, ears, nose and throat.
Occupation, outdoor activity.

CLASSIFICATION OF CASES.

There is no arbitrary division of the cases made so far as the treatment is concerned, but they rather tend to group themselves into three large classes, which will be described and their treatment outlined in a general way as follows:

CLASS I.

Faulty attitude, including round shoulders, forward shoulders, round, hollow back and functional scoliosis are treated by gymnastic exercises four times a week, and as they improve the frequency of the attendance is diminished. Some cases of round or forward shoulders are so resistant that exercises have no appreciable effect on their condition, and they are put into a plaster jacket with the idea of holding them in the correct upright position and at the same time affording an opportunity for padding the jacket in front so as to stretch gradually the constrictions about the shoulders. These jackets are very high in front of the shoulders and come up behind so as to fix the lower portions of the scapulæ. They are worn for six to twelve weeks, and their removal is followed by a continuance of their gymnastic work. They usually prove most efficient and result in marked improvement.

Functional scoliosis is usually successfully treated by exercises alone, and jackets or braces are not required, except in a few cases. Slight structural scoliosis is treated in the same way, and, if satisfactory improvement does not occur, by jackets.

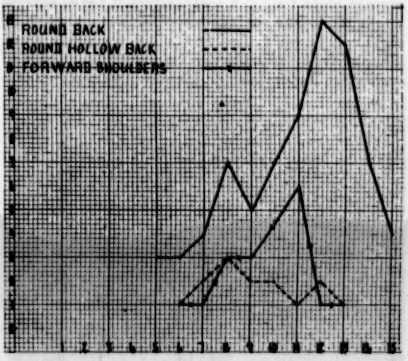


Chart II shows relation of antero-posterior variations. (Figures at side show number of cases; figures at bottom give ages by years.)

CLASS II.

Structural scoliosis of more than slight grade is best treated by jackets, either with or without exercises. In the moderate structural scoliosis the cases are best treated by removable jackets, which are worn all the time, except during the gymnastic work. These jackets are made from remodeled plaster torsos, which have been made from a jacket taken of the patient in the prone position, or standing with head extension, depending on which one gives the best corrected position. These torsos are further corrected by shaving off over the rotation and adding on the concavities. They may be made still more efficient by cutting them in two and setting the halves apart, the distance being determined by the patient's flexibility.

A check is kept of the efficiency of these jackets by means of frequent measurements of height. Four measurements are recorded as follows:

Best standing position.

Position with hands on hips, pushing up (limit of flexibility).

Position held by jacket.

Position with hands on hips pushing up in jacket.

If a case is held at her limit of flexibility in the jacket, as shown by comparing her height record when pushing up with hands on hips, with her height when in jacket, that is all one can expect to do at that time. As her flexibility increases

through exercises and use of the jacket, then the extra flexibility must be taken up by pads, and later by a new jacket, following a remodeling of the plaster torso. In general it may be stated that from three to six weeks is about as long as a jacket is really efficient, and it becomes necessary to alter the torso, or to take a new cast.

Jackets must be worn for long periods, that is, several years, to obtain permanent results. It is better to have these jackets made of plaster, for they are cheaper and do not take long to make, and are not worn long. A leather jacket takes several weeks to make, is expensive and in a growing child will probably not fit for any length of time. This is true only during the growing stages of scoliosis. Later leather jackets are satisfactory.

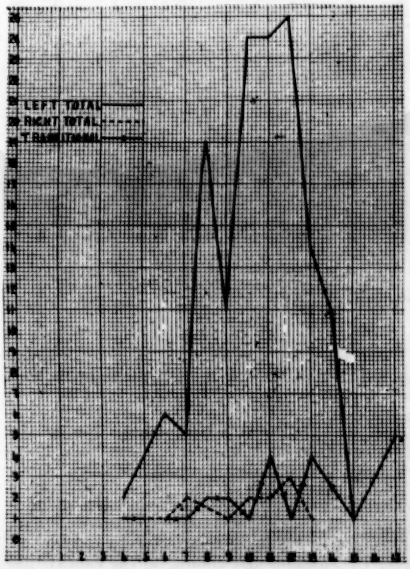


CHART III shows relation of physiological curves. (Figures at side show number of cases; figures at bottom give ages by years.)

The exercises in these moderate cases are for two purposes, namely, flexibility first and then muscular development. Jackets may be made more corrective and efficient by cutting out the greater part of the concave side and allowing the patient to expand through this opening, and also in mid-dorsal and upper-dorsal cases by fastening a steel shoulder pad on the jacket in front of the high shoulder to act as a point of counterpressure to that shoulder and prevent its falling forward.

LEATHER JACKETS.

There are two kinds of leather jackets in common use at the clinic. One is made of rather heavy leather, fitted wet over the corrected plaster torso, and when dry is saturated with a solution of barbary wax. This soon dries and makes a very hard and durable jacket. For purposes of reinforcement light strips of steel may be riveted on the outside at the areas of greatest strain. These require about ten days to two weeks to make.

The other type is the so-called leather celluloid jacket, made of light weight leather, fitted to the torso as before and lined with several layers of celluloid dissolved in acetone, which is painted over several layers of gauze on the inside of the jacket. These jackets are more efficient when fitted with steel strips as reinforcements, and are lighter than those made of barbary wax. Both types are perforated for the sake of coolness and ventilation.

Whereas the exercises in the first class of cases are usually symmetrical and carried out in the self-corrected position, except, of course, the passive stretching exercises for the round shoulder cases, the exercises for Class II are always those of special selection and asymmetrical in character, such as those which increase the backward flexibility of the spine against the direction of the deformity and increase the rotation of the thorax in the direction of the normal plane. In addition to the usual apparatus for increasing flexibility, we have been using also the symmetrical and asymmetrical creeping exercises as devised by Klapp. We have not been able to get the best results from these on account of our limited floor space. These latter exercises are an aid in increasing flexibility in some cases, but are by no means efficient alone to the exclusion of other treatment in obtaining results.

Exercises should not be pushed beyond the limit of fatigue, and the length of treatment, the period of exercises and the extent to which they may be pushed depend wholly on the vigor of the child.

CLASS III.

Cases which come into this class are those severe ones in which the curve has become more or less fixed, and in which there is very little hope of any cure. These cases have had periods when treatment might have been of use, but have passed that stage and arrived at a condition of severe structural deformity through neglect. They are usually the result of rickets or congenital deformities or deficiencies and infantile paralysis. About all one may hope to do is to hold the deformity at its present condition and to prevent increase. Some cases have been considerably improved by wearing permanent jackets put on in the corrected position without forcible correction. These jackets have large windows cut out of them through which the areas of rotation may be padded from time to time to decrease the deformity. They are worn for long periods of time, often a year, and in suitable cases cause marked improvement. These cases, then, may be considered as belonging to Class II, and their treatment is carried along under the plan outlined above.

APPARATUS AND EQUIPMENT.

In view of the small space at our disposal, we have done well by it, and I wish to describe in a general way some of the apparatus in use at the clinic. The essential apparatus is as follows.

1. Stretching board (two) (Lovett).
2. Sayer head sling and trapezes.
3. Adams' machine.
4. Lorenz rocker.
5. Roller.
6. Stretcher frame.
7. Pelvic machines.
8. Dumbbells, chest weights and wands.
9. Schultess' machine.

1. Stretching board (Lovett). Correction of the lateral curve of the spine is to be obtained most economically by pressure on the spine through the medium of the ribs and combined head traction, which is most easily secured by having the patient lie prone. The corrective force should be divided into two elements, — the force to correct the rotation and the force to correct the side deviation. This may be done by means of this board.

"The patient lies face downward, with knees flexed, on a board three feet wide by four feet long. Assuming the case to be one with a right dorsal curve, a broad canvas strap is passed around the left upper thorax, over and under the patient and fastened to a cleat on the right side of the board. This furnishes a point of pressure to the left against the upper thorax at the level of the axilla. A broad canvas strap is then passed around the pelvis of the patient, above and below, and is fastened to a cleat at the right side of the board. This furnishes a point of pressure to the left at the level of the pelvis. A broad canvas strap is then passed around the thorax at the level of the greatest point of the curve. It passes above and below the thorax, and its upper end is fastened to a cleat at the left side of the board. Its lower or under end is fastened by means of a cord into a compound pulley attached to a cleat at the left side of the board. By means of this pulley any reasonable degree of force may be exerted against the right side of the thorax, pulling it to the left, and at the same time that it pulls it tends to reduce the rotation from the fact that its upper end is fastened and its lower end moving towards the pulley." Head traction is applied in combination with this. Structural cases are treated with this apparatus from fifteen to twenty minutes daily. Dr. Lovett's board does not use head traction, but is an addition made by the writer.

2. The Sayer head sling is familiar to all and is used for passive stretching, as are also the trapezes.

3. Adams' machine. This is a machine devised by Dr. Z. B. Adams, of Boston, for doing the same thing as is done by the board devised by Dr. Lovett.

4. Lorenz rocker. This apparatus is designed for use in scoliosis and round back cases, and utilizes the body weight as a corrective force combined with forcible stretching. It consists of a heavy gas pipe stand furnished with an upper horizontal plane and a long, slanting plane covered with canvas, each about two feet wide, and pivoting on the gas-pipe standard at the junction of these two. At the junction point is a heavily padded leather roller. The lower frame or plane is provided with a counter balance to insure easier operation.

The patient lies reclining at about 45° to the floor, on his back, on the lower frame, and this is then lifted to a horizontal position. He then grasps in each hand a strap which is attached to the upper end of the horizontal or fixed frame, the part to be corrected resting on the leather roller. The inclined frame is then lowered sufficiently to create considerable pressure and stretching force over this area to be corrected. This is repeated several times and is used daily.

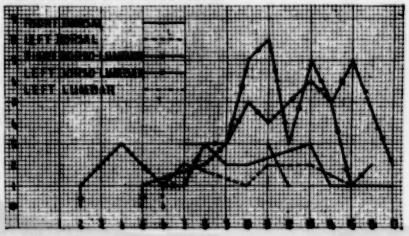


CHART IV shows relation of simple structural curves.
(Figures at side show number of cases; figures at bottom give ages by years.)

5. Roller. The roller is used in cases of round back and forward shoulders principally. It consists of an upright steel rod about eight feet long fastened to a square platform. It is hinged in the middle so as to enable it to be moved forward and backward. On the upper arm is a sliding saddle made of a half circle of steel, the ends of which are joined by a wide leather band. Above this is a sliding rod used as a lever, and above this is a handle bar for the patient to grasp. The patient stands on a stool and grasps the handle bar, and the saddle is adjusted opposite the deformity to be corrected and the lever is then grasped and the patient lifted off the stool. The hanging body weight is then in action as the corrective force. This procedure is repeated several times daily.

6. Stretcher. This apparatus is also used for the forcible correction of stiff, round back and shoulders and is described as follows:

"The apparatus consists of an oblong gas pipe frame of the ordinary pattern. Fastened to this near the middle, and hinged so as to be raised to any degree, is another section of gas pipe lying on the frame proper, and of the same shape and size as the upper half of the frame. To this movable section is fastened, at right angles to it, and movable on it, a gas pipe bridge rising about eighteen inches from the movable section. When prepared for use two strips of webbing, one over the other, run from each of the buckles

at the bottom of the frame. The lower two strips are tightly drawn and run to the buckles at the end of the movable section. The upper two are loosely fastened to the bridge over the movable section. The cross pieces are tightened, and the patient laid face downward on the webbing strip, which may be covered with sheet wadding. The thighs are flexed and the feet rest on the floor so that the lumbar spine is flattened. Two pieces of webbing are passed over the mid-dorsal region from side to side and tied to the lower non-movable frame on each side. These furnish the resistance for the straightening of the spine, when the upper end of the frame is lifted, carrying with it the upper chest and head. The upper part of the frame is lifted after the patient is in place and as much force as seems advisable is exerted. This should never be pushed beyond the point of mild discomfort. Several stretchings are made, at first of a few seconds each, and the movable part of the frame again let down to rest the patient.

7. Pelvic machines (devised by author). These are used to fix the pelvis during exercises so as to more carefully localize them. It is obvious that unless the pelvis is fixed during trunk bendings and swayings, the exercise is a general one and not a local one. These machines are made of gas pipe and are screwed to the floor. They consist of an upright made in two pieces, one sliding within the other, on top of which is a horizontal arm, which may be tipped up or down, and to which is fastened two sliding arms so as to grasp a pelvis of any width. These arms are connected by a leather strap which passes about the pelvis and holds the patient firmly.

8. The chest weight, dumbbells and wands are used for general symmetrical and setting up exercises.

9. Schultess' machine. This machine has been used for recording the scoliosis cases. It is complicated and can be used satisfactorily by one person only, who should make all observations. The apparatus consists of an upright frame in which the patient stands, the pelvis being fixed by clamps and the sternum steadied by an adjustable rod. Behind the patient is a sliding bridge with counter weights which move up and down on uprights. Attached to this bridge is a pointer which moves forwards and backwards and sideways. The movements of this pointer, by an arrangement of weights and pulleys, are recorded upon two glass panels parallel to the sagittal and frontal planes of the body by means of pencils moving on paper attached to the glass panels. By tracing from below upward the marked lines of spinous processes on one panel, the antero-posterior curve of the spine is recorded, while on the other the lateral curve is simultaneously marked. By a longer pointer the lateral body outline is then traced in the frontal plane, after the position of the scapulæ has been recorded. The two pencils in use are then thrown out of

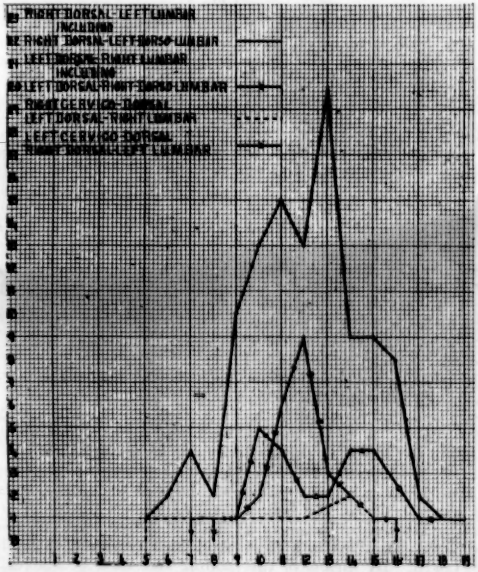


CHART V shows relations of triple structural curves.
(Figures at side show number of cases; figures at bottom give ages by years.)

action and by means of a third pencil, working on a glass plate on the sliding bridge, horizontal contours are recorded at three levels.

OCCURRENCE OF SCOLIOSIS.

I have made no attempt to take the figures for the clinic since its organization as a separate department, but have relied on the figures covering the period from October, 1903, to June, 1909. In three of these years the clinic was closed during the month of August, and in the other years during July, August and September was run at a very low level. The total number of cases during this time was 571. The total number of visits was 26,329, giving an average daily attendance of 46.07. There were boys, 130; girls, 441. This great difference between boys and girls is due to the probable fact that boys do not come to the clinic for treatment until the curves become severe, or until complications arise, while in girls the effects of scoliosis upon the figures are perceptible much earlier and treatment is sought to remedy conditions which in boys pass unnoticed. Statistics of clinics in various institutions show the same difference between boys and girls, whereas records from the examinations of large numbers of school children show about equal occurrence of scoliosis in both sexes.

AGE.

It must not be supposed that the appended charts show accurately the ages at which the scoliosis developed. Scoliosis is a deformity coincident with growth, and it probably begins in the early years of life. It has been noted as occurring from the first year up to the eighteenth year, but rarely develops afterwards. There is usually an increase in its frequency of development between the eighth and thirteenth years. Inaccurate parental observation makes it most difficult to establish any definite period of onset in the individual case.

INFLUENCE OF SHORT LEG.

A short leg either on one side or the other, except in rare cases, does not seem to play any definite part in the development of scoliosis of any one type. Out of 177 cases of total functional scoliosis, there were 37 cases with a short leg, the difference in length being about equally distributed on each side, and apparently affecting the development of the curve in no way.

ETIOLOGY.

I have made no attempt to classify these cases on an etiological or pathological basis, for at present our records are not complete enough, nor, even if they were, would it be possible to do so. At present the x-ray plays a great part in helping us to make a diagnosis of the curve, and it is a great surprise to me to find in a large number of cases anatomical deficiencies or variations of the vertebral column hitherto unsuspected.

RELATIVE FREQUENCY OF THE DIFFERENT FORMS OF SCOLIOSIS.

One hundred and seventy-seven cases out of the total of 571 showed a condition of functional scoliosis, 164 of these being the usual left total curve and 13 being the more unusual right total curve. A number of these showed also a co-existing condition of round back and forward shoulders. These conditions may be noted in the following Table I.

TABLE I.

Total or Postural Scoliosis.

Total number of cases,		177
Boys,	44	
Girls,	133	
Average age:		
Boys,	10.2	
Girls,	10.9	
Left total,		164
Boys,	42	
Girls,	122	
Right total,		13
Boys,	2	
Girls,	11	
Number with round back and forward shoulders,		48
Boys,	15	
Girls,	33	
Number with short legs,		37
Boys { right,	5	
Boys { left,	1	
Girls { right,	13	
Girls { left,	18	

Relation of Scoliosis to Short Leg.

Left total curve:		
Short leg on right,	16	
Short leg on left,	18	
Right total curve:		
Short leg on right,	2	
Short leg on left,	1	
Total,		37

Tracing as many of these functional cases as was possible after periods varying from several months to several years after having left the clinic, I found that 41 of them had developed definite structural deformities, varying more or less in degree. There are presumably others which have also changed into structural curves, but I have been unable to trace them for observation. These figures (see Table II) compare favorably with the series observed by Hess, who observed 86 cases of total functional scoliosis, of which 60 persisted as total scoliosis and 26 changed into structural curves.

TABLE II.

Number Developing Structural Curves.

From left total postural to	
Right dorsal,	3
Right dorso-lumbar,	1
Right dorsal, left lumbar,	12
Right dorsal, left dorso-lumbar,	3
Left dorso-lumbar,	10
Left dorsal, right dorso-lumbar,	2
Left lumbar,	4
	35
From right total to	
Right dorso-lumbar,	1
Right dorsal, left lumbar,	1
Right lumbar,	1
Left dorso-lumbar,	3
	6

Chart I shows the totals of each class of case and also the relative number of boys and girls in each class.

Chart II shows the relation of the anteroposterior variations to each other with their occurrence by ages.

The other charts show the relations of the simple functional and compound structural curves to each other in their occurrence by age and frequency.

It may be noted that from eleven to thirteen years of age is the period of greatest frequency and occurrence, both in the functional and structural scolioses.

The relative frequency of the occurrence of these different clinical forms is in favorable relation to the records of other observers, and these curves may then be taken as showing about the usual relations and frequency of occurrence as ordinarily observed in the various hospital clinics abroad.

AN HISTORICAL NOTICE OF THE OPERATION OF CÆSAREAN SECTION FROM THE FIRST OPERATION TO THE MIDDLE OF THE EIGHTEENTH CENTURY.

BY CHARLES GREENE CUMSTON, M.D., BOSTON.

If we are to believe Pliny (Hist. Nat., Lib. 7, chap. 9), the Cæsarean operation was performed long before his time, or at least the first case, because he says: "*Enecta parente gignuntur sicut Scipio Africanus prior natus, primusque Cesarum a cæso matris utero dictus.*"

This sentence has been very differently interpreted by a number of writers; several have upheld that Pliny referred to Julius Cæsar, and they assure us that an incision was made in order to remove this illustrious being from the belly of his mother, but Bayle, in his famous Dictionary, unhesitatingly states that this is false, a fact which had been pointed out before him by Zonaras. It is evident that Bayle is quite right in opposing the inference that these writers have made on Pliny's text relative to Julius Cæsar, because, as he points out, Cæsar's mother Aurelia took great care of her son's education and died while he was waging war on the Gauls. However, it is possible that Aurelia survived the operation and, consequently, the opinion of those who have upheld that Cæsar was removed from his mother's uterus through an incision is not destroyed. Some have believed that the Cæsarean operation took its name from Cæsar, but, according to Pliny, it should rather be inferred that Cæsar took his name from the operation itself, because those who were borne by means of this surgical interference were, according to him, called *Cæsares aut Cæsones a cæso matris utero.*

If one is satisfied with the conjectures which naturally arise from the name of Cæsar and the remark made by Bayle, it would seem that one might conclude that the Cæsarean operation was performed on the living female, but these conjectures are far from being decisive, and there is no certainty that in these far-off times surgeons dared to have recourse to it for saving the life of the mother and child. On the contrary, it is to be pointed out that up to the last century the profession was extremely skeptical as to the success of this operation, and I have been unable to discover any other reports of this operation before the commencement of the sixteenth century.

The first case recorded is that related by Bauhin, which he attributes to a butcher who performed it on his own wife. In the year 1500 the wife of Jacques Nufer was pregnant with her first child and, feeling labor pains for several days, had several midwives come to deliver her. They made many attempts to bring about labor, but they were all useless, and as the patient experienced very severe pains, and as there no longer was any hope of relieving her, her husband said that if she would confide in him he would undertake an operation which, by the grace of God, might possibly succeed. His wife replied that she would undergo anything to be relieved. As the affair was a delicate one the husband asked permission of the President of Fravenfelden to undertake this operation; the Judge at first would not consent, but being informed of the condition of the woman, and the willingness of the husband to relieve her, he at last allowed the operation to be performed. The husband returned home and told the midwives that those of them who were sufficiently courageous to help him might remain in the room, but that those who were not must withdraw. After imploring divine help, he laid his wife on a table, incised the abdominal wall and then the uterus, after which he quickly extracted the child. Several sutures were placed in the abdominal wall. The wound healed happily without any complication, and several years afterwards the woman was delivered of two children, one becoming a judge at Siergershenfen and who was alive in 1583.

François Rousset, who lived at the end of the sixteenth century, appears to be the first writer who undertook to advise the operation on living women. His book, which was published in 1581, is really a masterpiece and has for title: *Traité nouveau de l'Hysterotomotokie ou Enfantement Césarien, qui est extraction de l'enfant par incision latérale du ventre et matrice de la femme grosse ne pouvant autrement accoucher, et ce sans préjudicier à la vie de l'un et de l'autre ni l'empecher la fécondité maternelle par après.* Paris, 1581.

In the first part of this book he first points out the utility of the operation when there is imminent danger for both mother and child in cases where delivery is impossible by the birth canal. Next he establishes the possibility of this operation by showing that wounds of the parts involved in the operation are not necessarily fatal. And, lastly, he goes into considerable detail of several obstetrical complications which are far more dangerous than the operation itself and which may be avoided if the operation is done. These complications he places under five headings. In the first he refers to women who, being pregnant and the child dying and becoming decomposed, has

caused death of the mother on account of uterine infection, and who might have been saved if this operation had been resorted to. In the second class he relates several cases of abscess of the uterus which were successfully opened by means of the actual cautery. In the third, he mentions several cases of ulcer of the womb (sic) which allowed the child to make its exit into the abdominal cavity, and was followed by abscess in the hypogastrium. This was opened without any danger to the mother. In the fourth he refers to several cases of amputation of the uterus performed with the knife, ligature or cautery and the women had lived. And lastly, in the fifth section he proves by several examples that a woman can conceive after this operation.

In the second part of his book, Rousset establishes the sureness of the Cæsarean operation and proves this by relating cases which had been given him from reliable sources, and, lastly, the operations that he advised to be performed.

These cases are seven in number. In the first, we have the history of a woman named Godard upon whom the operation was performed six times, all the children living. The patient died the seventh time she was pregnant because she could not obtain the services of the surgeon who had delivered her by the operation upon previous occasions. The second observation was that of a patient upon whom the operation had been performed three times by two surgeons by name Ambroise le Noir and Gilles le Brun. The author was desirous of seeing the patient, but learned that she had died shortly before from the plague which had ravished the town where she lived. The third observation is a letter written by Aliboux, a physician at Sens, in which he states that Jean Desmarais, a surgeon at Chastre en Berry, had performed the Cæsarean operation on his wife and that later she was delivered naturally of a daughter. The fourth observation is merely the simple recital of a similar operation told to the famous lithotomist of Paris, Laurent Colot, by Pelion, a physician of Angers. The fifth case refers to another operation which was quite as successful as the other four. In the sixth, Rousset says that he saw at the hospital of Châtillon, in company with Denis Armenaut, a physician of Gian, a woman who had on the right of the abdomen a hernia accompanied by a very long cicatrix, and having asked her the cause of the latter she replied that it was the result of an incision that had been made to deliver her and that the child was at that time seven years old. In the seventh observation he relates that, in 1556, a woman who had been four days in labor had been operated on successfully. Eighteen months afterwards her husband died, she married again and was afterwards delivered of a daughter, the labor being normal.

Some time before the publication of Rousset's book, Ambroise Paré gave to the world his work on surgery in which he strongly criticises the Cæsarean operation, the following being his exact words: "Or, je m'émerveille comme d'autres veulent affermer avoir vû des femmes auxquelles pour extraire leurs enfants, l'on auroit incisé le ventre non-seulement une fois, mais plusieurs; car telle chose pour raison n'est du-tout impossible à croire, entendu que pour donner issue à l'enfant, il faudroit faire une grande plaie au muscles de l'épigastre et pareillement à la matrice, laquelle etant imbue d'une grande quintité de sang, et y faisant une division si grande, il y auroit une très-grande hémorrhagie dont la mort s'ensuivroit; davantage après avoir consolidé la plaie, la cicatrice ne permettroit pas à la matrice de se dilater pour porter l'enfant; il y a encore d'autres accidents qui en pourroient advenir, et le pis une mort subite à la mere; et partant, je ne conseillerai jamais de faire telle oeuvre où il y a si grand péril sans nul espoir en parlant humainement. Toutefois on m'a assûré qu'un nommé Maitre Vincent, Chirurgien d'Hericy près Fontainebleau a fait cette périlleuse opération avec heureuse issue; la femme que l'on dit avoir été incisée, et ledit Maitre Vincent, sont encore aujourd'hui vivans: tant de gens d'honneur dignes de foi me l'ont affermé, jusqu'à même à me dire avoir vû faire l'opération et extraire l'enfant, que je ne veux ni ose les mécroire, mais cela étant, j'ose bien dire que c'est un vrai miracle de nature," etc.

The operation referred to by Paré is reported in detail by Schenckius, who says that the surgeon who operated was not from Hericy, but from Nemours; that the patient's name was Nicole Beranger and that the operation was performed in 1542; he adds that the child was in decomposition and that there was such little hope of saving the mother that the surgeon only placed a few sutures in the skin, so that there resulted a ventral hernia for which the patient was obliged to wear a support. Schenckius also says that he saw the woman nearly two years after the operation and that she had been delivered of a daughter by the natural route.

It would appear that Paré was not always opposed to the Cæsarean operation because in the first edition of Rousset's book is to be found an Approbation by De Monanteuil, Regius Professor of Mathematics and Dean of the Faculty of Medicine of the University of Paris, in which this physician greatly praises Rousset's work, and immediately below this Approbation is found: *J'atteste ce que dessus*: Ambroise Paré.

In 1582, Gaspard Bauhin made a Latin translation of Rousset's book, which had for title, *Exsectio foetus vivi ex matre viva sine alterutrius vitae periculo et absque faecunditatis ablatione, a Francisco Rosseto Gallice conscripta, a Gasp. Bauhino latine reddita et variis historiis aucta. Basil. 1582.* To this he added several operations which had been successfully performed in an appendix to the work. The majority of these observations were sent to Bauhin by Albosius and Saguyerus; others were taken from the writings of Mauritius Cordaeus and Felix Plater, while several new ones were given by Rousset himself. At the end of his translation Bauhin says that this operation was performed on a woman named Elizabeth Turgois, and that afterwards she was delivered normally of four children.

In 1590, Rousset published his *Dialogus Apologeticus pro cæsareo partu, in malevoli cujusdam Pseudoprotei dicteria. Paris. 1590.* In this work he considers all the objections which had been made by his adversaries, and even takes it upon himself to expose them in their proper light, which gives him occasion to enlighten and fortify his own way of thinking. He deemed it *à propos* to give the sources from which he had obtained his knowledge, and speaks of noted men, with whose commerce he seems to have been familiar. Had his poem not been so long it might have placed him among the distinguished Latin poets of his day, while the object that he had in view would have suffered in no way. He gives to the ancients all necessary justice which is due them from those who have carefully meditated upon their writings, but he goes beyond timid admiration, which limits itself to respecting these early masters, and neglects to employ their knowledge in acquiring new. He proves by happy discoveries, unknown to these great men, that the genius of medicine did not become extinct with them, and that if they had lived in his time they would have made his own proofs more complete. Nothing can be simpler or more solid than his reasoning concerning the necessity of the Cæsarean operation, and nothing could be clearer or more precise than the instructions he gives. He describes the operation with great clearness, likewise his reasons in its favor.

This Dialogue brought forth many severe criticisms on the part of a certain Marchant, a surgeon of Paris, who published a work entitled: *In Francisci Rosseti Apologiam Jacobi Marchant, Regis et Parisiensis Chirurgi Declamatio.* In the first part of this work, Marchant combats the Cæsarean operation with the same arms as those employed by Paré, and rejects the first observation given by Rousset as false and contrary to all the laws of the animal economy. He then takes up the history of the woman of Châtillon and points out that the cicatrix observed on her abdomen by Rousset was not sufficient proof for believing that the operation had been done on her. I will quote him in his own words. "Combien ne voit-on pas de cicatrices de plaies accidentelles & d'abcès au ventre, qui pourroient faire croire que ce seroit une suite de l'opération Césarienne? Les habiles Chirurgiens, toujours zélés pour le bien public et pour le soulagement des malades, ont saisi avec empressement votre nouveau système, et ont voulu eux-mêmes être convaincus de sa vérité. Guillemeau fut le premier qui trouva l'occasion de faire l'opération Césarienne à une femme qui souffroit depuis plusieurs jours des douleurs cruelles, sans espérance de pouvoir accoucher; il opéra en presence d'Ambroise Paré et de plusieurs autres Chirurgiens de l'Hôtel Dieu de cette Ville, mais la malade mourut cinq jours après. Paré, Carbonet, Brunet et Viard ne furent pas plus heureux dans plusieurs autres occasions qui se présenterent." He ends the first part of his work by an enumeration of many of the causes which may prevent a natural delivery, but without referring to many conditions in which a normal delivery is really impossible he has the pretention of upholding that a careful and skilled physician may overcome all these difficulties without having recourse to Cæsarean section, which, according to his way of thinking, always ends fatally.

Marchant's zeal carries him away in the second part of his book, and he no longer combats Rousset by logical reasoning, but gives himself up to insults directed against him, the book concluding by several satirical poems addressed to Rousset in which the criticisms are far from being what would be expected from a man of letters. It is quite true that much erudition, precision and distinctness of style are to be found in Marchant's writings, and from careful perusal one must admit the profound knowledge and skill of this surgeon.

Following these satires there is a letter by Guillemeau addressed to Rousset, in which he gives the reasons which caused him to oppose the Cæsarean operation in his works, but it must be said that this letter is written in much gentler language than that employed by Marchant, and by reading it the character of a friend is distinctly perceived. Guillemeau rather endeavors to dissuade Rousset from approving and favoring a practice which had had so little success in the hands of the most skillful surgeons of the time, but Rousset, still assured of the correctness of his cause, replied the same year with much erudition to Marchant, employing observation as the surest means to refute his adversaries. As a proof of this I would refer to an observation taken from the Latin edition of Rousset, which ends in these terms: *Hæc anno Domini 1573 diligenter observavi, et in Adversariis meis annotavi.*

It is apparent that the Declamation of Marchant and some unfortunate results following the operation were the means of preventing its further performance, because Guillemeau expressly says in the fourth book of his "Chirurgie," chapter 28, that "ce qui determina M. Paré à se desister et retracter de cette operation, aussi-bien que le College des Chirurgiens et la plus saine partie de la Faculté de Médecine de Paris, dans la question qui fut agitée par feu M. Marchant dans ses deux Declamations qui'il fit, lorsqu'il eut l'honneur de passer Maitre Chirurgien de Paris."

It is evident that these disputes were both for and against the operation; those published by Rousset show that it was not infrequently performed successfully, while the cases related by his opponents proved to the mind of the profession that the operation was dangerous, and undoubtedly it is for this reason that it was not placed among the current operations of surgery of the times. Rousset, however, continued his work in order to reassure the profession, and after considerably extending his researches in reference to this operation, he published, in 1590, a Latin edition of his work which was far more extensive than his first, its title being: *Caesarei partus assertio Historiolog. Paris. 1590.*

Besides the new and good reasons that he adds to those he had already given, he increases the value of the book by several new case-records in which a successful outcome had occurred. The first was the history of a woman upon whom the

operation had been performed in 1576. The child was dead and undergoing putrefaction. Some time later the patient again became pregnant and was delivered naturally. The second case was taken from a letter written to Rousset by Vertunianus, a physician of Poitiers, in which the latter tells of a woman who was delivered in this way and who recovered perfectly.

The third case was that of a woman whose child had succumbed *in utero*. This occurrence had happened some time before and every method known at the time had been employed in order to deliver her. As she was in a very critical condition, the surgeons decided to perform the Cæsarean section, and as soon as the uterus was opened a large quantity of fetid matter escaped. The patient suffered a great deal during the extraction of the child because the incision was hardly large enough to allow it to pass. However, no accident occurred, hemorrhage was only slight and much purulent matter came away with the lochia. Five weeks after, the patient was able to go out, and since this operation she had been happily delivered of five children. The fourth operation was performed successfully in the year 1580 by a surgeon named Jacotin. Rousset makes the remark that he saw this patient and that this surgeon told him that he had operated successfully upon two other women. The fifth and last case is the history of a successful operation performed in 1582, and the statement is made that the surgeon who performed it was not particularly dexterous, although he succeeded. Rousset, in his own words, says: "Haec femina secta fuit a Joanne Luca tunc parum sobrio; cui tunc bene poto si hoc non male successit quid ei non est sperandum, qui sobrius et mentis compos arte duce eo accedet?"

Scipio Mercuri, a surgeon of Rome, published, in 1604, a dissertation on obstetrics having for title "*La Commare Orucoglitrice.*" In this work he relates cases of successful Cæsarean section, and advises that this operation should never be neglected in those cases where delivery is otherwise impossible. This author relates that at one time, being near Toulouse, he saw two women who had undergone the operation and that one of them had had children afterwards. He makes the rather remarkable statement that, in his day, this operation was almost as common in France as bleeding was in Italy for headache.

The writings of Schenckius refer to a letter from Albosius in which the latter states that he had performed the operation successfully upon one occasion.

In his work entitled, *Libro Observ. de morbis mulier*, Roonhuisen, a surgeon of Amsterdam, makes the statement that a physician of Bruge, by name Sonnius, had performed the operation seven times upon the same woman.

A famous Swedish physician, Olaus Rudrecius, saved his wife's life by this operation, which he performed himself, while Thomas Bartholini relates in his *Hist. Anat. Cent.* that when he was at Paris he knew the wife of a surgeon upon whom the Cæsarean operation had been done five times. In Theophile Renaud's work, *De ortu infantium contra naturam per sectionem Cæsaream, autore Theoph. Renaudo Societ. Jesu Theolog. Lugd. 1637*, three operations with a successful outcome are recorded. In the first he relates the testimony of the famous surgeon, Louis Panthot, who assured him that in the month of April, 1627, a woman near Lyons, after having suffered labor pains of great intensity for several days, was at length happily delivered by the Cæsarean operation. In the second case he states that a Jesuit had seen at La Flèche a woman who certified that she had submitted to the operation three times, and also that the Jesuit personally knew the surgeon who had operated. The third case is taken from a letter from Pellaire, a physician at Maurienne, in which it is stated that this operation was done successfully six times on a woman living at Ville d'Auçois.

In 1692, Saviard published in the *Journal des Sçavans* the case of a dressing that he had applied for a ventral hernia following an incision for Cæsarean section fourteen years previously. The patient finally died, and an autopsy was performed in the presence of several surgeons, there being found a cicactrix in the uterus, comprising the entire thickness of the walls of the organ and corresponding to the incision in the abdominal wall. This author adds that the surgeon who had performed the operation was obliged to leave on account of the bad treatment he received from the relatives of the woman, but it would appear, however, that Saviard did not know the real motive for this flight, because in the *Journal* for the month of June, 1693, it is stated that, being a Calvinist, he had considered it *à propos* to leave hurriedly, as many other Protestants had done, on account of the trouble which was preparing against those who had adopted the reformed religion.

In the same *Journal* are to be found two cases recorded by Jobert concerning two Cæsarean operations performed on a woman twenty months apart. The patient recovered perfectly and the author adds that the child which was delivered at the first operation was still living and presented a small cicatrix on the lower jaw caused by a slight cut it had received from the surgeon's knife at the time of delivery.

In 1693 a woman had been in labor for a long time, the midwife had attempted to deliver her by all known means and finally succeeded. A very severe complication resulted in the form of a vesico-vaginal fistula. The patient, in order to obtain relief, resorted to quacks, but their work only resulted in the production of a vaginal tumor which completely filled the canal. In spite of this the woman became pregnant again and when labor set in she was attended by Lankisch, a physician of Zittaw, who advised a Cæsarean section, which was successful as far as the mother was concerned. The account of this case is to be found in *Acta erudit. Lips. ann. 1693.*

In his *Dissert. du partu Cæsareo, Vitebergae edita anno 1695*, Vaterus mentions a similar operation which appears to have been quite as successful. The patient on whom it was performed had the entire vaginal cavity filled by a vegetating mass

following an ulcer (probably cancerous), so much so that the end of the little finger could hardly be made to enter.

In 1707, Ruleau, a surgeon at Xaintes, published a dissertation on the possibility and necessity of the Cæsarean operation. He brings up nearly all the reasons given by Rousset in order to prove how very necessary this operation is, and speaks of a successful case which occurred in his own practice. The patient had been in labor with severe pains for five days, and vaginal examination showed that the pelvis was so deformed that two fingers could hardly be introduced into the vagina. He, therefore, resorted to Cæsarean section, with the result that there was no hemorrhage, the lochia was discharged through the wound and the patient recovered nicely.

De la Motte relates in his work on obstetrics a similar case. A poor woman had suffered for three days and the child presented by the arm. The midwife who attempted to deliver the patient tore the arm away. A surgeon was called and, finding much difficulty in delivery, performed Cæsarean section, withdrawing a dead child, and then closed the abdomen with several sutures. The cure of this poor woman was, so to speak, left to the care of nature, because the surgeon saw her only very infrequently, leaving the care of the dressings to the husband. The wound suppurated, but in spite of this the patient recovered.

In 1739 the Académie Royale de Chirurgie caused a woman living in Guise, who had undergone the Cæsarean operation, to appear before it for examination. This patient had been in labor for three days and the midwife, being unable to deliver her, called a surgeon. He tried all the known means to deliver the woman but unsuccessfully, and finally the patient begged the surgeon to operate. The surgeon was astonished by this request and refused to perform the operation because he had never heard of it. However, pressed by the prayers of the patient and her husband, he finally consented. He made a longitudinal incision in the skin and muscles reaching to within three fingers' breadth of the umbilicus. As the intestines came out the surgeon had the husband hold them back with his hands. He then opened the uterus, making an incision sufficiently large for the introduction of the finger and then, feeling the movements of the child, he enlarged it sufficiently to extract the child and placenta. The incisions of the uterus and abdomen were united by a few sutures and then an ointment composed of fresh butter and chimney soot was applied to the wound. Three days after the operation the sutures broke away, but on account of the pain the patient would not allow the surgeon to introduce new ones. The lochia made its exit by the wound, which for several days was livid; afterwards it became crimson and was entirely healed at the end of three weeks. It would appear that during the entire illness the woman did not seem to be in danger, because she nursed the child. After this operation she had four children by the normal route; three were born dead, while the fourth was alive when the patient came to Paris.

The famous surgeon, De la Peyronie, relates the case of a woman twenty-five years of age who was delivered of her first child successfully. As she could not be delivered in her second pregnancy after a long labor, a surgeon by the name of L'Amiral was sent for, who made an incision on the left side of the hypogastrium and delivered the child and placenta. The mother recovered in fifteen days and the child was still living at the time the patient was seen. Several years after the operation the woman was again pregnant; the labor pains were severe, long and without effect. The same surgeon again performed the Cæsarean section.

Urban reported the following cases to the Académie de Chirurgie. A surgeon named De Thise, living at Bure, had performed during the last eight or ten years, and with success, the Cæsarean operation on three women. The first patient lived in the Duché of Luxembourg; she recovered perfectly and had other children afterwards. The second patient lived at Rochefort and died two years after the operation from colic. The third lived at Ave in the Duché of Bouillon. The Cæsarean section was done, convalescence was long because the patient was taken with violent coughing spells which caused the sutures to give way. One of the members of the Académie saw the latter case and wrote a letter to Houstet, dated Sept. 7, 1741, in which he says, "Qu'il étoit survenu à cette femme huit mois après l'opération une hernie ventrale de la grosseur et la forme d'un chapeau; que cette tumeur occupoit toute la region ombilicale droite; que l'enfant avoit vécu trois mois et demi, et que la malade avoit été guérie au bout de trois semaines; cette femme a eu trois enfans depuis l'opération."

A surgeon by the name of Brou, being unable to deliver a woman, performed the Cæsarean operation in the presence of her husband and the village priest. From his incision he withdrew a female child, who, at the time of writing, was eighteen years of age. The skin and muscles were united by a few sutures, which gave way after several days, but, nevertheless, the wound healed very well and some time afterwards De la Faye being in the neighborhood asked to see the woman and found a long cicatrix in the abdominal wall which had given rise to a large hernia. He found that the hernia was a little over thirteen inches long, ten inches wide and that the cicatrix was eight inches in length, while the distance from the umbilicus to the cicatrix was five inches.

Noyer reported a case to the Académie de Chirurgie of a woman successfully operated on on April 17, 1726. The patient was thirty-five years of age and he extracted a child which had been dead for several days. Several sutures were inserted and seventeen days later the cicatrix was perfect. This woman became pregnant later and after a long labor she sent for Noyer to operate again, but he was absent and she died. The patient had been delivered normally three times before the operation.

In the Histoire de l'Académie Royale des Sciences for the year 1730 is to be found the following

case. In 1723, Mme. Flandrin, a midwife in the town of Bulle in Fribourg, was called to attend a patient forty-eight years of age and pregnant for the first time. The head presented, but the pelvis was very narrow. Having tried for a day and a night all possible means of delivery, and being unsuccessful, she sent for Dr. Michel, who ordered a fortifying treatment, but on the fourth day, as the patient was still in labor, the doctor advised the midwife to draw the child with a crochet, and if this could not be done, to remove it piecemeal. As this was not successful, there alone remained the Cæsarean operation, which was decided on on the seventh day. It was done by the midwife herself with great courage and skill. The patient was delivered without any accident.

Helvetius, who communicated the above case, also produced a letter from Dr. Michel stating the facts to be true.

The wife of Dr. de Presseux, a physician of Spa, became pregnant for the first time at the age of thirty-five. When the labor pains set in a midwife was sent for, who informed the husband that the child was in good position. The pains continued for two hours and the membranes ruptured. Dr. de Presseux, perceiving that his wife suffered a great deal and that labor did not advance, made an examination himself and was greatly surprised to find that the presentation was a breech. He at once sent to Liege for a surgeon by the name of De Blierre, who arrived the next day and with the husband worked for eighteen hours endeavoring to perform version. As the child was dead and as it was impossible to change the position, the surgeon proposed the Cæsarean operation as the last resource. The husband was, in the first place, opposed to it, suggesting an instrumental delivery, but the surgeon replied that this could not be done because he had brought no instruments for it. As the patient was extremely weak, the husband finally consented. An incision was made and when the abdomen was opened the bladder was found tremendously distended, so much so that it almost covered the uterus, and as the size of the bladder prevented the surgeon from easily incising the uterus, he punctured it to the side of the fundus and emptied it completely. The uterus was then free and was opened and the child extracted. A few sutures were put in the muscles of the skin. The operation was not followed by any hemorrhage, the lochia passed by the vagina and was small in amount. Fever occurred several days after the operation, but was controlled by proper treatment. At the end of three weeks the sutures were removed and a little fecal matter came out at a point where the wound was not quite healed. By the application of certain remedies intended to accelerate cicatrization, the wound rapidly closed. This operation was done on the first day of the year 1738, and on Dec. 24, 1740, she was happily delivered normally of a female child.

In the month of April, 1740, Dr. Soumain was asked to see a woman aged thirty-seven years of age in the seventh month of pregnancy. At the first visit the patient appeared to be very worried because she was aware that from infancy her body had been deformed. During the following visits this surgeon had the opportunity of examining the patient and found that all the bones were deformed, principally the lower part of the spine and the pubic bones, which were so close together that there was not more than a space of two inches. Soumain saw the unfortunate outlook and was ready for action. On the seventh of June labor pains commenced, the membranes ruptured and the amniotic fluid was expelled. Soumain examined the patient and found that no progress was being made. From the seventh to the tenth of the month the condition remained the same, the pains caused a slight dilatation of the cervix, which only showed that it would be an impossibility to deliver the patient by the vagina. Therefore, Cæsarean operation was decided on in consultation with Drs. Bourgeois, Puzos, Souchay, Verdier, Gervais, Gregoire, Iard, Chauvin and La Fitte. After careful examination they all came to the conclusion as to the impossibility of delivery, and were of the same opinion as Soumain. I would point out that the above men were the most illustrious in the profession at the time.

The patient was placed on the edge of her bed, the head and thorax being a little higher than the rest of the body. It is stated in the report that there was a "scirrhous hardness of the omentum" on the right side, so, therefore, the left side was chosen for the incision, all the more so because on this side the uterus bulged out on account of the oblique position of the child. Soumain incised the skin, muscles and peritoneum, and as soon as the latter was opened the intestines protruded, but were retained within the abdomen by the hand of one of the consultants. The uterus was then easily seen. As the amniotic fluid had been expelled, and as the uterus had retracted on the child, it was opened with great caution. The child presented by the lower part of the back and upper part of the breech. After extraction the cord was tied and, aided by Puzos, the placenta was removed. After this the intestines were replaced and the wound closed with a few sutures and the proper dressings applied. The hemorrhage which followed the detachment of the placenta was slight. A few days after the operation suppuration became established, the pus became laudable, and forty-seven days afterwards the patient was able to go to church. The child measured twenty inches in length and survived ten days. It was afterwards reported that it died on account of neglect on the part of the nurse.

I will not refer to any other writings on the question of Cæsarean section because all the authors resorted to the same reasoning as did Rousset and, therefore, this would be merely a repetition, but it may be said that many were greatly in favor of it. At a later date I hope that I may be able to publish a second paper dealing with the history of this operation from the middle of the eighteenth century to the present time.

A NEW mission hospital was recently opened at Pensacola, Fla. — *Jour. Am. Med. Asso.*

LACTIC ACID BACTERIA; WHAT THEY ARE AND WHAT THEY ARE SUPPOSED TO DO.*

BY ARTHUR I. KENDALL, PH.D., BOSTON.
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From the earliest historic times the drinking of sour milk has been practiced by many nomadic and semi-nomadic tribes. Originally these people undoubtedly consumed milk in the fresh state, unacted upon by bacteria, but the advantages of soured milk must early have been appreciated.

Milk that has soured in a proper manner can be kept for some time without further change and yet retain its palatability, a point of great importance in those countries where no other means of preservation are available. Furthermore, any surplus milk can thus be rendered fit for future consumption, and undoubtedly this purely economic factor has been potent in popularizing this natural method of preservation.

In certain instances, peculiar methods have been gradually evolved to bring about this souring, and the well-known Kephir granules may be mentioned as a familiar example. Kephir granules consist essentially of lactic-acid-producing bacteria and yeasts enclosed in a coagulum of casein. The lactic acid bacilli ferment the lactose of milk, forming lactic acid, while the yeasts cause a secondary alcoholic fermentation which gives increased palatability to the finished product.

Kephir granules and similar ferments, then, are to be regarded as "starters," and our present-day use of starters for ripening cream and of dispensing lactic acid bacilli in tabloids is in reality the direct descendant, refined to be sure, of the procedure established centuries ago.

Little interest was manifested clinically in these soured milks until Metchnikoff and his school published their observations on the relation of bacterial putrefaction in the intestinal tract to premature senility, and the employment of lactic acid bacilli to counteract this pernicious activity. About this time, Grigoroff, a student in Massol's laboratory, called attention to the many instances of longevity among the Bulgarian peasants, and to the fact that sour milk forms an integral part of their diet. Other observations of a similar nature have been collected, and it is upon evidence of this circumstantial nature, rather than upon well-planned and carefully executed conclusive experiments, that the whole subject of lactic acid therapy rests at the present time.

It is the purpose of this paper to outline, briefly, the salient features of lactic acid therapy: what the lactic acid bacteria are, the kinds of bacteria employed in intestinal therapy, the conditions under which they may be expected to act in a salutary manner, and the nature of this action.

Lactic acid therapy consists essentially in administering by mouth living cultures of lactic acid bacilli, either in milk soured by their action or as tabloids, together with some easily fermentable carbohydrate. The bacteria ferment the carbohydrate in the alimentary tract, producing lactic acid.

* Read at the meeting of the New England Pediatric Society, May 21, 1910.

The object of this treatment is to restrain the activity of certain proteolytic (putrefactive) bacteria in the intestinal tract. These proteolytic organisms act upon protein and protein decomposition products, forming aromatic substances, indol, skatol, phenol, cresol and aromatic oxyacids, and these aromatic bodies in turn are absorbed, in part at least, and act as slowly cumulative poisons to their host. Such, at least, is the generally accepted hypothesis. According to Metchnikoff, who elaborated this method of treatment, the putrefactive bacteria are largely anerobic in character, and are localized in the large intestine. The lactic acid bacteria, on the other hand, are non-proteolytic in nature and find their most suitable environment in media containing fermentable carbohydrate, which they break down, producing lactic acid in considerable amounts. These organisms do not form putrefactive products, and, indeed, under such conditions they metabolize only enough protein to satisfy their nitrogen requirements.

There are many kinds of bacteria which form lactic acid, but in the restricted sense in which the term "lactic acid bacilli" is used in intestinal therapeutics, only those organisms are regarded as true lactic acid bacteria which form lactic acid and smaller amounts of the lower fatty acids, but which do not form putrefactive products from protein, and which do not produce gaseous products from the fermentation of carbohydrate. In addition to the lactic acid bacteria of sour milk, there are normal lactic acid bacilli in the intestines of man and the higher animals. The intestinal lactic acid bacteria are very similar, so far as their nutritive requirements are concerned, to those of sour milk, but there is one rather striking difference between the two classes. The sour milk bacteria usually become localized in the small intestines of man and animals, while the intestinal lactic acid bacilli, particularly *B. acidophilus*, which is the best known, find their most suitable habitat in the large intestines. The significance of this difference will be brought out later.

To arrive at a clear understanding of the nature of the antagonism between the lactic acid bacteria and the intestinal putrefactive bacilli will necessitate a discussion of the metabolism, chemistry and conditions favoring the respective development of the two types of organisms.

We will consider the proteolytic bacteria first.

There are several conditions favoring the vegetative reproduction of these putrefactive microbes in the alimentary tract:

1. An excess of protein in the diet. Animal protein is far more easily attacked than vegetable protein.

2. Protein in which decomposition has commenced.

3. Imperfect gastric digestion or gastric stasis. In these conditions, food is passed into the intestines in a state predisposing to putrefaction.

4. Intestinal stasis. Any condition retarding the rate of passage through the lumen of the intestines will tend to increase the activity of putrefactive processes.

5. Impaired intestinal absorption of protein. If the absorption of protein is slow, putrefaction of a bacterial nature will be increased, since the food supply of these bacteria is increased.

Certain other factors tend to limit bacterial putrefaction in the intestinal tract.

1. Rapid absorption of protein and the products of protein digestion, by reducing the available food supply of intestinal microbes, tends automatically to limit putrefactive processes.

2. Factors causing the rapid passage of food through the alimentary tract, as cathartics, and certain forms of spontaneous diarrheas.

3. Starvation, by lessening the food supply of bacteria, inhibits their activities.

4. The activity of lactic acid bacteria in a medium containing fermentable carbohydrate.

5. The presence of carbohydrate alone is not infrequently associated with a diminution of intestinal putrefaction, as shown by the decrease in the amounts of aromatic substances in the urine.

It would appear, then, that there are two distinct types of bacterial activity in the intestinal tract: the first, essentially putrefactive; the second, fermentative. The putrefactive organisms are essentially proteolytic and require protein in their dietary. They do not develop in media containing fermentable carbohydrate in the presence of bacteria capable of forming lactic acid from this sugar. The fermentative bacteria (lactic-acid-producing bacteria), on the contrary, thrive best in media containing sugars. They utilize only small amounts of protein and do not form typical putrefactive products in appreciable amounts. These organisms are distinctly antagonistic in their action upon proteolytic bacteria in saccharine-containing media.

In addition to the proteolytic bacteria and the fermentative bacilli of the lactic acid type, there is yet a third group of intestinal organisms, a group which is facultative with respect to protein and carbohydrate requirements. That is to say, they can develop well in media containing protein, or in media containing carbohydrate with only small amounts of protein. This facultative group is by far the largest of the three mentioned and includes many of the best-known and most thoroughly studied of the intestinal flora. As a familiar example, *B. coli* may be mentioned, and inasmuch as this organism illustrates in a striking manner a fundamental but by no means generally recognized principle of bacterial adaptation in metabolism, it will be well worth while to consider the products of vital activity of this organism in detail. The facts to be brought out are also of the utmost significance in relation to lactic acid therapy.

It appears to be a fact that the facultative group of which the colon bacillus is a member can accommodate their metabolism to different classes of foodstuffs in a perfectly definite manner. When they are grown in protein media, their products of vegetative activity are, chemically speaking, typical of protein putrefaction. If, however, they are grown in media containing carbohydrate, the products formed are almost invariably those characteristic of fermentation. In other words, the facultative bacteria combine, under the conditions stated, the attributes of both the proteolytic (putrefactive) and fermentative organisms.

The details of an actual experiment will elucidate this principle most clearly:

Two portions of meat-juice-peptone bouillon were prepared, each of exactly the same composition and reaction. To one portion 1% of dextrose was added, and the two flasks were then inoculated with the same strain of *B. coli* and incubated a week at body temperature. At the end of that time the contents of the flasks were analyzed chemically.

The flask containing no dextrose was foul-smelling, alkaline in reaction and contained ammonia, indol, skatol, phenol and aromatic oxyacids. In other words, this was a typical protein putrefaction.

The contents of the flask containing dextrose were acid, of an appetizing odor, and contained, besides carbon dioxide and hydrogen, which were evolved, lactic acid and smaller amounts of acetic and succinic acids. This decomposition represented a fermentation, although of not the typical lactic acid type, since gaseous products were formed in addition to lactic acid. The simple addition of dextrose, then, has changed the type of bacterial decomposition from the putrefactive type to the fermentative type. This protective action of the carbohydrates on the putrefaction of protein is also found to hold in the case of monkeys. The addition of sugars to the diet of such animals, previously on a strict protein regimen, results in the disappearance of aromatic substances from their urine.

The explanation of this phenomenon is not as simple in the intestinal tract as in the test tube, where we are dealing with single organisms, however, and there are two distinct phases to be recognized. First, the presence of fermentable carbohydrate tends to change the character of the metabolism of the facultative bacteria from the proteolytic to the fermentative type. This in itself would eliminate from the urine the amounts of putrefactive products attributable to their activity when the animal was fed on protein. In addition, however, there is found to be a distinct decrease both in the numbers and vitality of the obligate proteolytic organisms, accompanied by a corresponding increase in the normal intestinal lactic acid bacteria.

The addition of carbohydrate to the diet of animals previously on a strict protein diet, then, tends to diminish intestinal putrefaction, judging from the disappearance of aromatic bodies of putrefactive origin from the urine. These aromatic bodies are considered by most authorities to be the most available criteria upon which to form a judgment of the amount of protein putrefaction of bacterial origin in the intestinal tract; they have been so regarded almost universally in lactic acid therapy. If this be the case, it is perfectly possible to explain the reputed beneficial effects following the introduction of carbohydrate

and of artificial cultures of lactic acid bacilli without the intervention of these bacteria at all, since the change in character of the metabolism of the facultative organisms and the suppression of activity of the obligate proteolytic bacteria, as outlined above, would remove from the urine the substances indicative of putrefaction.

Having thus outlined, in a brief manner, the salient facts governing bacterial development in the intestinal tract, it will be possible to consider more closely the specific action of lactic acid as they develop in the intestinal tract.

One of the best-known and widely used sour milk organisms is *Bacillus bulgaricus*. These organisms have been shown to localize themselves in the small intestine. On the other hand, *Bacillus acidophilus*, the most thoroughly studied intestinal lactic acid bacteria, is found in the large intestine.

If the supposition that proteolytic activity is most marked in the large intestine be true, it follows that *Bacillus acidophilus* rather than *Bacillus bulgaricus* would be the more efficient organism to utilize in attempts to control this proteolytic activity, since both these organisms produce considerable amounts of lactic acid in suitable media. The lactic acid generated by *B. acidophilus* would be liberated in the midst of the putrefactive bacteria, while that elaborated by *B. bulgaricus* must be carried with the intestinal contents to the large intestine from the small intestine. Lactic acid is absorbed from the intestinal tract and burned in the body, so it is evident that the amount available in the large intestine would be problematical if the bulgarian ferment were relied upon.

In spite of the accepted idea that the seat of bacterial activity upon protein is localized in the large intestine, the writer believes that there may be a very decided bacterial decomposition of protein in the small intestine as well. This decomposition certainly takes place in experimental animals under certain conditions, and, in the case studied by the writer, this breakdown of protein was brought about by the symbiosis of an organism of the subtilis group acting with the colon bacillus. Since the protein acted upon was milk, it may be interesting to outline the process. A subtiloid bacillus of intestinal origin was allowed to grow in milk; a moderate amount of peptonization of the casein took place. A colon bacillus of similar origin coagulated the casein and produced a small amount of gas as well. If, however, after the subtiloid bacillus had partially peptonized the milk, the colon bacillus was inoculated, there was a further liquefaction of the casein, and a large volume of gas was liberated. It is absolutely essential that the bacteria act in the order mentioned to bring about the desired result, and it is a significant fact that this same order of the two types is met with in the alimentary canal.

The symbiotic action of these two organisms, acting in definite sequence, therefore, causes a greater liquefaction of the casein and the formation of much more gas than the sum of their separate activities. This action is prevented by the presence of fermentable sugar and lactic acid bacteria, since this process is largely proteolytic and proteolysis cannot take place in the presence of rapidly developing lactic acid organisms.

From what has been stated above, we may summarize the effects of lactic acid therapy as follows;

1. Objectionable proteolytic activity, resulting in the absorption by the host of aromatic substances derived from protein decomposition by the action of proteolytic bacteria, may take place in the intestinal tract.

2. These aromatic compounds may be formed in the small or large intestines by the facultative or obligate proteolytic organisms.

3. An excess of protein in the diet of the host, or any factor causing stasis or impaired absorption of protein, appears to be the direct cause of this condition. The result is an unusual amount of available food which stimulated the development of these proteolytic intestinal organisms.

4. The addition to the diet of easily fermentable carbohydrate, together with the restriction of the protein, is of material assistance in reducing the output of these putrefactive products in many instances.

5. The beneficial action of the carbohydrate is a twofold one: First, the character of the metabolism of the facultative organisms tends to change from the putrefactive to the fermentative type, eliminating from the urine the putrefactive products referable to their activity; and, secondly, the lactic acid bacilli, either those given by mouth or those normally present in the intestinal canal, or both, proliferate rapidly, forming considerable amounts of lactic acid from this carbohydrate and inhibiting the further development of the obligate proteolytic organisms by rendering the medium in which there are growing unsuitable for continued development.

6. The proteolytic bacteria may be producing their harmful effects either in the small or large intestine; in the former case, the introduction of organisms of the bulgarian type may reasonably be expected to be of benefit, since we have seen that they tend to localize themselves in the small intestine. If, however, the proteolytic process is of large intestinal origin, the normal lactic acid bacilli of the acidophilus type are indicated. If there is reason to suspect that these normal intestinal lactic acid bacilli are enfeebled in their action, or absent, it will be necessary to feed fresh cultures by mouth, or introduce them per rectum.

7. While the primary object of introducing lactic acid bacilli is to inhibit the objectionable activity of proteolytic organisms, it is possible, and, indeed, experiments seem to indicate, that in addition to the formation of lactic acid, other products associated with their development may be formed which also act beneficially. The nature of these products, and the character of their beneficial action, however, is not definitely known.

In young children, more particularly those fed upon cows' milk, we may conceive of three distinct types of bacterial activity of an undesirable nature in the alimentary tract:

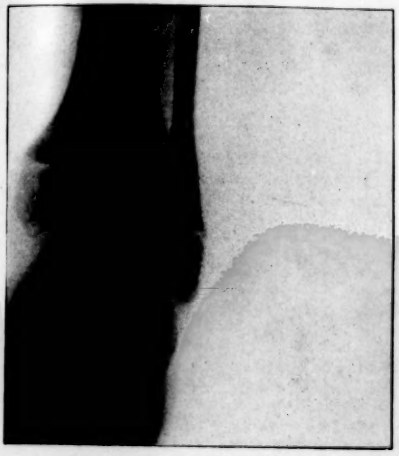


FIG. 1. X-ray, antero-posterior view, showing fracture through epiphysis.



FIG. 2. Lateral x-ray of same foot.



FIG. 3. Tracing from normal x-ray, showing outline of epiphyseal cartilage.

1. A true proteolytic type, characterized by the formation of putrefactive products, such as indol, phenol and oxyacids.

2. A mixed putrefactive and fermentative process, in which proteolytic and facultative organisms act symbiotically, producing through their symbiotic activity considerable amounts of gas and destruction of protein (casein). An example of this kind has been mentioned in which the colon bacillus and an organism of the subtilis group energetically destroyed milk.

3. A true fermentative type, in which there is an unrestrained overgrowth of true lactic acid bacilli. Salge has shown that in certain of his cases an enteritis resulted when the normal intestinal lactic acid bacilli of the acidophilus type proliferated to an unusual degree.

One not infrequently sees indications of this in infants whose diet has been for some time composed largely of Malt-suppe or similar preparations. There is developed a gradually increasing intolerance for this food, and bacteriological examination of such cases not infrequently reveals the fact that *B acidophilus* is present in greatly increased numbers.

Our knowledge of the whole subject of the application of bacteria in intestinal therapy, however, is still far too fragmentary to warrant a discussion of the treatment of these cases. All that can be legitimately done, and all that this paper hopes to accomplish, is to bring together, to analyze and to summarize our present knowledge of this subject.

FRACTURE OF THE LOWER EPIPHYSIS OF THE TIBIA, WITH A REPORT OF A CASE.

BY ARCHER O'REILLY, M.D.,
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FRACTURES of the lower epiphysis of the tibia are comparatively rare, or at least they have not been recognized and reported. In looking over the literature, the author has been able to find reports of only two cases, one by Coolidge[1] and the other by Feiss.[2]

Coolidge's case is one of a boy who fell and caught his foot in an iron fence. The injury is referred to as an epiphyseal separation. The x-ray and the position of the foot show a deformity very similar to the condition in the case that I am about to report. The x-ray, however, having been taken several years after the accident, does not show the actual injury. The case reported by Feiss is very similar to Coolidge's case, but the deformity is more marked owing to the growth of the fibula. In both cases the x-ray shows an almost identical deformity in the tibia.

The history in these cases was very similar; there was a severe wrench at the ankle-joint and the foot was twisted laterally. Signs of fracture were present, but accompanied with little pain. At first the result was good, but deformity developed later, due to disturbance in the growth of the tibia, while normal growth in the fibula continued. In the case here presented, there is also a history of a violent injury, with inversion of the foot, and of a fairly good immediate recovery with increasing deformity later.

The marked similarity in the deformity resulting in these cases impressed me, and on studying the x-ray pictures it appears as if the anatomical structure of the bone and shape of the epiphyseal line might account for the similarity and the fact that the fracture apparently always takes place at the same point. The normal epiphyseal line is not, as a rule, straight, but in a number of cases curves upward near the internal malleolus, as is shown in the accompanying cut. Moreover, the articular surface of the astragalus is more or less pulley-shaped. Grey describes the superior surface as follows: "The superior surface presents, behind, a broad, smooth, trochlear surface for articulation with the tibia. The trochlea is broader in front than behind, convex from before backward, slightly concave from side to side." As will be seen in the cut, this internal comes a short distance outside of the up curve in the epiphyseal line. It seems probable, then, that any violent injury tending to invert the foot when the epiphysis had not yet become united would bring this inner ridge of the astragalus in contact with the epiphysis immediately below and slightly internal to the upward bend in the epiphyseal line. The greatest force of the blow would come at this point and apparently tends to force the epiphysis up into this hollow, giving the characteristic deformity.

It is remarkable how closely the x-ray in my case resembles those in both Coolidge's and Feiss' cases. The only difference is that my case is more recent and for that reason shows quite distinctly the line of fracture, nor does it show the amount of overgrowth of the fibula shown in the other cases. I am induced to publish this case because it seems to give some suggestion as to the mechanics of the deformity, and because the x-ray shows the condition so clearly.

W. X., boy, fourteen, was seen in August, 1909. Complained of weakness in the ankle and said that foot had a tendency to turn in. Did not complain of any pain.

Family history. — Fair.

Past history. — General health good. When seven years old, ran a needle in right foot. Several abscesses resulted, some necrotic bone removed. "Foot has been weak ever since." (Fragment of the needle can be seen in x-ray.)

Present illness. — Three years ago a horse fell on the right foot. The ankle was swollen and painful, and the patient was laid up in bed for a week. Used leg after that without any protection. Ankle has been weak ever since.

Physical examination. — General condition good. Well nourished. Color good. Head, neck, throat, heart, lungs normal. All joints and limbs normal except the ankle. Right foot in a varus position. External

[1] Coolidge: Fracture Lower Epiphysis of Tibia. BOSTON MED AND SURG. JOUR., Oct. 8, 1908.
[2] Feiss: Old Fracture Lower Epiphysis of Tibia, Corrected by Radical Operation. Surg., Gynec. and Obstet., June, 1909.

malleolus is prominent and gives an appearance of enlargement, and is lower than normal. There are a number of scars on the foot as a result of the former operation, one running down the inner side of the foot across tibial tendons. There is practically no power in tibials. Antero-posterior motion is fair. Lateral motion is restricted.

It was decided to manipulate the foot under an anesthetic and to correct the deformity. This was done; the foot was put up in plaster of Paris for two months, and was then given a brace. At that time the position was good and ankle motions were fair. The patient then went to his home.

The author did not think it advisable at that time to perform a more radical operation as the patient was still growing, but told the father that a more radical operation would probably be necessary. It is interesting to note in this case the small amount of pain and apparent disability which allowed the use of the leg a week after the injury.

THE HYGIENIC AND DIETETIC TREATMENT OF DELICATE CHILDREN BY THE CLASS METHOD. (ABSTRACT.) *

BY WM. R. P. EMERSON, M.D., BOSTON.

The problem of the treatment of delicate children is not a simple one. Its solution depends upon finding the causes of the condition. Heredity cannot always be blamed, because most delicate children were normal and healthy infants. If the child does not improve under our care, it is safe to say that we have not carried our investigations far enough. The belief that adequate causes can always be found by looking thoroughly into every detail of the child's life should mark the beginning of success in its treatment. Acting upon this supposition, the writer in the fall of 1908 collected into a class, fifteen of the weakest and most poorly nourished children from the four or five thousand patients coming to the Children's Department of the Boston Dispensary.

First. The past record of each child was considered carefully. A new and complete physical examination was made. The child's diet and home conditions were investigated, by giving each child a small record book to be brought in at the next visit. The child or parent was directed to keep a complete record of everything the child ate or drank for the following forty-eight hours. The time spent in sleep, out of doors, the exact number of minutes at meals, and such details as seemed necessary in each particular case, were considered.

Second. A social visitor was sent to the house, where she filled out a special card giving all the essential details in the child's home surroundings.

Third. Another card was filled out in relation to the child's diet, habits at meals, its likes and dislikes as regards the chief articles of food. Based upon the data thus obtained, a talk was given the class as a whole, explaining hygiene and diet and the open-air treatment. A few food values were given. Positive directions were given rather than negative ones. The child was encouraged to substitute cocoa for tea and coffee, fruit for sweets and simple puddings for rich pies and cake. Hesitation was felt in taking children into the class who had any functional or organic affections. It was found that such children gained as rapidly as the others. The class was held on Saturday mornings for one hour. As the child came in he was weighed and given a position in the class according to his gain or loss in weight. The weekly report books were examined. The visitor in charge of the patient made her report. Individual suggestions and directions were given. Where the child gained in weight little was said. If the child did not gain, a careful study was made to ascertain the reason, and almost without exception the reason was easily found. The other children and parents were sympathetic listeners, eager to know the cause of the child not gaining. The bringing out of practical points in this way constituted the most effective method of instruction. The analysis of the class records showed, as factors in their poor condition, adenoid growths in the nasopharynx, close relation to tuberculosis, frequent carious teeth, fickle likes and dislikes for food, rapid eating, the use of liquids to wash down the food, hygienic ignorance and lack of control on the part of the parents. It was found that if a child was absent for more than one week from the class he almost invariably lost in weight.

On June 1, there were six graduates from the class; that is, six children had gained normal weight and health. During the summer two more were added, making eight who had gained normal weight and health. The other seven were in excellent health and lacked but a few pounds or ounces of being normal in weight. Places were provided for all these children for summer outings and vacations; they were weighed again in the fall; their average monthly gain was less during the summer months than during the winter months when they were members of the class.

In the classes of 1908 and 1909 the average age on admission was eleven years. The average amount under weight was 12 lb. 3 oz. The largest amount under weight in any one child was 28¼ lb. The average weekly gain was 6.6 oz. The largest average weekly gain in any one child was 8 oz.

The following were found to be the most important points in the treatment of these children by the class method:

PARENTS.

In the class method the parents observe and learn; their intelligent co-operation in secured; where the parents cannot come to the class, it is necessary that a social worker act *in loco parentis*, else the child does not gain.

WINDOW TENTS.

Window tents were used by about one half of the class. They serve a double purpose by giving fresh air to the children at night and also during the rest period in the day time, without cooling off the rest of the house. The mothers often use them and are benefited. Tents help utilize rooms not otherwise suitable for sleeping purposes. In stormy weather, or when the mother is unable

* Read at a meeting of the New England Pediatric Society, May 21, 1910.

to go out, the child can get its airing by the use of the window tent. The whole cost of the tent need not exceed two dollars. Those using tents gained on an average of 3.3 lb. more than those who did not use them.

DIET AND THE PROPER MASTICATION OF FOOD.

The dietary was based upon the forty-eight-hour list of food. Cereals were added and the diet balanced. The child was encouraged to take from three to six glasses of milk daily. The total food value was increased from an average of 1,200 calories per day to an average of 2,000 calories per day. Every possible means was used to get the child to eat slowly, in two cases it being necessary for the parent to feed the child with a spoon for short periods.

SCHOOLS.

Children attended school regularly. In a few cases it was necessary to take them out for a short time. They always gained immediately upon being taken out of school. The writer believes that there should be open-air schools for all delicate children. The establishment of such schools would mark a great step in advance in preventive medicine.

CONCLUSIONS.

The class method is particularly well adapted to the proper treatment of delicate children. The spirit of competition, the "game" in it, has a powerful attraction to the child, aiding greatly in his management and control.

The steady gain in weight in children following directions furnishes a strong incentive to the parents and the children alike.

The class method makes the necessary instruction of the parents easy and effective.

The results obtained each week remove prejudices and fears and convince in a moment, as if by magic, where hours spent in arguments fail.

In the giving of instructions and directions to the parents and the children assembled together there is an enormous saving of time.

The class method furnishes the best training school for the social worker. She can here learn what instructions are to be carried out; what the object sought. She catches the spirit of the work and is enabled to relieve the physician of a large mass of detail for which he has neither the time nor the energy to perform, and for which the social worker is the one person especially qualified by sex and training to carry out.

Clinical Department.

THE PRESENCE OF AIR IN THE BLOOD VESSELS IN MEDICO-LEGAL AUTOPSIES.*

BY GEORGE L. WEST, M.D.,
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AIR may enter the circulation whenever a blood vessel, being opened by accident or design, makes a communication in the circulation between a negative pressure in the blood vessel and the positive pressure of the surrounding air. In the arteries, the blood pressure precludes this possibility. In the veins, however, the natural flow of the venous blood makes a tendency for the vessel, when cut off from the blood circuit, to empty itself toward the heart. This fact, especially when the vessel belongs to one of the great cavities of the body, creates the conditions of negative pressure within itself and, if the vessel is in communication with the air, bubbles may enter and are carried to the heart and lungs.

The chief interest in this subject to the medical examiner rests in those cases where air enters the venous sinuses of the uterus, where the detachment of the placenta in the pregnant uterus opens venous trunks having a portion of their course in the abdominal cavity and air enters through the dilated or patulous os. This condition occurs almost always as a result of the working of the professional abortionist.

In the case which I wish to report, the bubbles of air or gas did not come from any attempt at producing abortion and show at least the possibility of air appearing in the circulation through the uterine sinuses as a result of practices not connected with the production of abortion.

M. P., twenty-nine years old, a married woman, but at the time of death separated from her husband, the mother of three children, the youngest five years old, met by appointment on an evening in May her paramour and went with him to a lonely spot in the woods, where they indulged in sexual intercourse. Immediately after the act, the woman stood up, exclaimed, "Oh, my God, my head," and fell into her lover's arms unconscious. There was no convulsive effort. The man summoned a physician, who found the woman dead. The autopsy was made about twelve hours after death. Inspection of the body showed the presence of bits of dead twigs and pine needles pressed against the skin of the buttocks and a few pieces on the pubic region. About the vaginal orifice was a small quantity of dried dark-colored blood, and some fluid blood of dark color was seen on dilating the vagina. There was a slight tumefaction of the lower abdominal region. On opening the pulmonary artery *in situ*, there escaped blood thickly mixed with bubbles of air or gas. These bubbles were found also in the right side of the heart, which was dilated, and in the large venous vessels of the thorax and abdomen. The brain and meninges were normal. The uterus were found enlarged to a point about half way between the pubic bone and the umbilicus. It contained a perfectly formed male fetus nine inches long in unruptured membranes. The placenta was separated from the uterine walls in its lower segment over an area of about three or four square inches. The os was partially dilated.

The evidence showed that the lover had knowledge of the woman's condition and that she was anxious to rid herself of the fetus and had approached a physician, a man of good repute, who had refused to aid her in this direction. There was no evidence of instrumental attempt at producing abortion.

This woman, although separated from her husband, was not legally divorced and the act of sexual connection was an adulterous act and the

* Read before the Massachusetts Medico-Legal Society, Feb. 2, 1910.

man, if a partner in causing her death in this manner, was guilty of compounding a felony and liable, therefore, for manslaughter. No arrest was made.

It seemed to be a reasonable diagnosis to assign air-embolism as a cause of death, the air entering the partially dilated os and the exposed uterine sinuses during the muscular contractions incident to the sexual act.

Several years ago, Welch and Nuttall reported the discovery of the bacillus aerogenes capsulatus, which develops very rapidly in bodies after death, causing the appearance of bubbles of gas in the blood. The germ may be introduced into the body whenever a blood vessel is opened. Welch states that it is probable that many cases reported from the autopsy in which the patients are said to have died from the admission of air into the circulatory system have in reality died from some other cause, the gas produced by the bacillus having been mistaken for air.

It would appear, then, in such a case as this that the cause of death may not be definitely assigned without taking a culture from the blood, and that the medical examiner would have difficulty in defending his opinion of air-embolism as the cause of death in the face of a cross-examination by an attorney who had knowledge of the activity of the bacillus aerogenes capsulatus unless the medical examiner had previously fortified himself by making a culture from the blood of the deceased person to establish the absence of the bacillus.

Medical Progress.

REPORT ON OBSTETRICS.

BY ROBERT L. DE NORMANDIE, M.D.

Human Blood Serum in Hemophilia Neonatorum.
Chin Posterior Positions.
Pyelitis in Pregnancy.
Intramural Abscesses of the Puerperal Uterus.
Multiple Abscesses of the Puerperal Uterus.
Fibroma of the Uterus in Pregnancy and the Puerperium.
Action of Animal Extracts on Uterine Contractions.
Coagulation Time of the Blood in Phlebitis.
Jaundice in Four Successive Pregnancies with Fatal Jaundice in the Offspring.
Puerperal Sepsis Treated by Intravenous Injections of Magnesium Sulphate.
Eclampsia Treated by Continued Sugar-Water Instillation.
Incontinence of Urine after Labor.
Extraperitoneal Cesarean Section.
Pubiotomy.

NORMAL HUMAN BLOOD SERUM AS A CURATIVE AGENT IN HEMOPHILIA NEONATORUM.

Welch [1] reports nine cases of hemophilia neonatorum in which he has used normal human blood serum. He briefly mentions the fact that certain untoward symptoms may arise when animal serum is administered, and says further that death sometimes has followed direct transfusion of blood. The etiology in these cases is unknown, but in no case of this series was it traumatic. The bleeding took place from various parts and occurred in various amounts. The serum was given in varying dosage, depending upon the urgency of the case. Welch advises that at least 10 ccm. be given at the first injection and that it be repeated three times a day if the infant be bleeding but moderately. In severe cases it should be given every two hours, and in large quantities. He advises to begin the treatment at the first indication of bleeding, no matter how insignificant. The charts accompanying the paper are most striking and instructive. Should this method of treatment prove in other hands as certain as in the author's, it will be a great advance in the treatment of this condition. The method of obtaining the serum is very easy, and when one appreciates the great difficulties of doing a direct transfusion on newborn babies, and the comparatively few surgeons who can do it, it very readily is seen that this may become the accepted treatment for hemorrhagic disease of the newborn.

TREATMENT OF CHIN POSTERIOR POSITION.

Unterberger [2] reports two cases of chin posterior which he successfully delivered. Cases where the face is high and chin posterior he does not consider, but only those cases where the chin is posterior in the outlet of the pelvis and on the pelvic floor making other treatment except delivery impossible. Many excellent obstetricians he says advise at once perforation even of a living child in this condition. Unterberger does not agree to this. Forceps he advises if possible with the double application of Scanzoni. On two cases that he reports this maneuver failed, but he was able to rotate manually the chin from the posterior position anteriorly and then delivered the one case with forceps and the second case by Kristeller's method of expression. He favors in all cases where the chin is posterior, first rotating the head with the hand.

TREATMENT OF PYELITIS OF PREGNANCY BY LAVAGE.

Pilcher [3] reports six cases of pyelitis of pregnancy where he has catheterized the ureters and irrigated the pelvis of the kidneys with a 25% solution of argyrol. He reviews the causes previously mentioned for pyelitis. From his own studies he concludes that it is perfectly safe in cases where the symptoms are not severe to wait eight or ten days without attempting to catheterize the ureters, using the rules already formulated for diet and urinary antiseptics. From his observations he does not agree with the advice that the patient frequently assume a knee-chest posture. In the course of his cystoscopic examinations he found that more was to be gained by favoring drainage with the kidney on a higher level than the bladder. In cases of persistent temperature, with pain and pyuria, he advises passing a catheter to the pelvis of the affected kidney, draining it thoroughly and then to instill a dram of 25% argyrol. He agrees with the other writers that abortion or premature labor is seldom necessary. He is satisfied himself that the reaction of the urine in the pelvis of the kidney at least may be alkaline. This point depends upon the amount of retention there is in the pelvis.

INTRAMURAL ABSCESS OF THE PUERPERAL UTERUS.

Sampson [4] reports fully with diagrams and drawings four cases of intramural abscess of the puerperal uterus. He believes that it is of much more frequent occurrence than the number of reported cases would indicate. Sampson groups the cases into two distinct types: those in which the abscess or abscesses are the only result of the puerperal infection, and those in which the uterine condition is secondary in pathological importance. The first he reports as a clinical entity. The second is not, because of the greater importance of the other conditions present. Sampson believes that the apparent rarity of this condition is due to the fact that it is not diagnosed. The cause of this condition is a puerperal infection, and the patient gives a history of this infection which has not cleared up completely, that is, has become chronic. The subjective symptoms may be slight or severe, and on examination the uterus feels like a myomatous uterus, but the abscess masses are usually not so definite or as hard. A diagnosis is not always possible. In a patient who gives a history of chronic puerperal infection with an enlarged uterus which gives the impression of containing an indefinite myoma, a probable diagnosis of this condition can be made. If not operated upon, the abscess may rupture into any of the surrounding tissues or organs, but the possibility of its gradual absorption must be recognized. During the acute stage, operative procedures should be avoided if possible, all effort being directed to improve the patient's general resistance. After the acute stage has subsided, one must delay operative work until the patient no longer improves. Whether a hysterectomy is attempted or not depends upon the size and number of the abscesses present. Multiple incision and drainage of the abscess cavity may be made and a cure effected.

A CASE OF MULTIPLE ABSCESSES IN A PUERPERAL UTERUS.

Beyer [5] reports a case of multiple abscesses in a puerperal uterus. The patient had a normal delivery of twins, but during the labor she was found to have a fever. Four and a half weeks after delivery she was brought to Veit's clinic at Halle. Her temperature was slightly raised and pulse not increased in frequency. On the right side, almost level to the umbilicus, was a hard mass sensitive to pressure. Vaginal examination was not remarkable and did not clear the diagnosis. The patient was watched and, because of the mass remaining unchanged and painful, operation was advised. Laparotomy was done and a right-sided mass was found over a large surface, fluctuating and adherent to the abdominal wall. It was opened and found to be full of thick yellow, not foul-smelling pus. Cultures were taken from this pus. The mass proved to be an abscess around the perimetrium, with infiltration of the parametrium, which had started from an abscess in the uterus. Hysterectomy was done in order to obtain good drainage of the pus focus. The patient stood the operation badly, but gradually recovered and twelve weeks after operation was discharged well. Microscopic examination of the pus showed it to be a hemolytic though not virulent streptococcus. Microscopic examination of the uterine muscle showed it to be full of small abscesses, especially at the right tube. In these abscesses were found everywhere streptococci in large numbers.

NUTRITIONAL CHANGES IN FIBROMATA OF THE UTERUS INCIDENT TO PREGNANCY AND THE PUERPERIUM.

Fry [6] reviews the nutritional changes which occur in fibromata of the non-pregnant uterus and the physiological changes in fibromata complicating pregnancy. The characteristic points he says of the physiological changes complicating pregnancy are that the tumor increases in size, changes its position, undergoes alterations of shape and consistency, while it diminishes rapidly in volume and may disappear during the puerperium. The uterine structures are engorged with blood, but the fibroma receives an insufficient blood supply. The nutrient blood vessels do not enlarge to any appreciable extent, being surrounded by thick fibrous walls and deprived of the elastic coat. Changes in the arteries may exist to the extent of obliteration. The outside network of blood vessels shows increased vascularity, while the deeper parts of the tumor are found deprived of blood, and the result is degeneration. The increase in volume of the tumor is due more especially to the proliferation of the fibrous element, and especially to the serous infiltration. True growth of the tumor is relatively rare. The general tendency of the tumor is to become flattened and elongated during the pregnancy, but in the puerperium it often quickly assumes its original shape. Because of this alteration in shape of the tumor, many tumors which have blocked the pelvis during the early months of gestation and apparently present an insurmountable obstacle to delivery have often become flattered and elongated and allow delivery to take place. The pathological changes which take place are chiefly the type leading to necrosis and suppuration. Because of these nutritional changes, gangrene may follow. Pain and tenderness are marked clinical features. Besides the nutritional changes, complications arise which are due to mechanical causes such as incarceration within the true pelvis. Torsion of the pedicle may cause hemorrhage within the fibroma, and suppuration and softening with central necrosis often follows. Fry reports three cases which have not previously been reported. The first was a case where the tumor involved the body and fundus of the uterus, of the interstitial type. Labor progressed normally and rapidly and Fry let her deliver herself. Postpartum hemorrhage followed. Uterine packing was necessary, the patient apparently became septic and finally death followed. Autopsy showed a fibroma with a large abscess cavity having gangrenous walls and contents. The second case

was a suppurating fibroma during the puerperium, and supravaginal hysterectomy was successfully done. The third was a sloughing fibroma which recovered without operation. Fry concludes that the fatal cases presented difficult labors, and the frightful mortality when treated by delivery through the natural passages emphasizes the importance of early Porro-Cæsarean section. Cases of suppuration of fibroma after childbirth should be treated by prompt performance of supravaginal hysterectomy. A valuable lesson is taught in these cases by the disastrous results of delay and attempt to deliver by obstetric methods.

THE EFFECT OF ANIMAL EXTRACT UPON UTERINE CONTRACTIONS.

Ott and Scott [7] report briefly their results of injecting dried animal extracts into the jugular vein of animals on the uterine contraction. Of the thirteen extracts tried, those from the infundibular lobe of the hypophysis, brain, mammary gland, spleen, parathyroid and pancreas gave the most marked results upon the contraction of the uterus. The writers say that the infundibular extract has been used in post-partum hemorrhage and has stopped the bleeding in from three to four minutes. They stated that the contractions of the human uterus caused by this extract are more permanent than any other preparation, not excepting ergot. The preparation used was a 20% solution of the extract, of which 1 ccm. was given intramuscularly.

OBSERVATIONS ON COAGULATION TIME OF THE BLOOD IN A CASE OF PHLEGMASIA ALBA DOLENS AND ITS TREATMENT.

Jacobs [8] reports a case of phlegmasia alba dolens following a normal delivery. Both legs were involved when he saw the patient. Ten ccm. of blood were withdrawn for bacteriological examination, but the blood coagulated so rapidly that it could not be placed quickly enough in the culture tubes. The second blood culture was made the next day, and before the blood was withdrawn 2 ccm. of a 1.5% sterile solution of sodium citrate was put into the syringe in order to prevent coagulation. The result of this blood culture was negative. Because of this very rapid coagulation, Jacobs then decided to determine the coagulation time of the blood, with the result that it was found to be but forty-five seconds. Upon finding this fact, he gave the patient a dram of citric acid dissolved in a glass of water three times a day for the purpose of diminishing the coagulability of the blood and thereby preventing the further formation of thrombosis and possibly of hastening dissolution of the already formed thrombus. The improvement which followed was remarkable. In nine days the swelling was completely reduced in both limbs and the patient was allowed to sit up in bed. The coagulation time on the second day after citric acid was administered was one minute and fifteen seconds, and on the ninth day thirteen minutes and forty-five seconds. From this on she made a good convalescence. Jacobs describes the technic used for determining the coagulation time of the blood, which is the same as that employed in Sir A. E. Wright's laboratory. He closes his article by saying, "This case serves to illustrate very clearly the therapeutic effect that was obtained as the result of the administration of citric acid with the object of reducing the coagulability of the blood and thereby preventing further formation of thrombosis and hastening, as it did in this case, the dissolution of the already formed clot."

A CASE OF RECURRING JAUNDICE IN FOUR SUCCESSIVE PREGNANCIES WITH FATAL JAUNDICE IN THREE SUCCESSIVE INFANTS.

Rolleston [9] reports a case in which the patient had jaundice in four successive pregnancies and lost from jaundice three infants. The patient had in three pregnancies become jaundiced about the sixth month and subsequently suffered from much itching. She suffered from nausea, but no vomiting, and she had been constipated. The children were all born six weeks before term not jaundiced, but rapidly became so and died. The patient has never been jaundiced except when pregnant. In the fourth pregnancy she was treated with urotropin and salicylate of sodium from the second month, but at the sixth month she again became jaundiced with pruritus. There was no enlargement of the liver or spleen, and no note that the temperature or pulse was raised. At eight months premature labor came on and a boy was born without jaundice and none has since developed. In the first three children of this patient there was no autopsy. Rolleston has collected a short bibliography on this subject. In one family he found a case reported where, out of fifteen children, fourteen had been jaundiced and only four survived. Another case, eight cases of jaundice out of twelve pregnancies; four of these had been autopsied, but no lesions of the liver or bile ducts were found. In Rolleston's patient there was no evidence of syphilis. The only noticeable fact is that this condition has been recorded in families with large numbers of pregnancies. Rolleston feels that the recurring jaundice is probably toxic. This condition of recurring jaundice in pregnancy in the mother with fatal jaundice in the offspring is, as far as he knows, the first recorded. He feels that the most reasonable method of treatment is to treat the mother with biliary and intestinal antiseptics, and to regulate the diet and to prevent constipation.

A CASE OF PUERPERAL BACTEREMIA TREATED BY INTRAVENOUS INJECTION OF MAGNESIUM SULPHATE.

Huggins [10] makes a preliminary report of his use of magnesium sulphate in the treatment of puerperal infections. He says that experiments both in animals and in humans have demonstrated that the administration of this salt intravenously is safe and is a valuable therapeutic agent. When indicated, the intravenous injection is supplemented by a continuous intra-uterine irrigation of a solution of magnesium sulphate. He reports a case of

a patient who gave a history of fever, sweats and chills, covering a period of ten days, after an abortion at the second month. Blood culture showed a streptococcus in pure culture at the end of forty-eight hours. The treatment then given was a solution of magnesium sulphate 25 gr. in 500 ccm. of normal salt solution intravenously. This solution was allowed to run into the vein slowly, occupying about forty-five minutes. Following the administration of the magnesium sulphate, the temperature, which had been running from 102–104, and pulse from 115–120, rose to 104 and then fell to 97, where it remained for six hours. The pulse became somewhat slower and improved in quality. Three days later the same solution was given a second time and the temperature rose, followed quickly by a sharp fall. From then on there was a gradual improvement in the condition of the patient in every way, and eight days after the patient was admitted to the hospital her temperature dropped to 99. She then developed a phlebitis with marked edema and swelling of the leg. This phlebitis was later incised and drained, but no pus obtained, but the patient was a great deal relieved by the operation. Fifteen days after the patient entered the hospital the blood culture showed no streptococci in the blood. She finally made a good recovery and was discharged from the hospital well.

TREATMENT OF ECLAMPSIA BY CONTINUED SUGAR WATER INSTILLATION.

Jacobson [11] writes a short review of eclampsia and then says that in his opinion uremia or eclampsia is caused by retention in the blood of the salts, principally the sodium chloride which the damaged kidneys are unable to throw out in sufficient quantity with the urine. By the retention of these salts, the molecular concentration of the blood and at the same time the specific gravity of the blood is raised. In order to reduce this molecular concentration, two methods seem to be favorable, — starving the patient and diluting the patient's blood by adding water. Jacobson withholds all food from eclamptics for three days except water. The usual physiological saline solution he rejects as dangerous and illogical, and for that reason he has given up its use and decided upon a solution of sugar in water. The two cases he reports which were treated by this method both made a good recovery, and observation of the specific gravity of the patient's blood showed that it dropped from 1,060 to 1,052. The two cases are characteristic cases of eclampsia, but from these two cases, of course, it is impossible to say whether the sugar solution had any real effect or not on the patients.

INCONTINENCE OF URINE FOLLOWING LABOR.

Miller [12] reviews the opinions held by various authors for the causes of this condition and the pathological changes which occur. He reports briefly four cases he has met with where incontinence has followed labor. In three cases difficult operative work had been done, and one in which there were no appreciable lacerations present. He is convinced there is no single constant cause for this condition. It is found immediately after labor, when the urethra is bruised, edematous and swollen, and when the nerve supply is temporarily injured. Lacerations along the sides of the urethra and the sagging of the urethra give a more permanent cause. Several authors teach that the incontinence is due to a conically dilated posterior urethra, whereby the length of the urethra is diminished and the sphincter overstretched and weakened, and that this condition is brought about by a dilated and relaxed vagina and perineum and consequent sagging down of the pelvic organs.

In the treatment, the prophylaxis is most important. The proper conduct of labor is to allow the complete dilatation of the cervix and the emptying of the bladder before the application of forceps, and the timely use of forceps to prevent sloughing from prolonged pressure on the head, with careful and immediate repair of lacerations. The incontinence which immediately follows labor generally need give no alarm, for it soon disappears. Replacement of a retroposed uterus by a well-fitting pessary aids much the incontinence. The operative procedures for this condition are various and elaborate, depending upon the condition of the urethra and the bladder neck. In all cases the relaxed and torn introitus must be repaired, together with an appropriate operation for the retroversion if one occurs.

EXTRAPERITONEAL CÆSAREAN SECTION.

Doederlein,[13] of Chicago, writes a review of the history and technic of extraperitoneal Cæsarean section. Doederlein points out that the shortcomings and imperfections of the classical Cæsarean section has led the profession to search for other methods of delivery. Symphysiotomy and hebosteotomy (pubiotomy) appeared, and now the extraperitoneal Cæsarean section. Doederlein considers Ritgen, of Giessen, to be the first to have described this operation. This was in 1825. Others tried it with slightly different technic from that recommended by Ritgen, failed and gave it up. In 1870, or thereabouts, Thomas, of New York, wrote of it, and in 1876 Skene reported two successful cases. Up to 1880, Doederlein finds eight cases. The bladder was wounded in these. Maternal mortality was 50%, and child mortality, 42%. Doederlein remarks that the deaths attributable to the operation itself was almost *nil*. From 1880 to 1907 few if any cases were operated upon by this method. In 1907, Frank, of Cologne, revived the operation with slightly different technic. The advantages that Frank claims for this operation are that it avoids hemorrhage, that it avoids peritonitis, that it increases the range or indication. In other words, that it may be done when the classical Cæserean section is contra-indicated. Frank's technic is not extraperitoneal, for the peritoneal cavity is opened low down near the bladder. The vesico-uterine fold is cut and securely sutured to the peritoneum. The lower part of the uterus is then incised transversely and the fetus is allowed to be delivered spontaneously, if possible. In clean cases the

uterine wound is sowed up, but in infected ones left open and a gauze drain is placed and also one over the uterus through the vagina. By this method Frank reports having done thirteen cases, with no deaths. Fromme, in Veit's clinic at Halle, adopted this method with several modifications, and he feels that the good results obtained by it would warrant its use in many cases where now pubiotomy is regarded as the safer procedure. In 1908 Latzko, of Vienna, and Doederlein, of Munich, made still further changes in the technic, so that now it can be truly regarded as an extraperitoneal operation. Doederlein, of Chicago, gives in detail Prof. A. Doederlein's technic, which briefly, is as follows:

The bladder is partially filled. Incision is made, with the patient in exaggerated Trendelenburg position on the right side, from the symphysis to a point a little above the right anterior superior spine. The underlying structures are split and pushed aside. The right rectus is drawn to the left side. All bleeding points are carefully tied. The cervix and lower uterine segment is exposed by pushing aside the bladder and perineum, and a vertical incision is made in the most prominent part presenting in the external wound and carefully enlarged with scissors. Forceps are then applied to the head and the baby extracted. Placenta is removed manually or by Crédé's method. The uterus is packed with iodoform gauze, the end of which is passed out through the vagina. The uterine wound is sewed up with continuous catgut suture, the loose cellular tissue and bladder stitched over the uterine suture and the external suture is closed in the usual manner. If there is suspicion of infection, it is well to drain through the vagina. Professor Doederlein has, up to now, operated upon ten cases, all of which gave good results both to mother and child. Hemorrhage was very slight. The question as to drainage is still an open one. Some of the European operators are using it and some do not. Professor Doederlein holds that the extraperitoneal method is indicated in all cases where the Cæsarean section is indicated, and also in some cases where hebosteotomy or craniotomy would otherwise be resorted to. Two objections to this method are (1) inability to sterilize the patient, and (2) the possibility of rupture of the uterus in later pregnancies. The second objection is merely speculation, as the future alone can tell. Doederlein's article ends with a short bibliography.

PUBIOTOMY.

Williams [14] makes his second report on pubiotomy, covering now twenty-five cases. He writes fully upon the immediate results, the effects of the operation upon the patient, upon the pelvis and upon the labor. The indications and technic which he describes fully are those which he has developed from his own experience and from other operators. His conclusions are briefly as follows:

After pubiotomy the patients were delivered at once. There were no injuries to the bladder. There were six perineal and five deep vaginal tears. The relative infrequency of injury to the soft parts he attributes particularly to the extensive manual dilatation of the vagina and perineum prior to operating. The after treatment is not onerous. The patients suffer but little. Immobilization of the pelvis is not necessary, a four-inch adhesive strap around the trochanters being sufficient. The maternal mortality he feels should not exceed 2% provided the operation is performed by competent operators upon uninfected women. It is indicated in contracted pelves where the conjugata vera exceeds 7 cm. Prophylactic placing of the saw is indicated when it appears a problem whether the head can pass through the pelvis. In multiparæ with history of repeated difficult labors, or in primiparæ presenting extensive disproportions, pubiotomy is inferior, he regards, to Cæsarean section performed at the end of pregnancy. After the patient has been subjected to the test of labor, pubiotomy is many times less dangerous than classical Cæsarean section. Williams feels that pubiotomy should replace high forceps, prophylactic version, induction of premature labor and craniotomy on the living child. It should not be employed in infected cases or after failures to deliver by other means. In cases where the separation between the cut ends does not exceed 4 to 5 cm. the patients recover perfectly and are able to walk as well as ever. The bone section usually heals by fibrous union and a certain degree of permanent enlargement of the pelvis may follow, and occasionally in a subsequent pregnancy spontaneous labor may occur.

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[14] Williams, J. Whittridge: Is Pubiotomy a Justifiable Operation? Am. Jour. Obstet., vol. lxi, No. 5, May, 1910, p. 721.

Gift to Dr. Grenfell — The forty-foot hospital tender *Yale*, which was built expressly for the work of Dr. Grenfell on the Labrador coast, and was presented to him as a wedding present, is reported to have arrived safely at Indian Harbor, Newfoundland. The *Yale* is ketch-rigged, with an auxiliary engine using kerosene, as gasoline cannot be obtained in Labrador. — *Med. Record.*

Reports of Societies.

NEW ENGLAND PEDIATRIC SOCIETY.

The New England Pediatric Society held its eleventh meeting on Saturday, May 21, 1910 at 8.15 P.M. in the Boston Medical Library.

The following papers were read:

William R. P. Emerson, M.D., Boston:

THE CLASS METHOD IN THE DIETETIC AND HYGIENIC TREATMENT OF DELICATE CHILDREN.[1]

Arthur I. Kendall, M.D., Boston:

LACTIC ACID BACILLI. WHAT THEY ARE AND WHAT THEY ARE SUPPOSED TO DO.[2]

Robert M. Merrick, M.D., Boston:

THERAPEUTIC USE OF SEA WATER IN INFANTS.

DISCUSSION, DR. EMERSON'S PAPER.

Dr. J. L. Morse: I think Dr. Emerson is to be congratulated for showing us a practical method of applying the attention to details which we all, I suppose, give to our private patients, to a larger number of patients in dispensary practice. So far as I know, his record to-night is unique. It certainly points out an entirely new field. I was a good deal interested in what he said about the children not doing as well when they went away to the country in the summer. That, I believe, has been the experience of the French when they have sent children away from Paris to the country in the summer. These children almost always came back in poorer condition than when they went away. This was attributed to the facts that they were not so carefully supervised, that their food was often not as good as they had been getting at home, and that they often had to work harder than they did at home.

Dr. Emerson: The first year I was simply feeling my way along. I believed if a child did not gain, the reason could be found, but I was not absolutely sure that such would be the case. The second year, however, has demonstrated to my satisfaction that either the hygienic or the organic cause can always be found. If the child does not gain after the hygienic conditions have been thoroughly studied, we are led to look again for an organic cause. In one case I began all over again with the physical examination, until I got to the throat. The more careful examination showed diseased tonsils and adenoids, lying too deep to be seen in the routine examination. The diseased tissue was removed the following day and the child immediately began to gain. In this way in several cases the class has helped in diagnosis by exclusion. From the first the class has been practically self-supporting. We charge five cents for the record books, and the mothers make the tents themselves. It seemed advisable to get the children away for the summer. One of the poor mothers said she would take three of the children with her own three. Those who graduate from the class, by gaining normal weight and health, are given a small diploma, which is the only special inducement offered the children for coming to the class.

Dr. F. T. Murphy: There is one point concerning the class system which I would like to speak about, and that is the one to which Dr. Merrick has already referred. I think Dr. Emerson has in a small way indicated work which might be done in a very large way with gratifying results. Hygienic measures now employed in the public schools fall short of the mark. I think the very fact that we show gain in weight in many of the children who are attending the tuberculosis class at Franklin Park is an indication that we should also adopt dietetic measures; that is, that the mothers should be taught in classes how to care for and how to feed their children. I think we are harping too much on the open-air part of the public school system and too little on dietetic measures, which should be used in every instance in order to get the best results. The children then, instead of being what we call pretubercular, anemic and underfed, would be a great deal stronger. At the tuberculosis school at Franklin Park each child has an active tubercular lesion in the lungs, or gives a positive Von Pirquet reaction. In many cases we get positive sputum. All are benefited by the open-air treatment, but it is the proper feeding of the children which is doing so much in helping them along. I think that the class method which Dr. Emerson has used as applied to the mothers of the children is an excellent thing. If we could have open-air rooms in the public schools, on the road or some other place, joined with a class system of teaching mothers how to prepare food and properly feed their children, we would make a long stride in the right direction.

Dr. Hastings: I would like to ask Dr. Emerson if he had any difficulty in getting the children to take the milk. In private practice children often say they do not like milk and will not take it. Dr. Emerson said in his paper that only those who did take the milk made the gain, and I would like to ask if among the children of the poorer classes he has experienced any difficulty in getting them to take it.

DISCUSSION, DR. KENDALL'S PAPER.

Dr. J. L. Morse: There are a number of points in Dr. Kendall's paper which, it seems to me, deserve special emphasis. One of them is the influence which the food has in modifying the intestinal bacterial flora. We are all very likely to forget not only this fact, I think, but also that it in many, if not most, instances renders the administration of bacterial cultures unnecessary. Another very important point is that the Bulgarian bacillus and other organisms of the same type act only in the small intestine and can be expected to do good only when the difficulty is located there. A most important point is that these lactic acid bacilli may do harm as well as good. Consequently, if we use them in a routine way, giving them freely in nearly every case, as so many do, we are perhaps just as likely to do harm as good. Judging from my own experience, it is impossible to determine from the clinical signs and symptoms in what case they are likely to do good and in what case they may do harm. Another point which has been called to my attention pretty strongly recently by cases that have come to me after treatment by other physicians is that a good many physicians are attaching too much importance to the presence of indican in the urine. Some of them are making diagnoses of serious intestinal lesions, and giving most unfavorable prognoses simply on this basis, drawing conclusions which, it seems to me, are entirely unwarranted.

Dr. F. B. Talbot: This subject is particularly interesting to me as I have been studying the effect of the various food components on the digestion of infants from the chemical point of view, and I believe that bacteriology explains certain things that we observe in the feeding of sick babies whose powers of digestion are lowered which chemistry does not explain. It is perfectly conceivable that an overgrowth of certain bacteria which were otherwise normal inhabitants of the intestinal canal may have a harmful influence on digestion. The whole subject is so complicated that it is impossible as yet to draw broad conclusions.

THERAPEUTIC USE OF SEA WATER IN INFANTS.

Robert M. Merrick, M.D., Boston: The use was suggested by the experience of Simon in his Boston

[1] See Journal, p. 326. [2] See Journal, p. 322.

lecture. The water was obtained off the "Grand Banks" and prepared according to the Simon technic. It was used in 12 cases of bronchopneumonia, 16 cases of congenital debility and 19 cases of acute and chronic intestinal indigestion. The result, on the whole, was poor in each class of cases and led to the conclusion that the subcutaneous injection produced no remarkable results, and in the experience of the writer equally good results were obtained in some cases treated by saline solution. Emphasis was laid on the usefulness of saline isotonic solutions in general circulatory weakness, especially as seen in infectious fevers.

DISCUSSION, DR. MERRICK'S PAPER.

DR. R. W. HASTINGS: Quite a number of these cases came under my care because I came on duty the first of January, Dr. Merrick's service ceasing in December. I am a little annoyed to see that the children who did well in the pneumonia cases were mostly before I came on duty. Certainly after I came on duty and carried out the treatment as Dr. Merrick had started it, I was not impressed with the effect that the sea water had on them. I started a parallel set of cases who would be having a salt solution, but after discussing the matter we found the amount of material was too small for that, and we thought it would be better to try and get fifty cases and see what would be the result with this treatment. One interesting thing, perhaps you caught it as Dr. Merrick read his paper, was the case of edema which seemed an effect from the subcutaneous use of sea water at first, but was relieved by doubling the dose. This was done at Dr. Leary's suggestion. I do not know any explanation of this and did not understand it at all at the time.

The class of cases at St. Mary's Infant Asylum which interests me most and baffles me most completely is these inanition cases, and after reading Dr. Simon's description of the wonderful results which would certainly come from the administration of sea water, and having tried all the different methods on successive sets of children, and finding them steadily going to the bad, no matter what we did, I was quite enthusiastic to try the sea-water treatment. This is the second set that Dr. Merrick reported, and you will see that they all did badly just the same whether they had sea water or not. After such a lecture as was given by Dr. Simon, in which he made such extraordinary claims both for the infectious diseases and for the inanition cases, it seems to me that such an investigation as Dr. Merrick has carried on ought to have a good deal of weight with us and help to eliminate undue authority which might otherwise be accepted from the words of a man who speaks with so great positiveness. Personally, I want to try the salt solution and give it in a similar series of cases and see whether we will not have just as good results, perhaps better, from the use of the normal saline solution as we do from the use of the fluid which the Frenchman thinks is "that out of which all animal life came."

Book Reviews.

Hygiene and Morality. A Manual for Nurses and Others, Giving an Outline of the Medical, Social and Legal Aspects of the Venereal Diseases. By LAVINIA L. DOCK, R.N. New York and London: G. P. Putnam's Sons. 1910.

It is a pity that this volume, which should have been a useful document in the campaign against venereal disease, should have been made a polemic in favor of woman suffrage. Whatever individual opinion in this matter may be, an avowedly impartial scientific work is not the place for its exploitation. Doubtless publicity and education are the chief agents by which we may hope ultimately to stop prostitution and its consequences, but their action and value are only hampered by partisan argument. Doubtless, too, the influence of good women must be the greatest inspiration in this conflict, as it is in all human progress and achievement, but that influence loses much of its force when those who seek to exert it assume the attitude that man alone is responsible for existing evils, and, therefore, "chuck him out, the brute." It is probably true that "you can lighten the curse of Adam when you've lightened the curse of Eve." The converse is probably also true, and mutual charity is the best means towards mutual betterment, whether in hygiene, morality or other social conditions.

The Surgery and Pathology of the Thyroid and Parathyroid Glands. By ALBERT J. OCHSNER, A.M., M.D., U.D., and RALPH L. THOMPSON, A.M., M.D. St. Louis: C. V. Mosby Company. 1910.

This work, dedicated to Dr. Charles H. Mayo, represents the results of the senior author's personal surgical experience in the treatment of thyroid disease, and of the junior author's studies of thyroid pathology and of the anatomy, physiology and pathology of the parathyroid glandules. The book, which is essentially a manual of regional surgery, is most admirably illustrated by many text figures, and by a series of forty full-page plates presenting detailed steps of operative procedure. There is also an abundant special bibliography of parathyroid literature. The work seems a valuable contribution to the technical knowledge of this important branch of surgery.

Clinical Examination of the Urine and Urinary Diagnosis. A Clinical Guide for the Use of Practitioners and Students of Medicine and Surgery. By J. BERGEN OGDEN, M.D. Illustrated. Third edition, thoroughly revised. Philadelphia and London: W. B. Saunders Company. 1909.

This third edition of a standard textbook represents a careful revision of the original material, with omission of some matters not of clinical importance, description of many improved methods and changes in technic, and addition of a new appendix on examination of the urine for the purpose of life insurance. It is unfortunate that there is but a brief consideration of the urine in pregnancy, and that the author dismisses puerperal eclampsia with little more than the statement that it "in all probability is identical with uremia," and without any account of methods of determining the ammonia coefficient. Apart from this, there is nothing to criticise and everything to praise in this work, which should continue with increased efficiency its valuable service to the profession.

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FLORENCE NIGHTINGALE.

IT is a curious reflection that a brutal, ineffectual and now almost forgotton war should have been the agent which made manifest to the world the genius of Florence Nightingale. Without that war, or in spite of it, her mission would have been ultimately accomplished, but more slowly, less effectually and less strikingly. Her methods were fundamentally correct, therefore her results must have been inevitable, but the Crimea pushed them to a sudden fruition.

Miss Nightingale was one of the most remarkable of her sex, one of the greatest women who have lived. Her life should be a classic for every young girl to read, to study, to ponder and, in so far as may be, to imitate. Now that she is dead, it is to be hoped that her family will authorize a biography which will necessarily be more accurate and complete than any book at present available.

It is certain that she possessed in the highest degree all the attributes of perfect womanhood. She was always, in thought and act, a lady. Her single obvious limitation was a delicate body, progressing to almost complete invalidism, yet so admirable was her regard for the rules of health she taught so well that she lived ninety years of most intense physical and mental effort. She possessed in a truly wonderful degree the genius of organization, together with those other qualities, most rare in man and in woman, an enormous comprehension of detail, combined with unerring deductive reasoning, from multitudes of isolated facts; these two attributes represent opposite poles of mental action and characterize only the greatest minds. Hers was the unusual fortune of completing the work she undertook and receiving the reward of her fellow-beings while she lived.

Florence Nightingale was to an unusual degree responsible by her individual efforts for her success. She achieved greatness. She inherited from parents definite intellectual gifts, but she outstripped them far in the development of these traits. She struggled against caste and tradition far more powerful than anything we know to-day, and while the breadth of character transmitted by her father helped her in the fight, it certainly robbed the struggle of but little of its intensity. Her mother was a charitable lady of the highest type, a woman of decision and mental power, yet this did not make the horrors of Scutari the less real or the more easy to overcome. Miss Nightingale's greatest glory must rest in the fact that, recognizing correctly her own natural powers, she also estimated and realized the colossal nature of the task before her. From the beginning she knew that it could be conquered only by the most complete and thorough preparation, backed by unflinching determination, singleness of purpose, calm judgment, physical courage and ever-ready sympathy. She illustrates well the fact that the really great possess natures so rounded and complete that they instinctively understand all manner of men, and in return all classes find in them a responsive chord. So it happened that Miss Nightingale was worshiped by the soldiers, respected and consulted by the officers, adored by the country people, accepted as an equal by the nobility, recognized as an authority by the scholar, and honored by royalty.

It is impossible for us to-day to picture accurately the world without trained nurses and trained nursing; we accept them as matter of course, as we accept the telephone, the automobile and to-morrow the aeroplane. Yet the difference that exists between proper nursing and the lack of it, between present conditions throughout the earth and those of sixty years ago, is stupendous and almost incomprehensible. It is a change which has fortunately improved the lot of the poor more than that of the rich. Medical men have been given a wonderful privilege in the fight for humanity against pain and disease, yet it may be seriously questioned whether, in the last half century, the trained nurse has not saved as many lives and alleviated as much suffering as has the physician. And this great opportunity has been made possible for all women by the efforts of one woman, who may well be considered for generations to come the model, the ideal and the glory of her sex.

THE GROWTH OF A GREAT LONDON HOSPITAL.

The London Hospital has recently been brought into special notice through a visit from the king. In connection with this event, the *Daily Mail* has gathered certain statistics which are of interest not only in relation to this hospital, but as an evidence of the extraordinary development of hospitals in general during the past two centuries.

The first year's work of the London Hospital was undertaken in 1740, in the reign of George II, and one hundred and twenty-seven patients were treated, with a very large percentage of recoveries, according to the records. As contrasted with these modest figures, it is stated that the present yearly work of this hospital is fifteen thousand in-patients and one hundred and eighty-two thousand out-patients, with the employment of seven hundred nurses, fifty resident doctors and instruction to five hundred medical students. It is hard to realize that less than two hundred years ago practically nothing was known of hospital hygiene, nurses in any modern sense had not yet come into existence, and treatment was crudely empirical. One sympathizes with the prejudice, not yet wholly extinct among certain classes of the community, against hospitals in general, when one reads of the really barbarous methods employed even in this great institution in the early days of its history.

In 1830 a physician wrote, "We always engage nurses without a character, as no respectable person would undertake so disagreeable an office." Any selection of diets to meet individual needs was wholly unknown, and the simplest rules of sanitation were ignored.

What the future may bring forth in the treatment of the sick may only be conjectured, but the possibilities of relief of human suffering take on an added significance in the light of the progress during the past fifty years. We speak at length in another column of the great work of reform instituted by Florence Nightingale, perhaps the most significant individual medical accomplishment of the last century, but hardly less remarkable has been the general awakening both within and without the profession to the opportunities of the present and the possibilities of the future. Of this the London Hospital stands as one of many examples.

MEDICAL NOTES.

Investigation of Pellagra. — The Surgeon-General of the United States Army has detailed Capt. Joseph F. Siler and Capt. Henry J. Nicholls, of the Medical Corps, to assist the commission appointed by the governor of Illinois in the study of pellagra in that state.

Cholera has Invaded Italy. — The disease has appeared in several towns on the Adriatic Coast, among which the town of Trani is most severely affected. Up to Aug. 18, 44 deaths had been recorded. The epidemic appears to be unusually virulent, with a mortality of over 75%, and often with fatal results within a few hours after outset. Dr. Ruetti, of Rome, who has been appointed royal commissioner with full powers, aided by the Red Cross Society, is directing the fight against it. The king himself is reported as about to visit the district unless the course of the invasion is stayed. Later reports are somewhat more reassuring.

The Mechanical Age in Germany. — News comes from Berlin giving two new uses for "horseless vehicles." In the army, field surgeons are to be mounted upon motor tricycles, built to stand rough work and equipped with a large box or basket for carrying first-aid appliances.

It is intended by this means to secure speedy relief for the wounded, thus doing away with one of the horrors of the battlefield. The tricycle is furthermore so arranged that it may serve as an ambulance, to carry those most in need to the field hospitals.

Another innovation is the equipment of a corps of hospital nurses in Berlin with bicycles. These nurses, equipped with small outfits which they strap to their bicycles, start immediately to the scene of any accident and frequently render first aid before the ambulance arrives.

Golf at the Meeting of the British Medical Association. — From the point of view of golfers the annual meeting of the British Medical Association, according to the *British Medical Journal*, must have been at least as successful and enjoyable as from that of those not affected with this mania. Thanks to the energies of Dr. F. J. Smith and those who co-operated with him in attending to their interests, golfers had the opportunity of testing the virtues of practically every first-class course within easy reach of London. In addition there was the usual annual match between teams drawn from golfers resident in the locality in which the meeting is being held and visitors. The match took place this year on Wednesday afternoon at Northwood Links, the arrangements made by Mr. Percy Furnivall

working out to general satisfaction. It proved what is known as a very close thing, London winning at length by ten matches to eight.

A Possible Aid in the Diagnosis of Malignant Disease.— In a recent number of the *Lancet* is published an article by Dr. Elsie M. Royle on the aid which chemical examination of the urine may afford in the diagnosis of malignant disease. Dr. Royle's investigations have enabled her to prove that in cases of cancer the uric acid is usually higher than is found in healthy cases under similar conditions; further, that the output of phosphates in the urine is, in the majority of cases of cancer, decreased when compared with healthy individuals; and, finally, that the ratio of $\frac{\text{phosphates}}{\text{uric acid}}$ is almost invariably reduced in malignant disease. Acting on these results, Dr. Royle suggests that a chemical analysis of the urine may prove of value as an aid to diagnosis in obscure cases of cancer, especially when the abdominal organs are the seat of the disease. The differential diagnosis of malignant disease from gallstones, gastric ulcer, chronic pancreatitis and other morbid conditions is frequently very difficult, and any reliable auxiliary test would be welcome. Dr. Royle, however, prudently observes that her investigations are not complete and that this communication is only intended as a preliminary one. The cases she has examined point to the proposed test as a useful one, but before the value in diagnosis of the facts proved in her paper can be clearly established, it will be necessary to determine how far they are true of other forms of cachexia, and what their relation may be to the secondary anemia usually present in malignant disease. Dr. Royle is at present engaged in working out these questions, and the results will be awaited with interest. The technic of the chemical tests is not a complicated one.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Aug. 23, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 34, scarlatina 20, typhoid fever 35, measles 18, smallpox 0, tuberculosis 72.

The death-rate of the reported deaths for the week ending Aug. 23, 1910, was 18.87.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Aug. 20, 1910, was 232, against 223 the corresponding week of last year, showing an increase of 9 deaths and making the death-rate for the week 19.21. Of this number 130 were males and 102 were females; 126 were white and 6 colored; 148 were born in the United States, 80 in foreign countries and 4 unknown; 43 were of American parentage, 154 of foreign parentage and 35 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 36 cases and 1 death; scarlatina, 16 cases and 0 deaths; typhoid fever, 21 cases and 3 deaths; measles, 19 cases and 2 deaths; tuberculosis, 71 cases and 17 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 18, whooping cough 1, heart disease 21, bronchitis 1. There were 19 deaths from violent causes. The number of children who died under one year was 59; the number under five years, 78. The number of persons who died over sixty years of age was 53. The deaths in public institutions were 103.

Cerebrospinal meningitis, 1 case. Anterior poliomyelitis, 2 cases and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 5 cases and 4 deaths. Measles, 3 cases. Typhoid fever, 1 case. Diphtheria, 2 cases.

Deducting deaths of non-residents, the total is 203 and the death-rate is then 16.81.

Poliomyelitis in Rhode Island.—A considerable number of cases of poliomyelitis have appeared in Providence, R. I., and vicinity. On Aug. 16, six new cases were reported.

Typhoid Fever in Worcester and Vicinity. — The direct relation between typhoid fever and infected milk is illustrated by the epidemic in Worcester. By Aug. 15 the Board of Health reported fifty-three cases among the customers of one milk dealer.

This dealer, it is stated, is allowed, notwithstanding, to continue his delivery as before the epidemic with the exception that he must not handle milk from one specified dairy. It is to be assumed that the Board of Health has traced the infection to this source. Even if this were true, it is to be hoped that the milk man thoroughly boiled his cans, his milk-house and his wagons on the day he ceased handling the polluted supply.

Cochituate, a village twenty-five miles from Worcester, has had more than eighty cases of typhoid, with three deaths, within the past three months. The infection there is also believed to be due to contaminated milk.

NEW YORK.

A CENTENARIAN. — Mrs. Margaret Johnson, a negress, the oldest woman on Long Island, and probably in the state of New York, died at her home at Bayside, N. Y., on Aug. 17, at the alleged age of one hundred and ten years. She is stated to have been born in New York City on May 15, 1800. She was the mother of ten children, but is survived by only one daughter.

Current Literature.

MEDICAL RECORD.

AUG. 13, 1910.

1. MEARS, J. E. *The Value of Surgical Procedures in the Solution of the Problem of Race Betterment.*
2. *FOX, C. D. *Report of Five Cases of Tetanus and Remarks on the Treatment of the Disease.*
3. ROBINOVITCH, L. G. *Electric Sleep in Paths of Displacement Currents: New Findings.*
4. FRIEDENWALD, J. *Important Events in the Development of Gastro-Enterology.*
5. NEUSTAEDTER, M. *Why the Exceptional Child is Entitled to Receive Training Suited to Its Needs at Public Expense.*
6. FOSTER, N. B. *Further Observations on Alcoholic Gastritis and Its Relation to Experimental Gastritis in Animals.*
7. ORGEL, D. H. *Primary Streptococcus Diphtheria.*
8. SAUER, J. G. *Aerotherapy.*

2. Fox reports five cases of tetanus and discusses the prophylaxis and treatment of this disease. The prophylactic treatment of wounds is of far greater importance than the treatment of tetanus after it has developed. The serum should be used prophylactically in all cases of punctured or deep wounds, where the anaerobic tetanus bacilli can grow. This is especially important in localities where tetanus is of frequent occurrence, as in New Jersey and Long Island. Tetanus bacilli are not uncommon in the human feces, especially if the host works around horses; for this reason thorough purging and restraint from uncooked food has been recommended for three days prior to operations in regions exposed to fecal contamination. In treatment, the serum is probably best given by the intraspinal or intraneural method. From an analysis of twenty-four cases collected from the literature, the writer finds that the intraspinal injection of magnesium sulphate is probably of great value and deserves a wide clinical trial. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

AUG. 13, 1910.

1. CUMSTON, C. G. *Resection of the Elbow in Children.*
2. MACWHINNIE, A. M. *Visual Fields in Accessory Sinus Disease.*
3. HILL, R. S. *Uterine Fibromyoma Complicating Pregnancy.*
4. MCGLINN, J. A. *Acute Inversion of the Uterus: Report of a Case.*
5. BASSLER, A. *Singultus Gastricus Nervosus.*
6. PRICE, G. E. *The Clinical Significance of Depression.*
7. WELLMAN, C. *A List of the Tropical Diseases Observed in the Region of San Francisco Bay, California.*
8. BRONNER, W. B. *Innocently Acquired Syphilis.*

[L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

AUG. 13, 1910.

1. POSEY, W. C. *Visual Requirements in the Public Services of the United States.*
2. BIERRING, W. L. *The Rôle of Pathology and Physiology in Preventive Medicine.*
3. REMMINGTON, J. P. *The Rôle of the Pharmacist in Preventive Medicine.*
4. WOODS, H. *Auto-Intoxication and Allied Intestinal Troubles as a Possible Cause of Certain Vascular and Functional Disorders of the Eye.*
5. BOOT, G. *Development of the Temporal Bone.*
6. LOWENBURG, H. *The Adaptability of Scientific Infant Feeding to General Practice.*
7. BUCKLE, L. *Childbirth after Apparent Menopause.*
8. *DORRANCE, G., AND GINSBURG, N. *Vein-to-Vein Transfusion of Blood.*
9. RAWLINGS, D. *The Campaign against Diphtheria and Scarlet Fever in Chicago.*
10. JONES, C. H. *What can Health Departments do to Control Scarlet Fever?*
11. KNOPF, S. A. *The Relation of Modern Dentistry to the Tuberculosis Problem.*
12. MAGRUDER, G. L. *Further Observations on the Milk Supply of Washington, D. C.*
13. PORCHER, W. P. *Scab Formation in the Nose. Its Etiology and Prevention.*
14. HEWITT, W. R. *Report of a Case of Aneurysm of the Coronary Artery.*
15. ARMS, B. L. *The Strauss Reaction for the Diagnosis of Glanders.*

8. Dorrance and Ginsburg advocate vein-to-vein transfusion of blood instead of artery to vein. They claim as advantages: (1) Its simplicity. (2) Lack of risk both to donor and donee in the matter of too rapid loss of blood for the donor and the danger of acute dilatation of the right heart for the donee. (3) Superficial vessels instead of deep ones are used and are easy of access and control. They believe these things offset the quicker but more difficult artery-to-vein method, even though, with the latter, the donee is getting purer, more oxygenated blood from the artery of the donor. Their method has been tried on one human case with success. [E. H. R.]

THE JOURNAL OF MEDICAL RESEARCH.

JUNE, 1910.

1. *ZINSSER, H. *On Bactericidal Substances Extracted from Normal Leucocytes.*
2. *SAPPINGTON, S. W. *Studies in Typhoid Vaccines and Opsonins.*
3. RETTGER, L. F. *A New and Improved Method of Enumerating Air Bacteria.*
4. *ANDERSON, J. F., AND GOLDBERGER, J. *On the Etiology of Tabardillo or Mexican Typhus.*
5. BUXTON, B. H., AND RAHE, A. H. *Effect of Dilution upon the Flocculation of Colloids. III. The Flocculation of Milk.*
6. WELLS, H. G., AND MITCHELL, J. H. *Studies on Calcification and Ossification. III.*
7. BROWN, L., AND SMITH, D. *The Cultivation of Tubercle Bacilli Directly from Sputum by the Use of Antiformin.*

1. Zinsser, using washed leucocytes from rabbits, performed a series of experiments, from which he concludes as follows: "Extracts of normal rabbit leucocytes, both those obtained by aqueous extraction and those obtained by freezing in salt solution, have distinct bactericidal powers for pyogenic staphylococci and for Bacillus typhosus." By testing the thermostability of these endocellular bactericidal substances, he showed that they are distinct from the bactericidal substances in serum. Quantitatively, they are much less than the latter; they are probably sufficient only for destruction of bacteria ingested by the leucocytes. They were not increased by immunization.

2. Sappington reports a series of twenty-two typhoid cases treated with typhoid vaccine. He also inoculated three non-typhoidal patients by way of contrast. In the latter, there was marked local reaction, but no general reaction save increase in opsonic index and agglutinins. The typhoid cases, on the contrary, showed almost no local reaction. In about 75% of these twenty-two cases, "there was distinct improvement sufficient in degree and rapidity of development to be foreign to the usual course of typhoid fever."

The treatment must be begun early, and a small dose of five million bacilli is to be tried first. This is to be rapidly increased, but the amount and frequency of dosage must be regulated by the reaction and the opsonic index.

4. Anderson and Goldberger conclude from their experiments that Rocky Mountain spotted fever and tabardillo are distinct diseases. The blood of infected persons is infective on at least the eighth day; inoculation of monkeys with such blood is positive, and one attack of the disease confers immunity. The blood serum when filtered is no longer infectious. The writers believe the body louse to be the carrier of this disease. [G. G. S.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

JULY, 1910.

1. PETERSON, R. *Gallstones during Pregnancy and the Puerperium.*
2. *WILLIAMS, J. W. CRAGIN, E. B., AND NEWELL, F. S. *Report on the Employment of Vaccine Therapy in Gynecology and Obstetrics.*
3. STONE, I. S. *On Fibromyomata of the Uterus, with Special Reference to Abdominal Hysterectomy.*
4. WARD, G. G. *The Repair of Inaccessible Vesico-Vaginal Fistulæ following Hysterectomy.*
5. FINDLEY, P. *Bilateral Tubal Pregnancy; Coincident Development.*
6. *VINEBERG, H. N. *The Surgical Treatment of Puerperal Septic Infection.*
7. *MONTGOMERY, E. E. *Surgical Treatment of Puerperal Sepsis.*
8. *POLAK, T. O. *When shall we Operate in Puerperal Septic Infection?*
9. MANTON, W. P. *Report of Three Unusual Cases: Primary Carcinoma of the Female Urethra; Hematoma of the Broad Ligament Recurring with Pregnancy: Fibroid Tumor of the Ovarian Ligament.*
10. *BLAKE, J. A. *What are the End Results of Surgery or Surgical Operations for the Relief of Neurasthenic Conditions Associated with the Various Visceral Ptoses: To What Extent do they Improve the Neurasthenic State Itself?*
11. SMITH, R. R. *Idem.*
12. BISSELL, D. *A Successful Reimplantation of a Pelvic Kidney in the Female: With Remarks on the Surgical Treatment of Kidney Displacements in the True Pelvis.*
13. TAUSSIG, F. J. *Syphilitic Fever in Pregnancy and the Puerperium.*

2. Williams, Cragin and Newell conclude from a review of the literature on vaccine therapy in gynecology and obstetrics that opsonins undoubtedly play a part in the production of active immunity. The determination of the opsonic index is difficult technically and uncertain in value. In chronic gonorrheal arthritis and urethritis opsonic treatment is a valuable adjunct to other treatment and may alone lead to cure. It appears to be useless in acute infections. It is more efficient in the treatment of vulvovaginitis in children than any other means, but even here it does not always cure. In infections of the urinary tract due to the colon bacillus it sometimes results in a symptomatic cure, but rarely relieves the bacteriuria. In the pyelitis and pyelonephritis of pregnancy there is no evidence that it does more good than the usual rest and urotropin treatment. In certain cases of endometritis it appears to reinforce the curative influence of the curettage.

6, 7, 8. In the symposium of three articles on the surgical treatment of puerperal septic infection (1) Vineberg advocates the ligation of the pelvic vein in pelvic thrombophlebitis, but his and quoted cases show a high mortality. (2) Montgomery has used the antistreptococcus serum to advantage. He warns that a patient convalescing from sepsis should never be considered out of danger as long as the pulse remains persistently rapid, even though the temperature does not rise above normal. This rapidity of pulse is almost always an indication of a slumbering process which may at any moment become active. (3) Polak states that the number of puerperal infections is increasing, but that the mortality is lower owing to our increased knowledge of treatment. He warns us to be more conservative, for he believes that any intrapelvic or intra-uterine manipulation made during the acute stage of a puerperal sepsis always breaks down and disturbs nature's protective barrier and permits the dissemination of the infection through freshly abraded or penetrated surfaces. Never disturb a local focus post-partum as long as the patient shows improvement, unless there is a definite localization of pus. Nature is competent in the majority of instances to localize and circumscribe the infection. Operations should be avoided if possible. Thrombophlebitis is a conservative process on the part of nature to limit the spread of infection, and any form of pelvic manipulation only tends to break down and separate parts of these thrombi and extend the infection to more remote parts.

10. Blake believes that in recommending an abdominal operation to relieve neurasthenia the following four conditions must be satisfied:

(1) That there is a definite morbid or mechanical perversion of the normal condition of the viscera.

(2) That it is the chief underlying cause of the neurasthenic state.

(3) That the neurasthenic condition cannot be cured without its correction.

(4) That it can be corrected by a definite operative procedure of only moderate danger to life.

AUGUST, 1910.

1. ROSENSTIRN, J. *A Contribution to the Question of Metastasis of Carcinoma in the Ovaries and Douglas' Cul-de-sac.*
2. *HARRIS, M. L. *The Influence of Trauma in the Production of Diseases of the Pelvic Organs in Women.*
3. MAYO, C. H. *Diagnosis of Hyperthyroidism or Exophthalmic Goiter.*
4. FOWLER, R. H. *Non-Parasitic Cysts of the Spleen.*
5. DEAVER, J. B., DA COSTA, J. C., AND PFEIFFER, D. B. *Vaccine Therapy as an Adjunct to Surgery.*
6. SEELIG, M. G., AND LYON, E. P. *Further Experimental Data on the Vasomotor Relations of Shock.*
7. WERELIUS, A. *The Pathology of the Thyroid and Hematology in One Hundred Goitrous Chicago Dogs.*
8. *WILSON, L. B., WILLIS, B. C., MCGRATH, B. F., PILCHER, J. T., AND BALFOUR, D. C. *Clinical Experiences with the Cammidge Reaction.*
9. DORRANCE, G. M. *On the Treatment of Traumatic Injuries of the Lungs and Pleuræ; with the Presentation of a New Intratracheal Tube for Use in Artificial Respiration.*
10. DUDLEY, F. W. *Liver Abscess. Ipecacuanha in the Treatment of Threatened Liver Abscess Following Amebic Dysentery and in Other Bowel Infections.*
11. MAGRUDER, E. P. *Bonegrafting and Osteoplasty. A Case of the Latter Presented.*
12. *CROSSEN, H. S. *A Deceptive Form of Appendicitis in Women.*

2. Harris, reviewing the condition of 77 women claiming injury to the pelvic organs after trolley-car and other like accidents, comes to the following conclusions: (1) Miscarriages during the first four months of pregnancy readily occur, often from comparatively slight injuries, or even fright, but after the fifth month they very rarely occur from such causes. (2) Car accidents and the like seldom if ever cause disease or displacement of the pelvic organs in women whose organs are normal and healthy at the time of the accident. (3) Women with chronic pus tubes or other pelvic inflammations may have acute exacerbations of their troubles excited by accidents producing general injuries. (4) Women with old lacerations, displacements, prolapses, etc., may have the symptoms resulting from such conditions temporarily aggravated by general injuries and are often particularly prone either consciously or unconsciously to attribute all of their troubles to such injuries, which had little or nothing to do with causing the conditions present. (5) Accidents producing general concussion of the body may produce a temporary irregularity in the menses, usually increasing them, but occasionally suspending them, which functional derangements seldom last longer than three or four months.

8. Wilson and his associates, experimenting with the Cammidge test, conclude finally that as a means of diagnosing disease of the pancreas it is both valueless and mis-

leading, and that there is no apparent clinical relationship between disease of the pancreas and any of our various types of end reaction. It does not seem that the end reactions are artifacts, but rather that they indicate actual metabolic variations. The relation of these changes in metabolism to the welfare of the patient is not apparent.

12. Crossen describes two very interesting cases of retrocecal appendicitis in which the appendices were so buried in the wall of the cecum that they were indistinguishable from the outside, but formed masses inside the cecum which were mistaken for adnexal disease before operation. [E. H. R.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 29.

JULY 21, 1910.

1. RUMPF. *Diagnosis and Treatment of Cardiac and Vascular Neuroses.* (Clinical lecture.)
2. *REICHER, K. *Experimental Work on the Treatment of Malignant Tumors.*
3. GRAWITZ. *Myogenic Leucocytosis.*
4. STORATH. *Habitual Misuse of Chloroform.*
5. THORSPECKEN, O. *A Case of Rheumatismus Nodosus.*
6. STREITBERGER. *Disinfection of the Field of Operation with Tincture of Iodine.*
7. GASIS, D. *Presence of Spermatozoa in Old Stains of Semen.*
8. LEHMANN, R. *Acute Otitis Media with Perisinus Abscess and Paralysis of the Abducens Nerve.*
9. WERTHEIMER. A. *Roentgen Ray Kinematograph of the Human Internal Organs.*
10. SCHALL, M. *New Technical Improvements in the Field of Medicine.*

2. Reicher compares the malignant tumors of animals with those of man and thinks that they have enough points in common to consider them in the same class. He then reviews the different methods that have been tried to check the growth of tumors in animals by the injection of different substances. He uses injections of adrenalin solution in the tissues around the tumors in mice and rats and has succeeded in causing necrosis of adenocarcinoma and sarcoma. By using the adrenalin injections before inoculating the rats with tumor he has diminished the frequency of successful inoculation. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 29.

JULY 19, 1910.

1. *KRÖNIG AND GAUSS. *Influence of the X-Ray on Operative Treatment of Uterine Hemorrhage and of Myomata.*
2. *FISCHER, P., AND HOPPE, J. *The Condition of the Ehrlich-Hata Preparation in the Human Body.*
3. STÜMPKE, G. *Relation of Iodine to the Serum Reaction.*
4. v. HOESSLIN, H. *Raynaud's Disease.*
5. RIEHL, M. *Preparations of Diastase and Carbohydrate Digestion.*
6. GEISSLER AND ZYBELL. *Plethysmographic Studies during Muscular Work.*
7. WREDE. *Conservative Treatment of Furuncles of the Face.*
8. BECKER, T. *Nervous Disturbances Following the Mülheim Railway Accident.*
9. SAMUELY, F. *Applicability of the Autenrieth-Koenigsberger Calorimeter as a Hemometer.*
10. KESSLER. *The Serological Typhoid Reaction of Mandelbaum.*
11. SCHÄFFER, K. *Köhler's Disease of the Bones.*
12. KOWNATZKI. *Adrenalin and Osteomalacia.*
13. KÖLLIKER. *The Question of Thyosinamin Poisoning.*
14. HEDDÄUS, A. *Injuries to the Intestine in Hernial Sacs.*
15. WALLER. *A New Method of Transporting the Wounded by Railway.*
16. ADAM, C. *Gonorrheal Ulceration of the Cornea.*

1. In a series of 568 cases of hemorrhage of the uterus, 505 were treated by operation and 63 by the x-ray. The writers believe that radiotherapy rightly used will give success in a great many cases where operation would be dangerous, and that in this way mortality can be lowered. They consider operation to be the treatment of choice, however, for strong people and especially for the poor, who must be able promptly to return to their duties. Of the cases that received radiotherapy, amenorrhea was brought about in 60%, oligomenorrhea in 30% more (i. e., sufficient result), but two cases became discouraged and desired operation.

2. The experiments of Fischer and Hoppe are interesting and important from the point of view of serology and scientific therapeutics. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 29.

JULY 18, 1910.

1. TORNAI, J. *The X-Ray in the Diagnosis of Stenoses of the Digestive Tract.*
2. HOFFMANN, M. *Cystoscopy in the Presence of Cloudy Urine; Catheterization of Ureters in Presence of Cystitis.*
3. ARNDT, G. *Proof of the Tubercle Bacilli in Lupus Erythematosus.*
4. STEFFENHAGEN, K. *Serum Reaction in Leprosy.*
5. SOBERNHEIM, G. *For the Organization of Wassermann's Serum Diagnosis.*
6. *HOEHNE, F., AND KALB, R. *Does the Blood in the Wassermann Reaction React Differently if Taken Before or After Eating?*
7. BOAS, H., AND NEVE, G. *The Wassermann Reaction in Dementia Paralytica.*
8. SENATOR, M. *The Treatment of Aphonia Hysterica.*
9. BICKEL, A., AND ROEDER, H. *The Thermos Sterilizer.*
10. HEGNER AND BAUMM. *Concerning the Action of Quartz Light on the Trachomatous Conjunctiva of the Eye.*

6. As this question has often been raised, these investigators have made the test in a series of fifty-three carefully selected cases. The tests have been made with great care and the authors prove conclusively that there is no apparent difference in the blood taken from a fasting patient and that of a patient after a full meal as far as its reaction to the Wassermann test is concerned. [J. L. H.]

ANNALES DE L'INSTITUT PASTEUR.

JUNE 25, 1910.

1. MAZÉ, M. P. *Theoretical and Practical Technic of Making Cheese.*
2. *DUBOURG, E. *Researches upon a Neutral Sugar from Crude Cane Sugar.*
3. *BORDET, J., AND SLEESWYK. *Variability of Organisms in Their Serum Diagnostic Tests Dependent upon the Culture Media.*
4. *AGULHON, H. *Influence of Boric Acid upon Diastatic Activity.*
5. PANISSET, L. *Studies on the Infection of the Guinea Pig with the Bacteria of Preis-Nocard.*

2. Dubourg has done some work in an endeavor to decide whether or no a neutral sugar exists in crude cane sugar, as has been claimed by several other observers. He concludes that there is no true neutral sugar in the crude cane sugar. He promises to report in the future some interesting results on the constitution of sugars contained in molasses of the sugar cane.

3. In using some of the modern methods for detecting specificity, such as complement duration, etc., Bordet and Sleeswyk have found that the characteristics of bacteria from the same original source will vary within certain limits, dependent upon the character of the media upon which they have been grown.

4. Agulhon shows by his work that boric acid in solution has very little inhibitory action upon the diastatic ferments. [C. F., JR.]

REVUE DE MÉDECINE.

JULY, 1910.

1. VAQUEZ, H., AND COTTET, J. *Clinical Observations on the Rhythm of Urinary Secretion and on Diuresis Produced by the Ingestion of Water.*
2. LONDE, P. *Pericholecystitis.*
3. LASSABLIÈRE, P. *The Influence of Toxins upon Nitrogen Metabolism.*
4. *THERRE, A. *Experimental Study on the Action of Vichy Water upon Arterial Tension.*

4. Therre has studied the effects upon arterial tension in goats of the various Vichy waters. The experiments are so conducted that the animals are subjected to the least possible change. Considerable variation is found in the different waters, even if their temperature and mineral content are the same. With only one exception he noted a marked rise in tension, which was maintained for a prolonged period of time. The "maximum and minimum" pressure went hand in hand. But the variation was not always in direct proportion to the amount of fluid administered, either by mouth or subcutaneously.

[L. H. S.]

Correspondence.

CANTERBURY.

[From Our Foreign Correspondent.]

Dover, July 31, 1910.

Mr. Editor: We did not, like Chaucer, lie "in Southwark at the Taberd," but when we finally did turn our backs on London we were

> "Ready to wenden on our pilgrimage
> To Canterbury with ful devout corage."

Unlike his good pilgrims, however, we broke our journey only at Rochester, a pleasant town with a fine old Norman castle and a cathedral that shows many traces of the ruthless hand of ignorance. A nearly effaced tablet near the West Gate still preserves, notwithstanding, the pious memory of one godly "decani Roffensis" and with it of the Roff's camp of the Romans, which, through the Anglo-Saxon Hrofescestre, gave the town its present name.

From Rochester we passed by far easier stages than the olden palmers to Canterbury, a much smaller town of much greater ecclesiastical importance, likewise with a name of pleasant etymologic connotation, Cantwarabyrig, city of Kentish men. The modern Canterbury, like that of old time, is still a straggling town built in a narrow strip along a high road that runs at right angles to the river Stour. The cathedral dominates it splendidly, standing in stately magnificence in its grand old close, surrounded, as Hawthorne has said of Peterborough, "by ancient and comely habitations of Christian men." It is a dramatic story they tell of the murder of Becket in this old minster, and a story that after seven centuries still seems vividly fresh as you retrace step by step the course of the martyred archbishop that fateful night, from his entrance into the cloisters, where the lurking knights glimpsed the glint of his ecclesiastical vestments, to the very stone in the great transept where they overtook and slew him. Something of the gloom of that tragedy seems ever since to have shadowed the church, whose castellated stone screen and successive flights of steps add an air of forbidding sternness to the interior. Faith finds it hard to credit the accounts of the fabulous wealth later heaped up by devout pilgrims at the shrine of St. Thomas, "the holy, blissful martyr," but it was evidently great enough to tempt the cupidity of Henry VIII, who thereby profited most unrighteously by his ancestor's crime.

Were it only for its cathedral, Canterbury would still attract pilgrims to-day, but the town is replete with interest apart from that. In the first place, its houses are the quaintest and oldest, and its streets and lanes the narrowest and crookedest, one can find anywhere within equal distance of London. They still show you an old hostelry, on the corner of Mercery Lane, where pilgrims to the cathedral lodged in Chaucer's time; and outside the West Gate another tavern, built in 1403, is still standing, where Sir John Oldcastle, prototype of Falstaff, is reputed to have consumed an intolerable deal of sack. Mercery Lane and Butchery Lane both lead into the Butter Market, where there is a dainty little bronze figure representing the muse of Christopher Marlowe. Christopher was a native of Canterbury, and died at twenty-nine, not the least famous of the men who have distinguished the old town.

Then, too, Canterbury has a multitude of old churches, from St. Dunstan's, — where Henry II doffed his royal robes and whence he went on his knees to the cathedral to do penance for Becket's murder, — to St. Martin's, the mother church of England, built in 680 A.D., and communing still by itself among its yews on a hill apart from and overlooking the town. Then there is the colony of French Huguenot silk-weavers, who came to Canterbury as refugees and since 1576 have exercised the privilege, granted them by good Queen Bess, of maintaining their French church and services in the crypt of the cathedral. Their descendants still continue their weaving trade in a moss-grown old building overhanging the river and bearing in one gable the laudable motto,

> "Fair Warp and Fitting Woof
> Weave a Web that Bideth Proof."

The river Stour runs with affectionate intimacy in and through the town, under old bridges, past garden walls whose luxuriant flowers trail in its waters, under creaking mills whose wheels it still obligingly turns. If there were a pagan tutelary deity of Canterbury, it ought to be the river-god of the Stour. And finally some confluents join it and it broadens out and babbles away serenely through hop-fields and sunny meadows. There is pleasant driving everywhere about Canterbury. One day we went to Harbledown, the last station of Chaucer's pilgrims before they reached their goal. The village must look exactly as it did in his time, and there is still the church of an old Hospital of St. Nicholas, founded by Archbishop Lanfranc for lepers, and now an almshouse for old poor men.

Canterbury also possesses another hospital, the Kent and Canterbury Hospital, a genuine medical institution, founded in 1793, and built to accommodate 104 patients, half medical, half surgical, though it now seldom has more than 80, owing to the establishment of hospitals in other larger and more rapidly growing cities of the county. It has roomy, comfortable wards, a large, modernly equipped operating room, and a pathologic laboratory far surpassing in size and convenience that of several hospitals in Boston. An out-patient department is maintained, and there are two residents, a physician and a surgeon. The latter most courteously showed us about. Among other things of professional interest, we saw a case of extreme microcephalus in a baby two weeks old, and another baby of three weeks with a large lumbar spina bifida, hydrocephalus and a deficiency of cranial bone such that the anterior and posterior fontanelles were merged into one, and practically the entire top of the cranial vault was membranous. This baby also had bilateral extreme talipes valgus.

The spacious, old-fashioned buildings of the Kent and Canterbury Hospital are erected, perhaps with a certain appropriateness, on an old cemetery once belonging to St. Augustine's Priory, a religious foundation which, with its abbey and conventual buildings, was formerly the rival of the cathedral monastery, but gradually fell into decay. A modern missionary college is now established on the site of this priory, and the hospital stands where the old monks were once laid in God's acre. Many melancholy ruins of the old abbey and buildings have been excavated in the garden of the present college. Canterbury is rich in things old and new, and the memories and tangible relics of the old persist harmoniously to be the glory and charm of a later age.

So from Canterbury we came to Dover, and are camped once more by the unvintaged sea. The "old Lord Warden" still stands sentinel by the harbor, and Dover cliffs are still white and still bare their chalky flanks to the dash of the surge. This afternoon we walked from Dover Castle, that crowns the eastern heights, to Shakespeare's Cliff on the west, which still

> "O'erhangs and jutties his confounded base,
> Swill'd with the wild and wasteful ocean,"

as fearfully as in the days of Lear or Harry of Monmouth. It is good to hear again the crisp rattle of pebbles in the undertow on the shingle, and the long, low roar and boom of breakers against the shore, and to see at night the steady flashing of "the coastwise lights of England." To-morrow we are again aboard and off to foreign fields, like

> "Palmers for to seeken straunge strondes
> And ferne halwes couthe in sondry londes."

Medicus Peregrinus.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 13, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,399	588	Waltham	3	1
Chicago	595	263	Pittsfield	11	4
Philadelphia	—	—	Brookline	5	1
St. Louis	—	—	Gloucester	7	—
Baltimore	—	—	North Adams	8	4
Cleveland	—	—	Northampton	2	1
Buffalo	—	—	Chicopee	13	9
Pittsburg	—	—	Medford	3	1
Cincinnati	—	—	Beverly	1	—
Milwaukee	—	—	Leominster	1	—
Washington	—	—	Hyde Park	7	2
Providence	—	—	Melrose	4	3
Boston	190	87	Newburyport	1	—
Worcester	53	19	Revere	5	3
Fall River	51	32	Westfield	11	4
Cambridge	24	7	Woburn	3	2
Lowell	33	14	Peabody	—	—
New Bedford	32	18	Marlboro	7	1
Lynn	17	8	Attleboro	7	5
Springfield	27	14	Adams	5	4
Lawrence	41	2	Clinton	4	1
Somerville	17	5	Gardner	2	2
Brockton	17	4	Milford	4	2
Holyoke	—	—	Watertown	—	—
Malden	15	2	Plymouth	—	—
Chelsea	9	3	Southbridge	5	4
Newton	6	2	Weymouth	2	1
Salem	13	—	Framingham	1	—
Haverhill	17	1	Wakefield	—	—
Fitchburg	—	—	Webster	2	1
Everett	2	—	Arlington	—	—
Quincy	—	—	Greenfield	2	—
Taunton	15	9			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED AUG. 10, 1910.

GUITERAS, G. M., surgeon. Granted four days' leave of absence from Aug. 9, 1910.

STIMPSON, W. G., surgeon. Granted twenty days' leave of absence from Aug. 11, 1910.

NYDEGGER, J. A., surgeon. Granted three days' leave of absence from Aug. 9, 1910.

BLUE, RUPERT, surgeon. Granted eight days' leave of absence from Aug. 7, 1910.

MOORE, DUNLOP, passed assistant surgeon. Granted fourteen days' leave of absence from Aug. 10, 1910.

FOX, CARROLL, passed assistant surgeon. Relieved from duty in the Hygienic Laboratory and directed to proceed to Manila, P. I., and report to the Chief Quarantine Officer for duty. Aug. 5, 1910.

VOGEL, C. W., passed assistant surgeon. Granted fifteen days' leave of absence from Aug. 10, 1910.

GLOVER, M. W., passed assistant surgeon. Leave of absence for ten days from July 25, 1910, amended to read three days from July 25, 1910.

BAHRENBURG, L. P. H., passed assistant surgeon. Granted six days' leave of absence from July 26, 1910, on account of sickness.

ASHFORD, F. A., passed assistant surgeon. Granted one day's leave of absence, July 30, 1910, on account of sickness.

CLEAVES, F. H., acting assistant surgeon. Granted six days' leave of absence from Aug. 1, 1910.

DEERHAKE, WM. A., acting assistant surgeon. Granted five days' leave of absence in July, 1910, under paragraph 210, Service Regulations.

ELFERS, J. C., acting assistant surgeon. Granted thirty days' leave of absence from Aug. 8, 1910.

HART, GEORGE G., acting assistant surgeon. Granted twelve days' leave of absence from Aug. 18, 1910.

HORNING, HENRY, acting assistant surgeon. Granted seven days' leave of absence from Aug. 3, 1910, under paragraph 210, Service Regulations.

MCLARTY, A. A., acting assistant surgeon. Granted ten days' leave of absence from Aug. 1, 1910.

ONUF, B., acting assistant surgeon. Granted eight days' leave of absence from Aug. 16, 1910.

RICHTER, H. C., acting assistant surgeon. Granted thirty days' leave of absence from Aug. 1, 1910.

RUSH, JOHN O., acting assistant surgeon. Granted fourteen days' leave of absence from Aug. 10, 1910, with pay, and four weeks' leave of absence from Aug. 24, 1910, without pay.

SAVAGE, WALTER L., acting assistant surgeon. Granted thirty days' leave of absence from Aug. 12, 1910.

SCHWARTZ, LOUIS, acting assistant surgeon. Granted seven days' leave of absence from Aug. 8, 1910, under paragraph 210, Service Regulations.

STEVENSON, J. W., acting assistant surgeon. Leave of absence for thirty days from Aug. 3, 1910, amended to read thirty days from Aug. 8, 1910.

STEWART, W. J. S., acting assistant surgeon. Granted one month's leave of absence without pay from July 23, 1910.

TOWNSEND, W., acting assistant surgeon. Granted eight days' leave of absence from July 28, 1910.

WALLACE, C. R., acting assistant surgeon. Granted fourteen days' leave of absence from Aug. 22, 1910.

RYDER, L. W., pharmacist. Granted one day's leave of absence, Aug. 6, 1910, under paragraph 210, Service Regulations.

MORRIS, G. A., pharmacist. Granted twenty-three days' leave of absence from Sept. 6, 1910.

BIERMAN, C. H., pharmacist. Leave of absence for thirteen days from July 26, 1910, revoked.

CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING AUG. 13, 1910.

LUMSDEN, G. P., medical inspector. Detached from the Naval Recruiting Station, Chattanooga, Tenn., and directed to wait orders. Aug. 5.

TOLFREE, H. M., passed assistant surgeon. Detached from the Naval Recruiting Station, Cleveland, Ohio, and ordered to the Naval Recruiting Station, Chattanooga, Tenn. Aug. 5.

Orders issued by commander-in-chief of Asiatic Fleet:

AMES, M. H., passed assistant surgeon. Ordered to duty at the Naval Hospital, Olongapo, P. I.

HIGGINS, S. L., passed assistant surgeon. Detached from the "Mohican" and ordered to the "New York."

DOLLARD, H. L., assistant surgeon. Detached from the "Relief" and ordered to the "Charleston."

GUEST, M. S., surgeon. Ordered to the Navy Yard, Pensacola, Fla., when discharged from treatment at the Naval Hospital, Las Animas, Colo. Aug. 6.

FITTS, H. B., medical inspector. Detached from the Navy Yard, Pensacola, Fla., and ordered to Washington, D. C., for examination for retirement. Aug. 9.

TOLFREE, H. M., surgeon. Commissioned surgeon from March 24, 1910. Aug. 11.

ALLEN, A. H., passed assistant surgeon. Detached from duty with the Naval Rifle Team of 1910 and ordered to duty at the Naval Hospital, Navy Yard, New York, N. Y. Aug. 11.

HIGGINS, S. L., passed assistant surgeon. Commissioned passed assistant surgeon from Nov. 12, 1909. Aug. 11.

SOCIETY NOTICE.

AMERICAN ASSOCIATION OF CLINICAL RESEARCH. — The second annual meeting of the American Association of Clinical Research will be held in Boston on Sept. 28 and 29, 1910.

RECENT DEATH.

COLLAMORE, FRANCIS, M.D., M.M.S.S., Retired, died in North Pembroke, Aug. 18, 1910, aged eighty-four years.

JOHNS HOPKINS HOSPITAL LIBRARY

Original Articles.

THE RESULTS OF ONE HUNDRED AND SIXTY-EIGHT OPERATIONS FOR HERNIA.

BY CHARLES L. SCUDDER, M.D.,

Surgeon to the Massachusetts General Hospital; Lecturer on Surgery, Harvard Medical School, Boston, Mass.

I WISH to describe my interpretation of the Bassini operation for inguinal hernia; to record the results of operations for inguinal hernia by this method; to report conditions existing following operations for the repair of other forms of hernia; to state certain important facts concerning hernia.

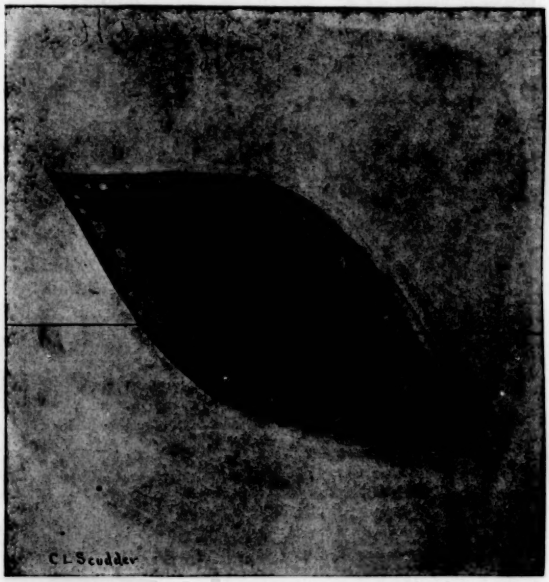


FIG. 1. Oblique incision through skin and superficial fascia down to the fascia of the external oblique muscle. Note the external abdominal ring made apparent by slight bulging caused by full hernial sac.

The accompanying drawings were made for me from studies of the anatomical findings at operations for hernia. These drawings illustrate the essential details of Bassini's operation for inguinal hernia. The operation is as follows:

A straight and obliquely placed incision is made parallel to and one finger's breadth above Poupart's ligament sufficient in length to expose readily the position of the internal and external abdominal rings. The few bleeding vessels are clamped and immediately ligated. The external abdominal ring is exactly developed by a few strokes of the knife and blunt dissection. (Fig. 1.)

The external oblique fascia is divided parallel with its fibers and freed by blunt gauze dissection from the parts beneath for about two fingers' breadths from the cut edges. The lower border of the internal oblique muscle, the sac of the hernia, the cord covered in part by the cremaster muscle and fascia are thus exposed to view. (Fig. 2.) The cremaster muscle may be well developed, as is indicated in the drawing, or it may be poorly developed and appear as a thin fascia with a few muscular fibers scattered through it. When the muscle is well developed, it may be utilized in closing the abdominal wound (Halstead), as is here illustrated.

The cremaster is split parallel with its fibers and separated from off the sac and cord and the sac developed by blunt dissection with fingers and gauze. The sac lies anteriorly to the cord and may be found high up near the situation of the internal ring. The sac appears as a whitish membrane when first discovered. The sac is thus more clearly exposed to view. The sac is held by dissecting forceps and opened by knife or scissors. (Fig. 3.) The sac is emptied of its contents. This step is often facilitated by the Trendelenburg position, complete anesthesia of the patient and a gauze sponge thrust into the sac and cautiously withdrawn. If any intra-abdominal organ (intestine, omentum, bladder) is found adherent to the interior of the hernial sac, it should be carefully freed and all bleeding checked.

If the sac is a thin and short one, not extending to the bottom of the scrotum, after it is opened, upon introducing the finger within it, the sac may readily be separated from the surrounding tissues of the cord and isolated. If the sac cannot be thus readily stripped from the surrounding parts, then after opening the sac, as shown in the drawing, it is divided transversely down to the cord and its vessels. The line of posterior division of the sac over the cord is indicated in Fig. 4. After dividing the peritoneum, the separation of the cord from the sac is very greatly facilitated by blunt sponge dissection. The proximal part of the sac is isolated (*a*) from the cord and (*b*) from the abdominal muscles (the internal oblique, conjoined tendon) in order to facilitate the placing of the peritoneal suture. It is important to make the isolation of the neck of the sac complete in its whole circumference so that the subsequent suture will be an effectively placed one.

The commonly used purse-string suture, even if applied with transfixion of the neck of the sac, may slip. This occurred to me some years ago. It unfortunately happened before the outer wound was closed, so that a secure suture was immediately placed. Since that time I have used the suture illustrated in Fig. 6. When the sac is very thin walled, a purse-string suture securely applied will serve every purpose. The distal portion of the sac [the scrotal part, if such exists (Fig. 5)] it is well to remove. If it is left *in situ*, no suture is taken in its mouth. The cavity of this sac is probably completely obliterated. If the distal portion of the sac is undisturbed, its interior should be thoroughly wiped with gauze to facilitate its obliteration by the process of repair. I have never seen a hydrocele or cyst follow this method of treating the undissected distal portion of a thin hernial sac.

Traction downward upon the proximal portion of the hernial sac and retraction of the tissues (internal oblique, cremaster, etc.) at the upper angle of the wound, together with traction downward upon the cord, facilitate suturing the peritoneum. (Fig. 6.) I have used the continuous loop or hemstitching suture taken with No. 1 chromic gut and a curved needle. (Fig. 6.)



FIG. 2. Oblique incision in line of fibers of the external oblique fascia. External oblique fascia freed from parts beneath. Note fibers above of internal oblique, conjoined tendon, below well-developed cremasteric fibers, bulging sac of hernia, cord showing at inner angle of wound.

The cord and distal portion of the sac, if left, are now lifted by blunt dissection from their bed, if it is decided to transplant the cord, and are together held aside. (Fig. 7.)

The next sutures are placed as indicated in Fig. 7. It is well to avoid including within the suture the ilio-inguinal and the genital branch of the genito-crural nerves below the lower border of the internal oblique. I always place one or two sutures external to the spot where the cord comes through the peritoneum (Fig. 7) and superficial to the suture of the neck of the sac. These two sutures

precludе the possibility of a recurrence of the hernia at this particular place. The remaining sutures are placed so as to lie beneath the uplifted cord. These interrupted sutures include the lower border of the internal oblique and conjoined tendon, the cremaster muscle and fascia and Poupart's ligament. (Fig. 7.) The sutures are tied securely without constricting too severely the muscular tissues. (Fig. 8.)

The cord is placed upon the tissues approximated by this series of sutures, and the external oblique fascia is closed over the cord by a continuous chromic catgut suture, taken as illustrated in the drawing (Fig. 9), with a loop or hemstitch. The fascia is thus not only approximated, but there is a definite overlapping or

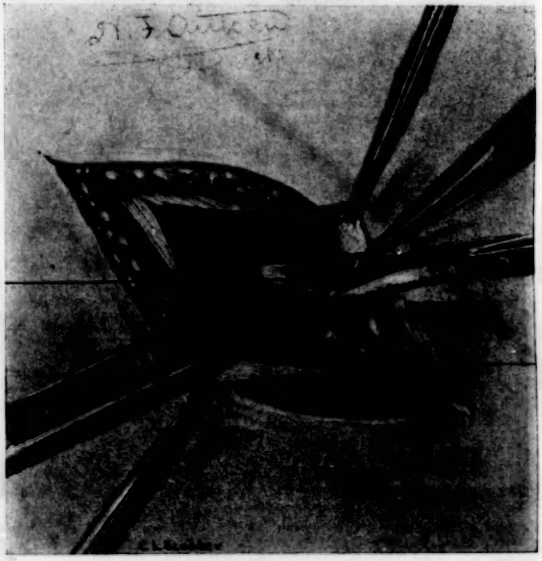


Fig. 3. The sac of the hernia has been isolated sufficiently and raised by forceps. Note scissors opening the sac, cord in lower angle of wound.

coaptation of the two layers of fascia as by the mattress suture. Mayo has called attention to the security of the mattress suture employed in the transversely overlapped fascia in umbilical hernia. Halstead has emphasized the firmness of a wound closed by the mattress suture in cases of inguinal hernia.

The superficial fascia is next approximated, and with it the subcutaneous fat tissue, by interrupted fine No. 0 catgut sutures. The skin is closed by silkworm gut, either cutaneously or subcutaneously placed. All blood and moisture are carefully wiped from the suture creases and skin. A dry sterile gauze dressing fastened with collodion is applied.

I think no especial dressing of a wound of the kind described above has any advantages over the simple dry sterile gauze. I have seen used, silver foil, ointments, pastes and powders. I think that the two factors, other things being equal, which assist or favor the healing of a hernial wound are absolute hemostasis and a minimum of operative trauma (by traction, etc.) to the skin edges and to the other tissues of the wound. Trauma to the skin may be avoided by an ample cutaneous incision.

So important is absolute hemostasis that I not only ligate every tiny bleeding point in the wound, but I apply a ham splint to the leg of the operated side, that the spica bandage applied to hold the dressing may exert a maximum of pressure upon the wound during the first twelve or twenty-four hours. The splint is then removed. There is no pressure exerted upon the region of the groin by a spica bandage if the patient is permitted to flex the knee of the bandaged side. A broad band of adhesive plaster is used by some operators to secure the dressing and maintain pressure.

In enumerating the facts which seem to me important in the operation for the cure of an inguinal hernia, I would include the following: An ample cutaneous incision; absolute hemostasis; an anatomical dissection of the parts concerned, so that every structure is clearly recognized; the complete isolation of the neck

or abdominal portion of the sac; the complete emptying of the sac of both adherent and non-adherent contents; the suture of the hernial sac at the level of the peritoneum of the anterior abdominal wall; the exact suture of the abdominal wall superficial to the peritoneum, including always one or two sutures placed over and above the sutured sac; the minimum of trauma to the cord.

In all ordinary cases of inguinal hernia, I have found this method of exposure and suture of the hernial sac and the method here described of repair of the abdominal wall satisfactory. I have seldom found it necessary to excise the veins of the cord. I have occasionally in children not transplanted the cord. I have utilized the fascia of the rectus abdominis a few times to reinforce the abdominal wall above the inner end of Poupart's ligament, as described by Halstead.

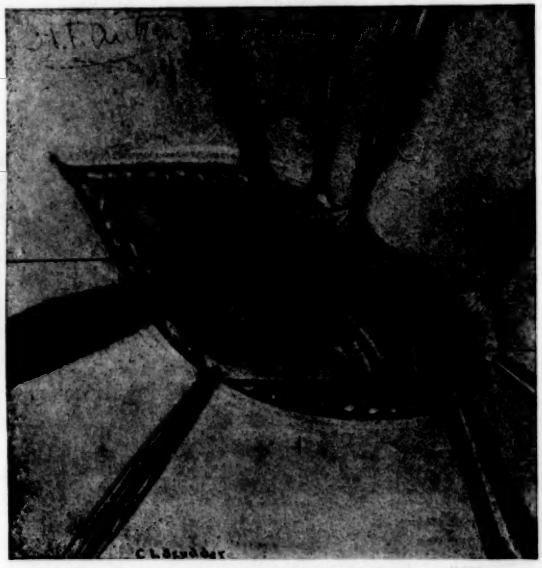


FIG. 4. The sac of the hernia has been opened. Note the interior of the sac leading towards peritoneal cavity above and to the scrotum below. Note the cord posteriorly to the sac and the dotted line across the sac indicating the line of section for further isolation of the peritoneum.

RESULTS FOLLOWING OPERATION FOR HERNIA.

I wish to report 244 operations done by me for herniæ of all kinds. There have been no deaths following operation in uncomplicated cases. The only deaths were in the strangulated group. There were 25 cases of strangulated hernia; 10 of these died; 3 were inguinal, 1 was ventral, 1 was femoral, and 5 of the 10 fatal cases were umbilical. These 10 deaths make a mortality of 40% in the strangulated group.

I have succeeded in obtaining the present condition of 158 of these cases. Of the 158 operations, 143 wounds are solid and without recurrence. That is, 90.6% of the cases operated upon in whom the returns were known were cured.

There were 165 cases of *inguinal* hernia; 53 cases did not report; 3 strangulated cases died; 10 of the 109 cases in which the end result is known recurred. That is, 90.9% of the inguinal group were known to be cured.

There were 27 cases of *ventral* hernia; 11 did not report; 1 of the cases recurred; 1 died of strangulation; 14 of the cases in whom the end result was known were all right. That is, 93⅓% of the cases reported were cured.

There were 13 *umbilical* cases. There was no report from 3 cases. Of the remainder, 5 died of strangulation; 5 had no recurrence.

There were 5 *epigastric* herniæ. All of these reported, and each case is well.

There were 2 *congenital* cases, each of which died. The ages of the deaths of these 2 congenital cases were four hours and twenty-four hours respectively.

It will thus be seen after a careful analysis of the returns from these cases of herniæ that there are comparatively few recurrences following the

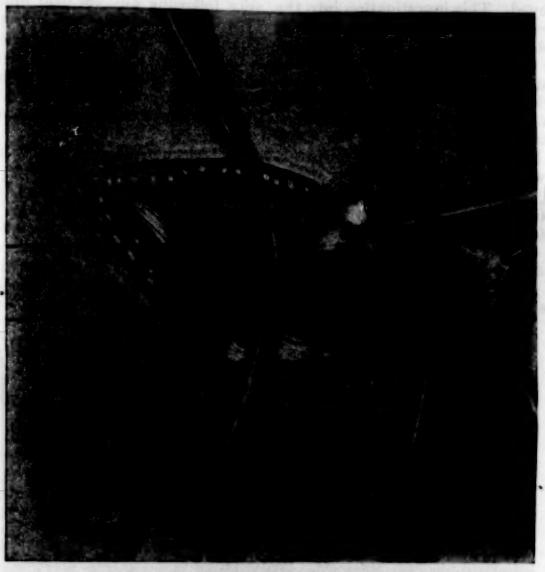


FIG. 5. The peritoneal portion of the hernial sac has been completely isolated; likewise the scrotal portion. Traction towards the symphysis pubis upon the peritoneal upper part of the sac facilitates proper placing of the sutures.

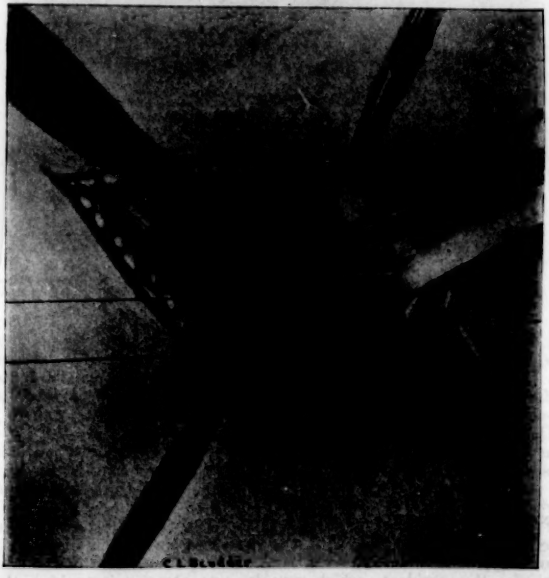


FIG. 6. The suture is being taken through and across the neck of the sac. Note retractor keeping internal ring region well in view. Note lifting of cord by gauze tape.

procedures employed. This investigation into the condition of these hernia cases was undertaken primarily to determine whether any material change might be necessary in the technic of the operation to secure better results. In analyzing the 10 cases in which recurrence is known to have occurred in the inguinal hernia group, conditions were present which precluded, perhaps, the possibility of cure. In certain (2) of these cases a chronic cough which had persisted for years contributed to the recurrence. One case was a strangulated case, and it is very likely that the operation was done with such haste on account of the condition of the patient that the technic was not as satisfactory as it might have been. In the other 7 cases there is no explanation apparent for the recurrence.



FIG. 7. Cord well raised, with all cord structures, from inguinal canal. Note suture placed beneath cord passing through conjoined tendon cremaster and Poupart's ligament. Note separation of inner part of divided fascia of external oblique.

I think it is fair to say that the operation described above as the Bassini operation for inguinal hernia is most satisfactory and that if carefully performed gives at least a cure in 90% of the cases and possibly in 95% (Coley) of the cases. There was no mortality attending these operations for hernia. Certain of the strangulated cases recovered. Ten strangulated cases died.

CERTAIN FACTS OF IMPORTANCE.

One should consider in connection with the question of mortality, and when advising an operation for hernia, the accidents which may arise following any surgical operative procedure. There is, of course, a risk from the anesthetic. There is a risk from possible pneumonia. There is a risk from possible embolism or from sepsis, but these risks must be taken and are to be disregarded under modern careful technic in the question of a lesion so important as a hernia.

There are a number of hernia operations described, but if each is carefully analyzed it will be found that all of the satisfactory procedures are based upon the same fundamental principles. Every operation for hernia presupposes the existence of a pouch of peritoneum into which the abdominal viscus protrudes. The presence of this peritoneal pouch is a constant invitation to the contained viscus, whether it be intestine or other organ, to protrude. Until this pouch is completely obliterated, the hernia cannot be cured. The Bassini operation as described above seeks to obliterate the hernial peritoneal pouch on a level with the anterior abdominal wall so as to efface all evidence of a pouch.

After the peritoneal pouch is eliminated, the further steps in the technic of any good hernial operation consist in a firm closure of the muscular and fascial abdominal wall. The method employed in the operations here reported was that described above.

The *spermatic cord* in the adult is best treated by transplanting it to beneath the layer of the



Fig. 8. Sutures above and below the cord tied excepting two.

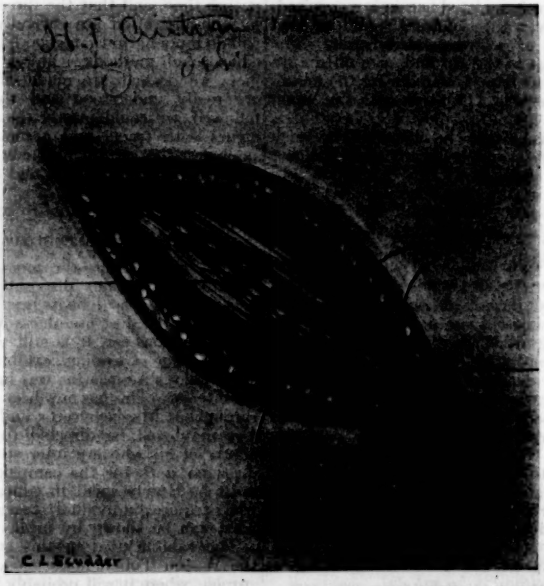


Fig. 9. Suture of the external oblique fascia above the cord.

external oblique. In children it does not seem necessary to transplant the spermatic cord. In certain cases in adults I have not transplanted the cord and the results have been satisfactory.

There are very few cases indeed in which a resection of the *spermatic veins* is a necessary step in the operation for hernia. I should state the necessity for operation in this way: If there exists in any case of hernia a good-sized varicocele, it would be wise to remove these veins not only for the cure of the varicocele, but to obtain greater security in the wound.

If there is present upon the side of the hernia an *undescended testicle*, I believe that, unless there is some contra-indication, the removal of the testicle with ligation of the cord upon a level with the parietal peritoneum is indicated.

I believe that there are few cases in which the general anesthesia secured by ether will not be satisfactory. Local cocaine and spinal anesthesia should be reserved for cases too ill to be etherized, and for the aged and those with a tendency to chronic bronchitis. In certain strangulated cases where the patient is very ill a local or spinal anesthesia may be indicated.

It seems to me that it is unwise to operate upon infants under three years of age for hernia, and in the very aged operation is often contra-indicated. These two extremes of life offer the chief exceptions to the operation for inguinal hernia. The operation for hernia is a safe operation.

It seems to me very important to emphasize the fact that an immediate operation should be done when a strangulated hernia is recognized. No taxis, not even the slightest, should be used in the presence of a strangulated hernia. The danger of damage to the gut and even of rupture of the gut and the danger of reducing the hernia *en bloc* is considerable. Delay in operating upon a strangulated hernia is unwise. Taxis of a strangulated hernia may be attended by such dire consequences that I believe it should almost never be employed.

EDUCATIONAL METHODS IN THE ANTI-TUBERCULOSIS CAMPAIGN.*

BY JOHN B. HAWES, 2D, M.D., BOSTON.

THE two most important factors in the campaign against tuberculosis are:

(1) The isolation of the advanced consumptive, thus preventing the spread of the disease, and

(2) The education of the public and of the medical profession in regard to the nature of the disease, thus bringing about its early detection and treatment. This at least is the attitude of Massachusetts toward the tuberculosis problem.

The new sanatoria recently opened at North Reading, Lakeville and Westfield are primarily for the segregation and isolation of the advanced consumptive.

The medical profession of the state, as represented by these Associated Committees, in conjunction with the Massachusetts Commission on Hospitals for Consumptives, the Health Inspectors of the State Board of Health and the numerous local anti-tuberculosis associations, are carrying on a campaign of education. The various methods employed, and the relative advantages and disadvantages of each, it is the purpose of this paper to discuss.

For many years we have been trying to educate the public in regard to tuberculosis. Ten or fifteen years ago, however, it was only the consumptive public whom we tried to educate, and that only in a desultory way. At that time, at any out-patient department, as, for example, at the out-patient department of the Massachusetts General Hospital, a consumptive coming for advice was told to take the examination for the Rutland State Sanatorium. If for any reason he was unable to do this, or if he was not accepted at this institution, he was handed a tract elaborately printed in whatever language he spoke, in which directions were given as to how he should live. "Take this tract," said the doctor, "put it on your bureau or wall at home, read it and learn it, and by following its directions you will get well." I am very doubtful if this method did much or any good. Indeed, I think it did harm in that it filled patients with a false sense of security in regard to themselves and the disease. Education to really educate must be more effective than this. One can easily prescribe an appropriate drug for a given ailment, but unless one sees that it is given in the proper doses, at the proper time, and that the directions in regard to its administration are carefully followed out, it will do more harm than good. It is the same with educational methods — unless we see that the facts we present are made effective, that they are really understood and that directions are followed, we could plaster the walls of our tenements with tracts and accomplish nothing. I shall describe certain methods which have been found effective for adults and for children.

I. EDUCATIONAL METHODS SUITABLE FOR ADULTS.

(*a*) THE TUBERCULOSIS EXHIBIT.

This was perhaps the most effective method of education at our disposal. In this state I believe that it has done its best work and that the time of its greatest usefulness is past. In certain localities, however, it is still very valuable.

The large traveling exhibit of the Boston Tuberculosis Association was invaluable in arousing interest. This has now been fairly well aroused throughout Massachusetts, and our present energies may well be directed toward guiding the efforts of all who are interested and anxious to do some work for the campaign. These efforts must be largely spent in educating the ignorant, who require individual teaching rather than what can be shown by means of large exhibits.

The exhibit used in this state, managed by the Boston Tuberculosis Association, is now in storage, where it will probably be kept for a year

* Read before The Massachusetts Medical Society, June 7, 1910.

or more, after which it will doubtless be sent on another tour. In the meantime I strongly urge the formation of small, compact exhibits, such as that which has been prepared for school purposes, to be described later. Such small exhibits can be made at little cost, require no attendant to travel with them, and will be of the greatest assistance as a means to illustrate talks on health and hygiene, as well as on tuberculosis, given in shops, factories or before labor unions, women's clubs or other small groups of people who can be talked to in an informal way. Such an exhibit, put up in a prominent place in a store or factory, would, I believe, do a great deal of good if the attention of the employees was called to it and a few demonstrations given as to what it meant.

The school exhibits, which I shall describe later in detail, are not designed to fill the need for such an exhibit mentioned above, but merely to serve as examples, which tuberculosis associations and school committees can obtain at a low price.

(*b*) PRESS ARTICLES.

At the offices of the State Tuberculosis Commission, 3 Joy Street, Boston, every two weeks a short article in regard to tuberculosis is sent out to about two hundred newspapers in Massachusetts. These articles are prepared either by the National Tuberculosis Association or by the Commission. They are given a wide circulation. Such a method as this has the advantage of reaching a very great number of people at a very slight cost. The exact amount of good which it does it is hard to estimate. By itself I do not believe that this method of education will accomplish much, but where any anti-tuberculosis campaign is active, and as a part of such a campaign,— by pointing out to every one what is being done, and how and where information may be obtained, etc., — I believe that press articles will do much good. Salem has carried on this method of education in a most effective way, combining articles of general educational value with those of general interest. Gardner is following suit with a series of articles on tuberculosis which appear in the local paper. In scattered agricultural communities, where it is very hard to get people together in large numbers for lectures, exhibits, etc., the public press should be used far more than it now is for educational purposes. In such districts as Barnstable, etc., the daily or weekly paper is read with the greatest of care, advertisements and all, and each item is discussed at length in the home. Short, breezy articles on health, hygiene, fresh air, etc., will receive careful attention and do a great deal of good. All such articles should be written in what is called "newspaper" or "journalistic" style; if not, either the editors will not publish them, or, if published, they will not be largely read.

(*c*) LECTURES, TALKS, ETC.

The amount of good to be accomplished by lectures, talks, etc., depends largely on the speaker's ability to size up his audience and to talk in a language suited to its needs. In Boston many young physicians are called upon to address various labor unions, groups of factory employees, etc., on the subject of tuberculosis. Many such talks, given by young hospital graduates, while they deeply impress the listeners with the learning of the doctor, convey very little information to them. It is hard in a lecture of this kind to put things in simple enough terms. Such talks should be absolutely informal and should be short — not over fifteen or twenty minutes. The speaker should impress a few facts upon his hearers and see that these facts are clearly understood, rather than attempt to give a general sketchy outline of the whole subject. He should drive home his facts by local allusions. If he is talking to the Cigar Makers' Union, the dangers of this occupation should be emphasized; if he is addressing a Bakers' Benevolent Society, the need of cleanliness, etc., should be dwelt upon.

Lectures to women's clubs offer great opportunity to arouse enthusiasm and awaken active interest. Such audiences are usually of a rather intelligent order, and in addressing them one need not "talk down" to any very great degree. The majority of women's clubs need waking up. A purely scientific paper will not do this. Women are at heart sentimentalists, and the recital of a few striking examples of harm done by neglect or ignorance of this disease will do more good than many facts. A description of active work carried on by other women's clubs will stir up local interest and help to get things done. If I am speaking in Lawrence, for instance, I am very apt to describe in glowing terms how the Quincy Women's Club raised the money to hold the tuberculosis exhibit, formed an anti-tuberculosis association and helped to establish a day camp. Most important of all, no speaker should conclude his address before a woman's club without mentioning one or two lines of practical work which such an organization could carry on and which he has found out beforehand are much needed. Lectures in churches and before tuberculosis associations should be of a similar nature. I believe no talk should be over thirty minutes in length. Lantern slides, given after the talk, with a brief description of each, pointing out what it teaches and how it applies, are of the greatest help. A sense of humor judiciously used will help to maintain interest in what at best is a most serious subject. At the end of many talks which I have given, the presiding officer usually states that the doctor will be glad to answer all questions, etc. An embarrassing period of silence almost always follows, unless some anxious parent arises to ask what should be done in the case of Nellie or Johnnie. I well remember one such instance, when a most charming old lady asked me whether or not I advised young ladies to use silk underwear. Unless certain people are prepared beforehand to ask intelligent questions it is usually far better to omit this so-called "discussion."

(*d*) CARDS, PLACARDS, ETC.

Prominent anti-spitting signs of course accomplish some good. I do not believe they accomplish very m ch, however, unless once in a while the board of health of the community in which these signs are posted enforces the law, causes a few arrests to be made and publishes articles in the local press explaining why this is wise, proper and necessary. Posters, circulars, etc., giving facts in regard to tuberculosis, without any local information, I do not believe accomplish much. Large posters, such as are used in New Bedford, telling people where and when they can be examined and secure treatment, are really valuable. Attractive calendars, with pictures of Rome, Venice, Syria or the home country of the people for whom they are intended, with information in regard to tuberculosis and the local dispensary, etc., will be hung up in every home and will be noticed. Such calendars as gotten out by the New York Charity Organization Society and the Boston Tuberculosis Association are not expensive, costing approximately $30.00 to $35.00 per 1,000. Elaborate pamphlets, such as that printed by the Illinois State Board of Health, which is perhaps the best of its type, and others as printed by our board of health and the tuberculosis association, etc., will do good only among the more intelligent classes, and will hardly reach those where the need of such information is most urgent. They are also more expensive.

At the Commission offices we have recently prepared a small folder of stiff pasteboard to be placed in the pay envelopes of employees in large factories and other concerns. Ten thousand of these were prepared for the General Electric Company of Lynn. Brockton, Pittsfield, Clinton, Salem, Fitchburg and other places have adopted this idea. In addition to certain information in regard to tuberculosis, the address of the local dispensary is given and the days and hours when patients can be examined and secure treatment are stated. Such cards cost $24.00 per 5,000; $43.00 per 10,000. Information in regard to these can be secured at the Commission office. In Fall River they have placed short notices in regard to tuberculosis inside the covers of the school books. This is a cheap and efficient method of calling the attention of the children to the subject.

(*e*) THE TRAINED NURSE AND SOCIAL WORKER.

As was stated in the beginning of this paper, it is the trained nurse or social worker who is to make these educational methods effective. Despite some pessimistic reports which reach us from Baltimore, where apparently they have come to the conclusion that the trained nurse cannot accomplish very much in the homes, I firmly believe, and I think we all believe, that it is the trained nurse or trained social worker, seeing patients in their homes and in the workshop, who is the great factor in any educational campaign. A splendid example of such an educational work is that now being carried on at the immense factory of the Dennison Manufacturing Company in South Framingham. During the past year this concern has employed a nurse who devotes all her time to seeing that the working and home conditions of the employees are satisfactory. She takes the sick to the doctor or to the hospital for treatment; those who are run down or in poor health she studies, helps and advises, and, most important of all, she goes into the homes and teaches these people how to live. The good that women can do in this way as nurses, or social workers, or trained volunteer visitors, is enormous. It is limited solely by their number or by the means to pay for their services.

II. EDUCATIONAL METHODS BEST SUITED TO CHILDREN.

(*a*) THE SCHOOL NURSE.

Here again the nurse is the important factor. Physicians can examine the children, legislatures can pass laws directing that there shall be instruction in tuberculosis, its prevention, etc., teachers can be provided with information on the subject, but unless there is a woman medically trained as regards the disease, socially trained to cope with social problems, and, most important of all, trained or endowed by nature with tact and good sense, little will be accomplished among the children. The importance of this cannot be overestimated. Every one agrees that it is hard or impossible to get adults, particularly among the lower classes, to change their set ideas and methods of living. It is by dealing with the children that we are really going to control tuberculosis, not in this generation, nor in the next, perhaps, but some time in the future. Pittsburg, under the leadership of Dr. Charles William White, is doing this educational work among children in a most effective way. After a great deal of difficulty, permission was secured from the Board of Education and from the boards of control of the different public schools to teach the children in regard to tuberculosis. A trained nurse and social worker was secured and well paid to devote her entire time to going around among the different schools and giving short talks. In taking up this work in any individual school a preliminary meeting was held with the superintendent, teachers and janitors, at which the nurse explained her plans. Next the nurse gave fifteen-minute talks to the children, taking them in small groups, going from classroom to classroom. After school hours the mothers were invited to attend a meeting at the school, where the same subject was gone over from a somewhat different point of view. Later on the children were given an examination or asked to write an essay on what they had learned. The school nurse co-operated with the school physicians and with the parents and children in their homes.

No system quite so elaborate as this has been carried out in this state. On a small scale, however, it has been done. In Canton, for instance,

there is a school nurse who not only gives talks to the children and to the teachers at the school, but follows the children into their homes, becomes well acquainted with the mothers and gives instruction in proper methods of living. The Boston school nurses are doing magnificent work. Without such a school nurse I do not believe that the teachers alone can do very much effective teaching in hygiene and allied subjects. According to Chapter 181 of the Acts of 1908, a law was passed that "in each of the subjects of physiology and hygiene special instruction as to tuberculosis and its prevention shall be taught as a regular branch of study, . . ." etc. In accordance with this act, and at the request of the State Board of Education, a committee of Boston physicians prepared a pamphlet on the subject of tuberculosis, a copy of which was placed in the hands of each teacher in the state. In comparatively few places was there a school nurse to give this instruction or to make this law effective, and, as a result, I do not believe that this law, beneficial and wise as it was, has as yet accomplished very much. The majority of teachers are already overworked and can hardly be expected, either on account of lack of time or lack of training, to give this instruction; it is the school nurse who can do this, and it is the appointing of such nurses which will prevent this law from becoming a dead letter, as in many instances it now is.

(*b*) School Tuberculosis Exhibits.

A bill has recently been passed by the legislature, introduced by our Associated Committees, giving an appropriation of $1,000 to prepare small "school tuberculosis exhibits." Such an exhibit will show graphically what tuberculosis is, what it does, how it is spread, how cured, and, most important of all, how prevented. This exhibit, now that the original plates, frames, etc., have been made, can be duplicated for $30.00 to $35.00. Upon request certain frames will be left vacant in order to insert pictures or charts of local interest. It is planned to place such an exhibit as this, as far as can be provided out of our small appropriation, in public schools in the state, and to have it go from classroom to classroom, perhaps remaining some months in one school. It is to be used as a means of illustrating talks given by school teachers, nurses or physicians on health, hygiene, tuberculosis, etc. Our appropriation can only provide us with a small number of such exhibits. It is hoped that school committees and local tuberculosis associations will take up this work and duplicate these exhibits throughout the state. Such an exhibit as this will do a great deal toward making instruction in regard to tuberculosis and its prevention effective.

(*c*) Outdoor Schools, Etc.

The value of the outdoor school or of the "outdoor room," one of which is being arranged for in each public school in Boston, as an educational factor is immense. Parents are bound to be deeply impressed by the rapid improvement in the condition of their children, and the lessons learned at such a school concerning fresh air, good food, cleanliness, etc., are sure to be discussed in the home.

In Cambridge, Salem and elsewhere school children have been given examinations and have written essays on health and hygiene in addition to their regular studies. Such examinations as these, if of a practical nature and supplemented by other means of education, are sure to do good. I recently looked over examination papers written by a child of eleven and a child of fourteen in a Salem school, and I can merely say if the average child knows as much about tuberculosis, or if the answers to the questions represent what the children really know, that in the next generation Salem will have consumption well under control.

III. Indirect Educational Factors.

Among such indirect educational factors may be mentioned the sanatorium and camp, and the tuberculosis class or dispensary. The sanatorium acts in two ways: First, as a striking example to those people in the immediate neighborhood in regard to outdoor life, and, next, by the influence and example of those patients discharged as arrested or cured. This latter factor, however, may work for evil as well as for good. Unless the discharged patient is placed in touch with the local tuberculosis association, dispensary or nurse, there is grave danger of a rapid relapse, which will place this example of the value of the sanatorium treatment in a most unfortunate light. There is no need of emphasizing the good done in an educational way by children or adults attending a properly conducted tuberculosis class or dispensary.

Last I wish to speak in regard to a very much-neglected educational factor — the influence of the physician himself upon his patients and upon his friends. In spite of the active work being done in Massachusetts, a state which stands foremost in this country in the anti-tuberculosis movement, there are far too many physicians who take no active part in this campaign. In many instances this is due to the burden imposed by an active practice; in many others, however, it is due to the belief that this work is already in the hands of a few physicians who can do it all and who do not need any help. In Boston, for example, it has been only with the greatest difficulty that young physicians have been secured who are willing to give talks to the various labor unions and other organizations which are constantly asking for speakers. Wherever the tuberculosis exhibit is held the work is usually done by one or two active men — the bulk of the profession sits back and waits to see if it is going to be a success before taking part. The fact that not even 50% of the patients being treated at the Rutland State Sanatorium, an institution which was primarily for incipient cases, are of the incipient class demonstrates only too clearly the need of education in the medical profession as to what constitutes an early

diagnosis. The truth of the statement that "successful treatment ends where physical signs begin" is far too little recognized. Physicians are waiting month after month for tubercle bacilli to appear in the sputum before they tell their patients that they have consumption. In many communities it seems as if the average private citizen were more familiar with the general subject of tuberculosis and its prevention than the medical profession; it is undoubtedly true that the active workers in many tuberculosis associations are not physicians, but lay men and women. The physician as an educational factor in this campaign in Massachusetts is not what he should be; we must realize that education is needed among ourselves as well as by the general public.

The final point which I should like to bring out is this: that whichever of these educational methods any community takes up, whether it be by giving a series of lectures, or pay envelope cards, or school tuberculosis exhibits, or what not, the work cannot be well done and cannot accomplish what it should unless it is backed up and made effective by the efforts of a tuberculosis nurse or social worker. This is the real key to successful education in this anti-tuberculosis campaign.

Discussion.

Dr. Eugene A. Darling: I have not much to add to what Dr. Hawes has already said. I think in Cambridge our experiences bear out to a very large extent what he has outlined. We have tried all the methods he has mentioned, and we find that his concluding remark is true, — that there is a very distinct difference between the kind of work which can be done by the true social worker and the nurse. The nurse gives her chief attention to the sick patient, dealing with her comfort. On the other hand, the social worker takes a much broader view of the case. A variety of problems are presented to her that she is competent to handle because of her experience. We find that the nurse, as a rule, is not able to handle the larger problems, and yet she can do the actual individual work even better than the social worker. In Cambridge the work goes on much better if the social worker does not have to think of the nursing, and, on the other hand, the nurse does her work better if she does not have to think of the social part of the work.

In Cambridge, whatever work has been accomplished by the society is very largely due to the fact that we have a very competent social worker who has given a great deal of her time to the work. Our association has worked in co-operation with the Visiting Nurses' Association.

The other point I wish to mention is the work in the public schools. Cambridge has made an effort to have the law of 1908 put into operation there. We felt the law was worth trying and a committee from the association held several conferences with the superintendent of schools and, as a result, the following method was adopted of putting the law into operation. It was found that it was better to have the teaching done by the teachers, and yet most of the teachers were unable to give any competent instruction upon this subject of tuberculosis, and, therefore, it was thought best to have several conferences between a physician and the teachers. It was thought that the same instruction would not be desirable for scholars in all the grades. The teachers were divided into three groups. The first group comprised the kindergarten and the primary schools, the second group the grammar schools, and the third group the high schools, and when it became my task to think up what to say to these three groups of teachers, I was very hard put. It was a task of great difficulty indeed, and I do not feel quite satisfied with the result of my effort, but at any rate we did carry out that plan. I advised the teachers of the kindergarten and primary schools to say very little about tuberculosis itself, but to lay great stress upon the hygiene, cleanliness, ventilation, exercise and general topics of that kind, keeping the subject of tuberculosis largely in the background, because the children of that age were not able to understand very much about tuberculosis. I advised the teachers of the grammar schools to give their chief attention to the general topics of hygiene, sanitation, and then to give some general instruction about tuberculosis, talking about the great extent of the disease and in a general way the measures which are employed to combat it. I advised the teachers of the high schools to speak upon the subject of personal hygiene to a greater extent and to apply such methods as were necessary to the subject of tuberculosis. I used the pamphlets established by the State Board of Education, and we used Dr. Clark's book, a very useful book for purposes like that.

I had a chance to test whether the scholars grasped the subject or not by the fact that a friend of mine had a boy in one of the lower grades. My friend said that her boy had come home shortly after one of these meetings full of the subject of tuberculosis. She questioned him a little, and I asked her what he said, and she repeated what was really a very good description of the subject that the boy had grasped. If the children get as good an idea as that, we think the work is well worth trying. We all know that what the teacher says carries the greatest weight. Teachers are ahead of parents. What they say goes, and the children will remember it. It remains to be seen whether the plan will be successful to repeat in future years.

One teacher said he was trying to do as little of this, and keep within the law, as possible. He said, "I do not believe in talking about these things to children because it is a disagreeable subject." I was a little hot in my reply to him. I said, "It is disagreeable because you make it so. It is not more so than a great many other things we have to approach if done in the right way. We must go about it in the right way." He admitted that perhaps that was so. He said he would try to do more in the future.

Dr. J. F. A. Adams, of Pittsfield: The Berkshire committee has spent its chief efforts in organizing local antituberculosis associations. We have one in Pittsfield, one in Great Barrington and one in Adams. They are all doing good work. Each has a visiting nurse. There is also a visiting nurse in Williamstown.

The school children are being instructed. A little girl who is a member of my daughter's Sunday-school class came to supper at my house last week just after the traveling exhibit of the Boston Association had been in Pittsfield. She began to talk about the exhibit which she had been to see, and I found she was very well informed about tuberculosis. I asked her where she had learned this. She said from one of her school books, which she would bring around and show me. She did so, and I found it a delightful little book called "Town and City," with twenty pages on tuberculosis and its prevention. She was in the sixth grade.

Education of adults is less satisfactory. I was told recently of a man who had been at Rutland for some months, and had been discharged with the disease not arrested. When somebody spoke to him about his

careless spitting, he remarked, "I know all about it, and I am going to spit where I've a mind to."

There is one thing which has not been spoken of very much, and I would like to say a word as to the education of the medical profession. There is not sufficient enthusiasm in the medical profession in this work against tuberculosis. A few of the doctors are very much interested, and others are not. I do not know exactly why. What is it? You can all form your own conclusions. It requires a great deal of care and attention, with little or no return, and a busy doctor finds it hard to investigate every case that comes to his office, and a great many cases of slight cough are called "bronchitis" and treated casually. The patient goes away and comes back perhaps in two or three weeks. It is not easy for the doctor to investigate carefully and thoroughly every slight case of cough. His waiting room is full of patients, and he has perhaps fifteen minutes for each. These patients ought to have half to three quarters of an hour. I cannot emphasize too much the importance of this extra care.

There is one way of getting at the doctors. I am one of the committee for preparing questions for the examinations of candidates for membership in The Massachusetts Medical Society, and two of the questions at the last examination were these:

"1. Diagnosis and treatment in a case of incipient pulmonary tuberculosis.

"2. Care necessary in the same stage (*a*) for the patient; (*b*) for the public."

It would be well if some similar question were always included.

Dr. Thomas F. Harrington, of Boston: In addition to the educational methods suggested by Dr. Hawes, the Boston School Department has inaugurated a plan of instruction which promises much.

The pupils in the normal school are given definite instruction relative to tuberculosis, its cause and prevention, and an outline of instruction has been presented to those pupils which has for its basis the presentation of the fundamentals underlying the whole anti-tuberculosis work.

One of the most effective means of impressing upon the teachers and pupils the importance of caring for health has been the establishment of "Health Day." On this day all the grades present programs dealing with tuberculosis and other diseases. The children present essays on the importance of fresh air, cleanliness, exercise and rest, food and drink, etc. The exercises in the schools on this day are arranged so that in each grade lessons are given "why" the windows are opened, exercise taken, positions in standing and in sitting corrected, etc.

In December, 1909, over 90,000 children were examined by the school nurses, teachers and medical inspectors, and over 5,000 were judged by the medical inspectors to be anemic, glandular, undersized or choreic. Special open-air rooms have been provided for this class of children, and opportunity is given for procuring, at a cost not exceeding two cents, a suitable lunch each day.

The School Committee has placed scales and measuring rods in each district, and the school nurses have been instructed to keep weekly records of the weight of each child. These children are not tuberculous children, but rather the predisposed.

For the purely tuberculous children, a special school has been maintained at Franklin Park. Since the opening of the school in 1908, 196 children, ranging in ages from five to sixteen years, have been admitted. Forty-three of these children have been returned to their regular grades cured, and many have been promoted into higher grades while attending this open-air school. Each "cured case" is followed up by the school nurse, and each is examined in the Burroughs Place clinic once a month.

In addition to these special classes, the School Committee has changed its rules and regulations so that each schoolroom, dressing-room and corridor is flushed twice during each session with air from outside the building. All the windows are thrown widely open. A fixed standard temperature of 67° F. has been established for the schoolrooms.

The investigation in Boston would seem to indicate that demonstrable tuberculosis is comparatively rare among school children. From 3 to 5%, however, of all school children can be classified as pre-tubercular. The open-air rooms established by the School Committee are for this latter class, many of which would gravitate into the tuberculous class unless saved. It seems far wiser in presenting preventive measures to teachers and pupils to avoid, as far as possible, emphasizing any particular disease, such as tuberculosis, and to make the lessons general so as to apply to general health.

Dr. W. W. Marvel, of Fall River: I would say that we in Fall River have used practically all the methods outlined in Dr. Hawes' paper. We have had exhibits and given lectures. The large exhibit was valuable in bringing the crusade before the whole people, and now we do more detail work with small groups. Our experiences with lectures have been rather disappointing, as we have found difficulty in getting audiences. We reached a number of people by addressing the various trades unions, and, to reach the largest number of the poor, we arranged several popular illustrated lectures, the audiences ranging from four to four hundred on Tuberculosis Sunday.

However, our most effective work has been with the traveling school exhibit. We realized that the subject should be presented in an interesting, instructive and simple way, so we covered practically the whole scheme of general hygiene in as nice and cheerful a manner as possible. The hearty co-operation of the superintendent of schools, Mr. Durfee, was secured, and he saw to it that the exhibit was placed in every school building. The corridors were used, and the exhibit remained a week in each place. The way the teachers took up the proposition to help their teaching of hygiene was surprising. There were assemblies of scholars addressed by physicians and prominent citizens, and special instruction by the teachers themselves. The children returned and told what they had learned, and in the higher grades essays and papers were prepared. I have brought along a few samples of this work and you will agree with me that the results certainly justify the work. What a child has taken the trouble to look up and write about is very apt to remain with him throughout life. This is from a child in the fifth grade:

"A careful person will never spit carelessly. Spitting causes consumption. A careful boy will never sneeze at the table; when he feels it coming on he should have his handkerchief ready. No one should exchange chewing gum, because he not only gets the gum, but he gets some of the saliva, too, and he also gets the germs, if there are any. He should never take a bite of anybody else's apples or other food."

Here are some more:

"Last week we had the tuberculosis exhibit at our school and it was very interesting. I think we should learn many lessons from it. From the charts I learned 'how to make your home, your school and your city the cleanest, most healthful and best in the United States.'

"We have a fresh-air room in my school, and I am in that room. In other rooms I have been sickly and had headaches, and made a large number of absent marks.

"But this year it is quite a change, the fresh air is

fine. I have not been absent this year for myself. Our teacher, Miss Leat, knows what is good for us. She has made a healthy girl out of me.

" 'The only consumptive to be afraid of is the careless consumptive. He coughs and spits anywhere and everywhere.'

" 'Take the doctor's advice and 'Don't sleep where there is no *Fresh Air*. Don't work where there is no *Fresh Air*. Sunlight and *Fresh Air* kill the germs.'

" It is dangerous to drink out of public fountains; if you ever want a drink, carry your own drinking cup or drinking glass with you. If you see any rubbish around your home, school or anywhere, do not wait for somebody else to pick it up; do it yourself. 'Never spit on the floors in the home, workshop, store or mill; the dust from dried sputum spreads disease.'

" I think it was very nice for the Fall River Tuberculosis Society to send around to the schools the tuberculosis exhibit. I learned a great many things from it that I never knew before. I hope others have learned something, too."

Those are all from the fifth grade. They are all learning the same thing. Other children have brought out their artistic instinct and cut pictures from papers and post cards. Here is a picture of a young baby [holding up a paper] who is going to combat the disease with dumb bells. Here is one from Grade Four [holding up paper]. This child is probably seven or eight years of age.

One pupil says:

" Mr. McCreery is telling all the rooms in our school about consumption. Every room from No. 1 to No. 18 is going into the hall to see the exhibit. It was sent by the Anti-Tuberculosis Society. This society is doing everything it can to prevent consumption. We learned about this society when we came into school last September. One day Miss Flanagan told us a story about a pretty little girl with golden hair who died of consumption. At Christmas time, when we brought money for our party, every boy and girl in the room gave a cent to help the consumptives. Now we are going to help this society and help ourselves. We must try to prevent the spread of consumption. First we are going to be clean all the time. Take a bath every night, wash and brush our teeth, and brush our hair. Then we are going to keep our yards clean, and sleep with our windows open. We will try to keep the flies off food, and never bite from anything, candy or apple, that belongs to another."

Here is another one, probably the child of a doctor:

" If you have consumption, do not pay any attention to the advertisements in the paper, but go to a doctor and you will be cured. Do not go too late. Go just as soon as you are not feeling well. If you cannot be cured at home, you can go to the tuberculosis home. Out there there are tents a few feet from the ground so that the person who is in bed will not find it too damp for him. Sleep from eight to ten hours. When you get up, do not be afraid to go out in the open air, because that will cure you, and then rest. Eat proper food; no pie or cake. Drink all the milk you desire to, and a piece of beef steak is good nourishing food."

Now another school has presented this [holding up a number of letters] in book form, and the children went at this scientifically. Those children have written directly from what they saw at the exhibit, but these other children, seven, eight and nine years of age, have gone down to the library and this is the result. They were investigators. They have drawn pictures of the tubercle bacillus. Our exhibit is almost absurd because it is so simple. I have brought along a few photographs of our exhibit. It did not cost over fifty dollars. It has a box that holds the slides and a strong standard and some steel rods on which are hung these placards.

DR. WALTER G. PHIPPEN, of Salem: We have used all of the various educational methods that have been described by Dr. Hawes with varying results. Of course the exhibit was the first one we used, and it served its purpose well. The press we have used very largely, and, in one way not spoken of here, a method used by the board of health, the so-called Health Question Box. Each edition of the paper had a column devoted to questions about tuberculosis or about health in general, and in the next edition of the paper these questions were answered by the physician. I think that helped considerably.

We have not used lectures very much because the greater part of our population we want to reach are Poles, Armenians and French Canadians who do not understand English.

I wish to reiterate what has already been said, that a trained social worker and a trained nurse are very essential. We have only recently been able to have both. We have now a trained hospital nurse. A great deal of attention is being given to keeping in touch with the children in families where tuberculosis has been known to have been previously, and in seeing that they are properly educated. We have a conference with the local board of health which has brought about very good results already, and we are trying to bring about many more.

There is one branch of educational methods which has not been spoken of this morning, and that is educating the people not to have an excessive fear of tuberculosis patients. That fact has recently been brought to my attention because a landlord has requested a tuberculosis patient whom we have had under our control for three years to move because the other tenants in the house have complained. I think there is a field for a great deal of work. It seems that a large number of patients who do not have tuberculosis definitely, but would be classed as susceptible, and whom the physician thinks needs to take regular treatment, the open-air, fresh-air treatment, do not like to do it. They say, " I have not tuberculosis. If I sleep at night in a tent, people will say I have tuberculosis." It is the fear of such a patient as that that we want to combat.

DR. L. M. PALMER, of South Framingham: The only help that I think I can bring to this discussion is to speak of the work that we are doing in Framingham. I think that the plan we have in our town, a town of some thirteen or fourteen thousand, will illustrate what can be done. We have one organization with a big name to it which includes a District Nurses' Association and a department for antituberculosis work. We have three departments of that society with a board of seven directors for each department, making twenty-one in all, and those twenty-one meet monthly and compare notes, and in this way the work of one department overlaps another and so we keep in touch with all. One person does practically the work of the three departments. She takes the place of a social worker and a nurse, which has been objected to here by one of the speakers as one and the same thing. She makes a daily visit to these cases of tuberculosis in the acute form, or has the nurse under her care do it, or in case the patient is not sick enough to see so often, at longer intervals. She also provides for daily care for the sick through the district nurse, a plan that works very well indeed.

Reference was made to the Dennison factory. I want to add my commendation of that work. It is a work that is bound to increase. The amount of good that one social worker who is also a nurse can do to a great manufacturing plant like that is excellent, especially if she is tactful. The operators like her and go to her for things

that they would not go to any one else for. She does a great deal of good. I think the growth of the industrial nurse is going to be very rapid in the next few years.

I want to emphasize what has also been spoken of before this morning, — the fear of the people of the tuberculosis cases. I think there is a danger about overeducating the public along this line. We make them afraid. I think this is a point that we must look out for. However, this is not, to my mind, the greatest trouble. My greatest trouble is to convince them that they have got tuberculosis. Up to the present time I do not know what to do with cases that say they have not got it, will not be looked after, will not give up the positions which they are holding. In the case of a table girl, have we the authority to subject this class of people to treatment, and can we put the law to them and restrain them? I am uncertain about it. I shall be glad of instructions.

Dr. A. T. Cabot: I will say in answer to Dr. Palmer's question that the State Board of Health has authority if they have a desire to exercise it.

Dr. Palmer: How will they do it?

Dr. A. T. Cabot: By the laws that they have.

Dr. E. St. J. Johnson, of New Bedford: Having listened with much interest to the various speakers, I would say, for my own part in the discussion, that the work accomplished by our own state and its various cities would count a great deal more, and be much less expensive, if certain problems entirely beyond local control could be thoroughly understood and taken up by the federal government. These problems and the education against tuberculosis naturally vary, as Dr. Hawes has said, in different places, and I mention those which are more prominent in a city like New Bedford, which, as most of you know, is largely made up of cotton mills run by foreign labor. In New Bedford a number of people are making a determined fight against this disease, which was exceedingly prevalent among the poorer classes when this crusade began in the state. This crusade has been and is at present being waged by the following organizations: First, the anti-tuberculosis society. Second, a local sanitarium, the Rockdale Hospital, which is soon to be moved to more commodious quarters. It takes all cases which cannot be treated at home. Third, the so-called chest clinic. This organization keeps track of ambulatory cases and improved cases returned to work. Fourth, the district nurses' staff, which reports any cases and brings cases to the clinic. There are eleven registered cases so far as we can trace them. By this means education is being placed, and we are striving to seek the best available methods of cure. Good results have been obtained, but we intend to have better ones in the future. The state is helping us a great deal, and methods of increasing such results may perhaps be considered under the following headings: First, instruction of immigrants before they start out. They should be made familiar with the conditions here, and what they must do to favor the conditions of health when they come into the country. The federal government has looked after Cubans in Cuba and Filipinos in the Philippines. Why cannot its representatives tell these people the truth about conditions here. Second, the registration of cases by doctors is very important. There should be a fine placed upon those who fail to report investigated cases. A fine for a non-registration of a case of tuberculosis is an important question. These cases cost the state, unless seen early, perhaps four dollars a week for life. Is this economy? Third, the local board of health. I hope some day the membership of this body may be made by state appointment and that it will have at least one well-educated, independent physician among its members. Fourth, extravagance. In our city all classes are given over to a most reckless, senseless and spendthrift use of money on things which are not essential to the best methods of health. Fifth, social service work in connection with our clinics, paid if possible, composed of enthusiastic workers, medical and social, to follow up the cases and to see that they are examined, and to constantly repeat doctrines of common-sense living, with assistance where necessary from the churches and charities to carry this out. Each patient should have at least one volunteer worker especially interested in his or her case, who holds the patient to the required standards by constantly repeating the principles of hygiene day after day, week after week, and year after year. I must say the available people in our city are painfully few, and that such work is handicapped by personal rivalry, politics, individual misunderstanding and race prejudices so common to human nature in all ages.

We have not made use in New Bedford of the maps, the school-nurses, the outdoor schools or the small exhibits. I hope we shall later. We are going to try.

Dr. E. O. Otis, of Boston: It seems evident from all that has been said here, and from the present stage of the tuberculosis campaign, that from this time on the educational propaganda must be largely carried on through the schools. In this state especially does this seem to be true, for we in the Boston Tuberculosis Association have found that there is no longer a demand for the traveling tuberculosis exhibition, and it has been retired. Coming as a delegate from the Boston Tuberculosis Association, I wish to refer to an interesting and unexpectedly disappointing experiment the Association has been making the past year, namely, that of a night camp. In an open space of thirty-five acres in the suburbs of the city, at Mattapan, a very comfortable night camp was erected with twelve bedrooms or separate sleeping apartments, open in front, somewhat after the plan of the "lean-to." This camp was within a five-cent fare from the city, and was intended for cured and arrested cases who had returned to their work in the city. Breakfast and dinner or an evening meal were furnished besides lodging, and for this a charge of $6.00 per week was made. We of the Association, as well as Dr. Hills, the superintendent of Rutland, thought there would be no difficulty in filling our twelve rooms with returned Rutland cases or other arrested cases who desired to continue the hygienic and open-air treatment which had been so effective in the cure. To our disappointment, however, we never have been able to fill our rooms, although we have advertised the camp extensively, particularly with all Boston patients discharged from Rutland. Whether they have grown tired of institution life or any suggestion of it, or for some other reason, the fact remains that up to the present time the experiment has been rather disappointing.

Something has been said here regarding the obligation laid upon the physician in the tuberculosis warfare and education of the public, and it has been intimated that he has not always fulfilled this obligation. Of course it goes without saying that it is incumbent upon the physician to do everything in his power towards the prevention of this great plague. I must confess, however, that I have much sympathy for the hard-worked and poorly paid general practitioner. It seems to me that either one of two things will have to take place in the future. Either have a free tuberculosis dispensary for the examination of suspected cases, whether able to pay or not, maintained by the state, municipality or town, and pay the attending physician a reasonable recompense; or else confine the attendance at such a dispensary strictly to those unable to pay for services, referring those able to pay something to the physician at his office. Tuberculosis work both in prevention and education is for the benefit of the whole community, and

the community should bear their share of the expense and not put an undue proportion of such work and expense upon the poor physician, who, as a rule, I believe is always ready to contribute his fair share of service for the public good. Even in tuberculosis dispensaries for the poor alone I believe the physician should receive some recompense — as is the case in the out-patient department of the Boston Consumptives' Hospital.

DR. J. J. MINOT, of Boston: I think the important thing in the future is the education of the child and the use of the nurse and the social worker, and I think that these schools are a great service in educating the public and in educating the children. I think that there are more tuberculous children in Boston than is generally thought. There has been no trouble in curing the ones at Franklin Park. If anybody wants to see the school, it is open all day from eight in the morning until four-thirty in the afternoon except Sundays, and visitors are welcome.

DR. HAWES: I have nothing further to say except that the summing up of the whole thing is the handling of the children in the future, and getting more and more nurses and social workers, and that when we get requests for information as to how best to spend a certain amount of money that has been given to the society, the question of paying a nurse and paying her well to handle the problem in conjunction with the physician should be carefully considered.

THE PERSONAL RELATION OF THE PHYSICIAN TO HIS PATIENTS.*

BY OLIVER H. HOWE, M.D., COHASSET, MASS.

IN these days of marvelous achievement in medicine and surgery, we can scarcely keep pace with the march of new knowledge. With myriads of new synthetic compounds, with the introduction of serotherapy, with the new applications of electricity and the daring advances of surgery, our heads are well-nigh bewildered with the great mass of new medical nomenclature. Attractive and valuable as are all these subjects, it is not to them that I would draw your attention to-day, but rather to another feature of our daily work, less novel, but perhaps more vital — the personal relation of the physician to the patient.

A venerable physician told me, many years ago, that the healing art consisted of medicine and the doctor. If we recollect some of our own illnesses, we shall realize the force of this remark. The tumbler of medicine had its place, and the spoonful was religiously taken, but we best remember the kindly presence of the doctor, the thoughtful inquiries, the reassuring manner and the cheering words, all coming like a gospel from the great realm of sunshine and vigor. Before he came, the atmosphere of our room had been as Hamlet described, "All sicklied o'er with the pale cast of thought." His presence had changed all this, for he had left with us a conviction of God's sound, sane world and that we belonged to it and would soon be resuming our part in it. He had left us something of himself, for he personated these sound, strong elements. We felt that we were leaning upon him, and that he was a power. We treasured his words and eagerly awaited his coming, for it was the one interesting event of the day. Later, as we were propped up on pillows, and caught sight of his gray ulster as he approached the house, our symptoms immediately abated.

The personal relation is more important with the physician than with any other individual in the community. He brings the child into the world and perchance breathes the breath of life into it from his own lungs. He watches its tender years through the perilous events of infant feeding and the alarming diseases of childhood, and is urgently sent for in case of accident. The knife in his steady hand is trusted by all, and his counsel is asked for the manner of education and kind of employment for the young man. In turn he is present at his wedding and later attends to the needs of his growing family. In many cases he knows the whole life of the individual; watching him day by day through a lingering illness and easing his pillow in his last moments. Often he consoles the bereaved family more successfully than the clergyman. Perchance in time he may attend five or six generations of the same family. Such is the life we know, and exacting and laborious as it is, I doubt if any of us would exchange it for any other. Other workers are paid in coin of gold and silver. We receive, in addition, the tribute we most prize, in the coin of friendship and of respect and in the consciousness of doing good. Beyond this, it is in the province of most men of business to urge their wares or their services upon those who do not desire them; to sell to the reluctant customer; to obtain a hearing where such is not desired. The physician is relieved of these insinuating and distasteful methods. He goes only where his presence is welcome, and many times the front door is flung wide open to receive him, with the salutation, "O Doctor, I am so glad you have come!" These facts, and others which we well know, make it plain that our profession is unique in its opportunities, its privileges and its rewards.

The increasing concentration of population in cities and the strong tendency to specialism threaten to leave the general practitioner in the minority. No member of the profession, however, can reap so great a reward in personal satisfaction as the general practitioner. His bonds of friendship and sympathy are strongly developed and the family doctor has a vital and intimate part in the life of the community.

It should be our aim to fulfill the responsibilities of our work and the expectations of our patients as well as in us lies, and I propose to spend a few moments in discussing what seem to me to be the essential elements of the matter and how we may further increase our usefulness to our patients through the personal relation. In so doing, I find that I have drawn my material largely from a study of my own deficiencies and I therefore disclaim any intention to dictate to any one else, and I state that any

* President's Address, Norfolk South District Medical Society, May 5, 1910.

duties I may suggest, I am ready to take to myself in equal degree.

The most obvious need of our professional life, as it seems to me, is that we more thoroughly individualize our patients. Classification, as we see it in hospitals and in medical literature, tends to merge the individual in the mass. We speak of so many cases of pneumonia, and then detail our pet treatment, which has been so successful in them all. The patients, however, are not alike. They do not look alike or react alike, either to the disease or to our remedies. We need, to a greater degree, to think out each person's environment and resources; to weigh each person's antecedents and powers of resistance, and then treat him according to his individual needs and practical resources. The failure to individualize has been intensified by the changed meaning of the word "case." To my mind, a case is properly a record of a sickness, filed for reference or tabulation. To speak of making a visit to-day, I think we can more properly say that we have visited a sick person or a patient. To call him a case seems to me a barbarism and a term which may prevent us from considering him in his true relation. I know the dictionary sanctions the current misuse of the word, but believe the restricted use I have suggested is truer to our best intent. Specialism is responsible for much of the failure to individualize. The specialist sees the patient usually in his office, and has little or no opportunity to know his surroundings or his real life. We general practitioners know whom we treat, and the family tendencies and traditions as well. Let us profit by our knowledge and adapt our treatment like a well-fitting tailor-made garment, cut to his measurement.

To say that the doctor should treat his patients with kindness seems like a truism, and yet the conditions of our professional life show that the problem is by no means a simple one. The patient is suffering from bodily ills, and the mind partakes of the disorder. Let us suppose that we have before us a hard-headed man of business, keen and quick in judgment, accustomed to deal promptly with new conditions of his business, and inclined to be optimistic in general. Let him lie in bed a few days and suffer more or less pain and he becomes a different creature. He has been accustomed in his business to have matters respond promptly to his touch, like the levers of his automobile, and now to deal with an attack of rheumatism or pleurisy, either of which requires time, is a new experience for him. Two or three hours of wakefulness at night become peopled with phantoms of the most terrible nature. His nerves become screwed up to a frightful tension, and all his surroundings are distorted by a mischievous mirage. He loses his patience, his judgment and his ordinary good cheer. To deal firmly, kindly and helpfully with such a patient is no ordinary task. Too direct and matter-of-fact a course will only increase his concentration on his symptoms and will lead him to remark that the doctor has no sympathy. Too sympathetic a manner will make a baby of him. He must, of course, be made to feel that the doctor takes a personal interest in his condition and that he is exerting himself to the utmost for his welfare. With this must be mingled much of the helpfulness of the doctor's personality. Some diversion must be added, some amusing story to break the spell of his over-wrought nerves. The doctor must bring something from the outside world, and must show by his manner a firm confidence in his recovery. To carry out this personal influence successfully, the doctor must imagine himself in the situation of the patient and get to see things as much as possible from his point of view. In this way he will be prepared to meet the misgivings and weaknesses of the patient in advance of their manifestation, and being in the lead is always a good thing in the practice of medicine. We thus see that the kindness of the physician is a mixture of ready observation, fore-thought, sympathy, firmness and wholesome personality with tact. He who can best mingle these ingredients will have the strongest and best personal influence with his patients.

The proper treatment of the sick has diversity enough, but the personal influence we exert varies immensely. With some we agree and sympathize. With others we puncture the bubbles of their imaginary ills and dispute their pet forebodings. Some we scold in a playful manner, and with others we laugh and tell a story. A keen sense of the humor of life is a valuable asset for the physician. It must be used judiciously, however, and with circumspection. It is generally wiser not to descend quite to the point of boon-companionship with our patients, for if we do we may later find that we have suffered a lapse in our authority.

All of us have days when something apparently goes wrong with the planetary system. We have been delayed in an aggravating manner; some patient has proved refractory, or our plans for a leisure evening have miscarried. We ought to be particularly careful not to allow any of these matters to disturb our outward serenity, for the doctor who carries pessimism or indifference or his own troubles into the sick room, is poisoning the atmosphere of that apartment with malignant vapors, which the afflicted one must breathe for many hours.

We often find at the close of a busy day that the drain upon our sympathies and the effort of adapting ourselves to all sorts of people have well nigh exhausted our good nature, and we have only the dregs of our personality to offer our families at home. This condition, if it become in any sense a habit, is most deplorable, and we must not allow it. What could be worse than to give all our good qualities to strangers and treat those we love best with unkindness!

Probably nothing contributes more to frank and open relations between doctor and patient than the belief that the physician will keep inviolate all statements made to him. The doctor who will retail any of the weaknesses and peculiarities of other patients may be thought very entertaining and amusing, but his listeners will not, in turn, confide to him their secrets. Again, in re-

lation to patients under treatment, they are to pay the doctor for the care and thought devoted to diagnosis of their ailments and, therefore, have a property right to the same. The patients may, if they so desire, impart the information to others. They are the proper ones to impart it — not the doctor. It may be said that the doctor need retain only suspicious and unpleasant information. This is a fallacy, for should he follow this rule, his occasional silence would bear a ready interpretation. No clearer statement of a physician's duty in this regard can be found than that contained in the celebrated oath of Hippocrates, as follows: "Whatever in connection with my professional practice, or not in connection with it, I see or hear in the life of men which ought not to be spoken of abroad, I will not divulge, as reckoning that all such ought to be kept secret. With purity and holiness will I pass my life and practise my art." Hippocrates lived four hundred years before Christ, but who can voice a purer or more elevated sentiment to-day?

That the personal relation of the physician falls short of what it should be is evidenced by the substitutes which the public adopt from time to time. Instead of considering each and every one of these as a willful, deliberate and wicked wandering of human nature from the truth, we should try to learn the underlying reason if there is one.

I judge that before the introduction of homeopathy, there was a dogmatic and uncompromising insistence on large and nauseous doses and that some of the profession may have taken a savage delight in inflicting them upon suffering humanity. Much as we disapprove of the principles of homeopathy, we find it, in one sense, a revolt against the domineering spirit — a very bad spirit for a beneficent profession to manifest. With our present pharmaceutical resources, the potent alkaloids and other new additions and improvements, we can meet the tastes and wishes of our patients in such a manner as we would like if we were the sick ones.

The patent medicine evil also may have a lesson for us. It may be that many of us have dealt and prescribed our medicines in too mechanical and matter-of-fact a way, without the comforting explanation to the patient which will link it to his symptoms and serve to fasten his faith upon it. It is, therefore, possible that the patient resorts to the patent medicine because he finds the literature abundant and optimistic and because his doctor fails to give him the information which his curiosity demands.

So with the present cult of osteopathy, I believe it exists because of a genuine disregard by many of the profession of the valuable aids of massage, passive exercises and gymnastics, and perhaps of well-chosen external applications in disease. The patient cured by the osteopath is apt to exclaim, "Why, my family physician treated me for weeks and weeks and never gave me any external treatment!" I believe some of us (myself included) are deplorably ignorant about many kinds of treatment which are perfectly legitimate for us to use, and beneficial to the patient. Let the profession as a whole become skilled in the use of massage, exercises, vibration, electricity and the like, using them personally and after discriminating diagnosis, and I believe osteopathy will disappear.

The Emmanuel Movement and Christian Science attempt to furnish in an abnormal sort of way a sustaining sympathy and encouragement which the profession ought to provide. I believe they flourish because of the declining power of the personal qualities of the physician. The profession has in some ways become indifferent, unsympathetic and perhaps commercial, as regarded by the patient, whose spirit languishes and yearns for some special influence which the doctor does not supply.

Now these various heresies — patent medicines, osteopathy, the Emmanuel Movement and Christian Science — are all absurd because they omit the intelligent, skillful, warm-hearted and sympathetic personality of the physician. Our feelings are perhaps impelled to make a crusade against each of them, putting in such vigorous arguments as to completely demolish them once for all. I do not believe such a method would succeed and, in my opinion, a far better way is to prove to the world by the daily work of the profession that we are providing the best and most helpful assistance to the sick. Such proof, however, implies an uplift in the medical profession — a further awakening to our responsibilities and to the personal power which we possess. It is not enough that our diagnosis be faultlessly correct, our treatment well chosen and firmly carried out, all these may be perfect and yet not impress the patient. There must be the essential link of personal influence, which must carry to the heart of the patient, conviction that he is under sympathetic and effective treatment. This is a sheet-anchor which he will not cast off.

Curiously, doctors are most praised for little kindnesses which lie outside the ordinary range of their professional duty. Such are the unexpected friendly inquiry, the personal letter, the little delicacy secured for the invalid's table — the thousand and one little acts that imply thoughtfulness and continued interest. Dr. Charles C. Tower, of South Weymouth, whose memory is revered by all who know him, went twice a day for several years, to lift a helpless old man from bed to chair and back again, because the doctor could lift him a little more gently than any one else. Such acts as this, performed out of kindness and often without compensation, endear the physician to the community in a manner experienced by no one else. This tendency in public feeling is not always in line with our preferences, for we often think they ought to more definitely admire our skill and the prompt action by which we turned the tide of illness. But no; the public cannot appreciate diagnosis or erudition. They have their own ways of looking at things, and it is really the overflowing of the cup that attracts attention. If we would succeed as we ought, we must pay due regard to the patient's standpoint and look at things ourselves from his point of view.

Perhaps this is the key to the whole matter. We must see both sides and must never cast away with scorn the true feelings of any patient, however humble. It is a mutual relation and, like all mutual relations, it is one of delicacy. The physician is in duty bound to treat it delicately and with thoughtful regard, being more solicitous to cultivate the fine flower of friendship than to secure distinction or income.

Many times we are disappointed and fail of praise or credit when we think we most deserve it. Be this as it may, let us never lose our confidence in human nature, and let us never become pessimistic, even when we turn the barren pages of our ledgers. A patient can injure the doctor by nonpayment of his bill, or otherwise, but let it never be said that any patient or collection of patients can transform the doctor into a pessimist. I am not one of those who habitually bewail the trials and injustices heaped upon us. They are hard to bear, at times, I admit, but, personally, I have received credit in countless instances where I felt I had not deserved it. Setting these accounts over against each other. I have always felt, in my own case, that they balanced fully as well as I deserved, and I believe the doctor should be always and everywhere an optimist.

The broad knowledge of the whole community possessed by the physician fits him in a marked degree for various local public services, such as those relating to health, charity and education, by which he can help and safeguard the public. Into such work he should bring the same spirit of service that animates his profession.

The more we consider it, the more we wonder at the extent and importance of the personal relation of the physician. It is indeed the most important personal relation in the world, outside the family. To enter into the life and feelings of all classes in the community, we need broad foundations of character and broad sympathy with very varied interests. To adequately fulfill our duty, we need a broadening and enlargement of the whole nature. Thus and thus only can we lead the public back to right ways of thinking and redeem the medical profession from any weaknesses or misconceptions which now exist.

THE NECESSITY OF THE GENERAL PRACTICE OF MEDICINE AS A PRELIMINARY TRAINING FOR THOSE ENGAGED IN SPECIAL WORK.

BY CAROLUS M. COBB, M.D., BOSTON.

The belief that the practice of general medicine was necessary as a preliminary to special work was formerly held not only by the general practitioners, but by the specialists themselves. The higher emoluments which are supposed to come to those who do special work has attracted a constantly increasing number of young men without experience in general medicine, until at the present time an overwhelming majority of specialists have had no experience in the actual practice of medicine. Furthermore, many of them have received their degrees from schools in which the requirements for graduation are barely sufficient for the graduate to pass the State Board of Registration. These degrees are obtained for the express purpose of enabling the graduate to enter special work after a brief course in a special hospital. The special hospitals lend their aid to this condition for the very evident reason that the recent graduate has the necessary time to serve as interne, clinical clerk, assistant and through all of the slow process which finally leads to a full surgeonship. The tendency of all this is to widen the breach between special work and general medicine, with a loss to both, but with by far the heavier loss to specialism. We see, very largely, what we are taught to see, and the specialist has a tendency to forget that the small area of the body upon which he spends his time is but a part of a complex physiological whole which is influenced by general conditions.

The shorter the time one has practiced medicine, the more easily one sees nothing but what is in his special field. If specialism is to continue to be a useful part of medicine, it is high time that the general practitioner demands that the specialist is well-trained and that he has also practiced general medicine. It is not to be expected that every good doctor will make a good specialist, but it should be remembered that a good specialist cannot be made out of anything but a good doctor. If specialism is to hold the respect of the profession, a change must be made in this direction because the daily occurrence of cases like the following can have but one result.

Case I. Mrs. I., aged thirty, consulted me for epiphora and gave the following history. She had first noticed it about three years before and had gone to a special hospital for treatment. The surgeon evidently did not find much the matter, as the treatment recommended was simply the wearing of weak convex lenses for near work. She next consulted a specialist of some note, who informed her that the tear ducts were closed and proceded to probe them; as she did not obtain relief from this treatment, she then consulted a noted specialist, who in turn fitted her with glasses, + 2, for near work. The epiphora continued, and in about a year she consulted him again. He again prescribed glasses for near work, + 2.50 this time. She then came to me, and I could not find anything wrong with the eyes, and she repeatedly asserted that she had not received any relief from the various lenses which had been prescribed. I asked if she had any stomach trouble, and she said she had, but she did not look badly nourished and from her description of her trouble I gained the impression that she was extremely nervous. I then asked her if there was anything troubling her, and her eyes filled with tears and she replied that she was unhappily situated. Here was the explanation of her epiphora. I told her it would do her no good to go from one to another and have her glasses changed, as

glasses would not prevent her from weeping over what she considered an unhappy situation.

CASE II. Mrs. —, aged forty-five, living in the northern part of the state, consulted me about her throat and gave the following history. She had suffered for some years with attacks of pharyngitis and had consulted a specialist, who advised the removal of the tonsils, to which she consented, and after the operation she went to Connecticut for several months and while there she was free from sore throat. She returned in the fall and soon suffered again from her old malady. She again consulted the specialist, who informed her that there were still islands of tonsillar tissue scattered over the back of the pharynx and advised her to take ether again and have them all removed. She demurred at this and later consulted me. When I saw her she still had the islands of tonsillar tissue, but the throat also had the appearance which would lead one to think the patient might have idiosyncrasies in regard to food. With this idea in mind I questioned her in regard to what particular article of diet poisoned her, and she told me fruit, and particularly apples. The explanation of her freedom from trouble while in Connecticut was that she abstained from fruit, but when she came home again she told me her mother had a large quantity of apples and grapes, of which she ate freely and the trouble with her throat was soon as bad as ever. I could only tell her that if she ate fruit she would have pharyngitis whether she had the throat operated upon or not. The specialist whom she consulted is an able man, but he was trying to remove by operation a constitutional condition, which not only cannot be done, but it reflects upon specialism to attempt it.

CASE III. Miss V., aged thirty-six, consulted me about obstructed nasal respiration from which she suffered and for which she had had her nose burned, sawed and cut by specialists all the way from Denver to Boston. She was thin, nervous and suffered from constipation. There was no nasal obstruction, but she was suffering from intestinal absorption and the nasal cilia were matted together by a glue-like secretion which is often present in the nose under these conditions. A prescription for the relief of the constipation and careful directions in regard to diet led to a marked improvement. She feels that a large part of the surgical work which has been done on her nose has been unnecessary, and I am inclined to agree with her. I do not know of any class of operations which give so much relief as do necessary operations upon the nose and throat, but when a patient is subjected to one nasal operation after another, and by different men, to cure a condition which is the result of intestinal absorption, one can hardly be blamed for wishing that the specialists had a little less special training and knew a little more general medicine.

Paget long ago made the remark that "no disease can be properly understood unless it be considered in its whole pathology," and the same condition exists to-day. Diseased conditions have not changed, and manual dexterity and facility in fitting glasses should not entitle one to the name of specialist. The only motive one should have for practicing medicine is that he is able to relieve suffering humanity, and a specialist should be doubly trained else he will fall far short of what the public has a right to expect.

Clinical Department.

TIBIALE EXTERNUM AND FRACTURE OF SESAMOID. REPORT OF CASES.

BY CHARLES F. PAINTER, M.D., BOSTON.

(From the Orthopedic Clinic of the Carney Hospital.)

CASE I. Mr. X. entered the Carney Hospital in May, 1910, complaining of pain in the inner border of the right foot, especially when walking. He states that about three months before this time he was running upstairs rapidly, two or three steps at a time, when he felt a sudden, acute pain in this part of the foot and he was obliged to stop running immediately. Presently the foot commenced to swell somewhat in this region and became very tender to touch in a small area about the size of a fifty-cent piece over the mid-portion of the inner border of the scaphoid. He kept off it as much as he could and applied a bandage around the foot in this situation. This helped, but pain continued to some extent, and whenever he made any considerable effort in walking the discomfort at once became aggravated, the swelling more pronounced and he was obliged to yield to it. He had never experienced anything like it before; there was no ecchymosis about the foot at that time. During the two or three weeks preceding his coming to the hospital there has been no improvement in the condition.

On physical examination, the right foot was slightly swollen over the region of the scaphoid and internal cuneiform, and over this swollen area there was acute tenderness upon pressure. There was no redness or increase in the surface temperature. The motions of the foot at the ankle and the mediotarsal joint were to all intents and purposes normal. He walked with a slight limp.

Protection of the foot by plaster strapping did not quiet the trouble down. An x-ray revealed a shadow that appeared very much as though a portion of the scaphoid had been pulled off. On examination at this time there seemed to be abnormal motion in the region where the tenderness was located and where the chipped-off piece seemed to show in the skiagram.

An operation was advised, and was performed ten days after he was first seen (May, 1910). On cutting down over the side of the scaphoid and exposing the insertion of the tendon of the posterior tibial it was found that there was a loose piece of bone about the size of a Lima bean, which seemed to have a false joint between it and the body of the scaphoid. The separation between the two bones was clean cut and not as though there had been a fracture. The loose fragment was so completely enclosed in the end of the posterior tibial tendon that it had to be carefully dissected out from this attachment. The expansions of this tendon to the lateral aspects of the scaphoid and internal cuneiform were not disturbed. A strong silk ligature was quilted through the distal end of the tendon of the posterior tibial and forced through a hole drilled in the scaphoid.

This was done to insure a firmer connection between the scaphoid and the tendon of the muscle.

The foot was then put up in plaster of Paris in an inverted position, after the wound had been closed, and a dry dressing applied.

In looking up the anomalies of the bones of the tarsus, I found that Dr. Thomas Dwight has described an anomalous bone in this situation which has been called the tibiale externum. This is figured in his book on the "Variations of the Bones of the Hands and Feet," Plates XXV and XXVIII, Figs. 61 and 62. I quote from his description (pp. 18–19):

"The tibiale externum is commonly known as the sesamoid in the tendon of the tibialis posticus, but it is a true part of the skeleton, being found in many mammals and being cartilaginous in the second month of the embryo. I have seen it as a separate cartilage at birth. Fig. 62 shows it in a child of two years. In about 10% this is a separate bone, generally closely connected with the tuberosity of the scaphoid by fibro-cartilage or fibrous tissue. It may play on it with a true joint, but more often the articular cartilage, even when present, shows signs of degeneration, and the two apposed surfaces tend to interlock. It is more or less involved in the tendon of the posterior tibial. It sometimes is quite free, having no close connection with the scaphoid, but, as Pfitzner has shown, it is never inclosed in the tendon. Its relation to the tuberosity of the scaphoid is uncertain, whether it persists as a distinct element or is consolidated with the latter. It may be placed directly internal to the tuberosity, but more often it is somewhat behind it, and sometimes so much so that it seems to form a link between the tuberosity of the scaphoid and the front of the sustentaculum, beneath and internal to the head of the astragalus. When fused it may stand straight out as a projection from the scaphoid, or it may bend backwards as a well-defined hook, or it may be so completely fused that its presence is inferred only by the size of the prominence. If it pleases any one to say that it is simply a very large tuberosity, there is no way of convincing him, nor does it practically matter. Pfitzner has once seen it subdivided, and in two or three other cases an imperfect division was indicated by furrows. The tendency of an independent tibiale externum is to be symmetrical. Thus Pfitzner found it 26 times on both sides and only 17 times on one side. He found it nearly twice as often in women as in men. As to size, the largest seen by Pfitzner had a chief diameter of 19 mm. He found but five under 5 mm., showing that very minute forms are rare. It is evident that this may be mistaken for a fracture."

In this case there was no evidence of a similar condition on the other side, and the relation of the bony fragment to the expansion of the tendon was a most intimate one, thus differing from the condition as Dwight has described it.

The result, from a surgical point of view, has been quite satisfactory, even at this short time since the operation.

A knowledge of the occurrence of this anomaly may be of service in helping to arrive at a proper diagnosis, for the symptoms may be so acute as to suggest even an inflammatory process in the tarsus. Prolonged fixation is not likely to permanently relieve a person from the occurrence of these symptoms when once the bone has been started from its moorings, and surgical interference seems to offer the best hope of relief.

Another seemingly anomalous condition in the foot has been called to my attention recently, or if not anomalous, still sufficiently unusual to merit a brief description.

Case II. Professor Dwight calls attention in his book (p. 22), to which reference has above been made, to subdivision of the internal sesamoid of the great toe. The case here reported was diagnosed, after the x-ray examination, as being a fracture of both the internal and external sesamoids of the right great toe. In the light of what Professor Dwight and Stieda, quoted by Dwight, have said, it may perfectly well be that the condition presented by my patient was not a true fracture, but an anomaly to which attention had never been called until the occurrence of the injury referred to below.

In August, 1909, Mr. D., a man sixty-six years of age, was summering on the Maine coast, and when going over the rocks one day to reach his boat he felt a sudden sharp pain beneath the ball of the right great toe. This pain was at that time very severe and had continued to be so whenever he stepped on that part of the foot, though there was no pain when weight was not being borne. He consulted me about six weeks after the accident, at which time there was no physical evidence of anything wrong with the foot except his lameness and tenderness upon pressure beneath the ball of the great toe. An x-ray showed a separation of both external and internal sesamoids into two portions, the division being a transverse one. There was no sign of callus formation. Both fragments were of approximately the same size.

Protection of the foot from pressure, at first in a plaster cast and then by a felt and leather support, fashioned to keep the ball of the great toe from resting upon the floor, eventually afforded relief from the discomfort of weight bearing and walking. The x-ray shows the condition very well. There is no fracture or division of the same bones on the other foot.

I quote from Professor Dwight's book (p. 22): "Subdivision of the internal sesamoid of the great toe is not so very uncommon, the division being by a cross line into a larger proximal and a smaller distal part. I have seen this several times both in the bones and in x-rays, and have seen once the external divided in the same manner with the suspicion of a longitudinal division of the larger piece. Stieda[1] found two sesamoid bones on the plantar aspect of the interphalangeal joint of the great toe, and at the same time a subdivided sesamoid at the metacarpophalangeal joint. The man had suffered from a previous injury to the ball of the foot. He saw twice a tibial sesamoid of the fourth toe in the x-ray."

[1] Beiträge zur klinische Chirurgie, 1904.

Though this condition does not apparently occur very often, recognition of its existence might be of importance, especially in prognosis. Sometimes bursal inflammations occur in this region and should be differentiated from this anomaly.

TWO CASES OF TRANSVERSE SUBPERIOSTEAL FRACTURE OF THE LOWER END OF THE RADIUS IN CHILDREN.

BY WM. PEARCE COUES, M.D., BOSTON.

THE importance of the recognition of these obscure fractures in children is receiving increased attention. From clinical examination, without radiographs, the diagnosis of these cases would have been impossible.

CASE I. M. P., a girl of nine years, was seen at the Surgical Clinic, Boston Dispensary, April 11, 1910. The history was as follows:

About ten days ago the child fell down hurting the left wrist. Some disability and pain followed, but it was not marked. Examination showed very slight swelling of the wrist. There was no ecchymosis. Flexion and extension of the fingers was perfect. The landmarks of the wrist were in normal relation. There was slight pain on pressure on the lower end of the radius; no crepitus or abnormal mobility was found.

The radiographs showed well the lifting of the periosteum in the lateral view and the slight bulging on either side of the radius in the antero-posterior view.

The crack running transversely across the radius about 1½ inches above the styloid was clearly discernible.

CASE II. T. S., eleven years of age, was seen at the Surgical Clinic, Boston Dispensary, May 16, 1910. The history was as follows:

Three days ago the child hurt her left arm in falling. Examination showed considerable tenderness over the lower third of the radius. There was slight swelling of the wrist; rotation of the forearm was painful. Flexion and extension of the fingers was perfect. There was no ecchymosis; no crepitus or abnormal mobility was present.

The radiographs showed well in the anterior-posterior view the same bulging on either side of the radius as in Case I. In the lateral view the irregularity to the ulnar side of the radius was plainly seen. The distance of the fracture from the end of the styloid process of the radius was almost exactly one inch. The transverse crack extending across the radius to the bulging periosteum on either side was slightly more marked than in Case I.

Treatment by fixation with posterior splint alone gave perfect results in both cases.

Medical Progress.

REPORT OF PROGRESS IN OTOLOGY.

BY HARRIS PEYTON MOSHER, M.D., BOSTON.

IN reviewing the otological literature of the last twelve months, the reader finds that labyrinthine diseases and surgery occupy the greatest space. The same is true of the literature of the previous year. Operative surgery, however, does not occupy the minds of all the writers. It is pleasant to notice that a few men have gone back to the basal physiological problems connected with otology; that is, that tremendously difficult subject of the physiology of hearing has been bravely attacked again by Shambaugh, and Walker has had the courage to make use of the ductus indolymphaticus in expounding a new theory of tinnitus and vertigo. An interesting and important article by A. A. Gray was published in the *Laryngoscope* on "An Investigation on the Anatomical Structure and Relationships of the Labyrinth in the Reptile, the Bird and the Mammal."[1] Besides this stimulating work, articles which show progress have appeared in connection with the x-ray examination of the mastoid for pre-operative determination of the cellular consistency of the mastoid process and the position of the lateral sinus. Beck has published an elaborate article on mastoid surgery. This is very complete and extremely useful to the operator on account of the numerous and illustrative drawings.

The use of cocaine for producing anesthesia for middle-ear operating, and for even such extensive work as mastoid operation itself, has been advocated in at least two articles. The presence of Neuman in this country, Neuman being the man who received a prize for his work in connection with cocaine anesthesia about the ear, also has stimulated interest in this subject. Neuman's classes in the various cities of the United States have stimulated interest in labyrinthine diagnosis and surgery. The use of vaccine therapy in connection with diseases of the middle ear is not new in the last twelve months. Considerable work had been done along this line in the last few years, but the general consensus of opinion seems to be that the vaccines were of but limited use. A paper, however, was read by Dr. E. W. Nagle, by invitation, of the American Rhinological, Otological and Laryngological Association, in Washington, which brought the subject up again and presented it in a new and more favorable light. This observer, working in connection with Dr. F. C. Cobb, of Boston, had extremely favorable results in curing chronic middle-ear suppuration by the use of otogenous vaccines. It became apparent in the brisk discussion which followed the reading of this paper that the writer's good results to date, differing as they do from the results of previous observers, were due to improved technic in preparing the vaccines. At this same meeting in Washington there was a symposium on the deaf child. This symposium was especially complete and brought this important subject up to date in all its bearings. The greater part of the symposium was given over to papers by professional educators of the partially and completely deaf child. The complicated subject of training the deaf child and the best methods of bringing this about were clearly set forth. Otologists furnished a certain amount of material in the symposium. This, though im-

[1] Laryngoscope, vol. xix, p. 161, March, 1909.

portant, was along the old and more familiar lines. The printed symposium furnishes a very valuable mass of material to which the otologist and general physician can refer for guidance in these difficult cases.

Turning from these more or less theoretical subjects, and coming to one of the very last articles published, the reviewer finds one which deals with a very practical and old subject, namely, the Eustachian tube. In the July number of the *Laryngoscope*, Yankauer, of New York, has an exhaustive article styled the "Isthmus of the Eustachian Tube." In this he goes over old ground and then strikes off in directions which are rather new. The article is clearly and modestly written. The conclusions given by the writer are drawn after a sufficient length of time so that they are not only convincing, but most stimulating.

In noting the progress of otology for the last year, it is necessary to record revised editions of certain standard textbooks. The English translation of Politzer's "Atlas" has appeared in the seventh edition. The textbook of Dench has appeared in the fourth edition. Both books are brought up to date by revising the chapters on labyrinthine diseases and surgery. In addition to these two large and notable books, a very short but valuable textbook has been issued by Yearsley. A small handbook by Lake is to be reckoned among the books of the last twelve months. The important clinical work done by Lake on the labyrinth appears in this clearly summarized.

At the Eighth International Congress at Budapest a committee appointed to consider the subject of hearing tests reported a universal formula for recording tests of hearing. This uniform formula supplies a need felt for many years. The formula can be found in the July *Laryngoscope* for 1910. The abbreviations of each test are the initial letters of the corresponding Latin name. This makes a test so recorded of international use. The pitch, however, is always given according to the German musical method. English-speaking aurists, therefore, who care to be scientifically accurate, and who, therefore, adopt this formula, will have to change their testing forks somewhat, or, what would be better still, to adopt the standard German forks. From the American standpoint it will surely be considered a noteworthy happening, if not exactly a sign of progress, that it was decided at Budapest to hold the next International Congress of Otology in Boston. This meeting will come in 1912. Dr. Clarence J. Blake, of Boston, is the president. Boston, and perhaps some of the other American cities, thus having had due notice of the coming meeting, will take advantage of the next two years to brush up, if need be, and to get in trim for the distinguished visitors who are to attend this meeting.

In reviewing the literature of otology for the last twelve months, the reader finds that labyrinthine and cerebral surgery occupy a large place. The results of the investigations of Baranay are being applied in the clinic, and articles explaining and simplifying his observations are numerous. American otologists are under obligations to Goldstein, Kerrison and Chamberlain for work in this line. Goldstein has translated the latest articles of Baranay, and Kerrison and Chamberlain have expounded and simplified the work of Baranay, Alexander and Neuman. The reviewer has used the American articles freely and wishes to express his obligations and his thanks to the three men mentioned above.

Otogenic Meningitis.

Dr. Mygind[2] says that his experience does not support the supposition that otogenic meningitis is the result of pus retention in the middle ear, but rather that the nature of the suppuration and the anatomic relations of the petrous portion of the temporal bone and the mastoid process play the most important part in the pathogenesis. The impression is, however, that the middle-ear suppuration now and then spreads explosively to all parts of the cranial cavity simultaneously, causing two or more intracranial complications. There is but one trustworthy objective sign, in his opinion, of this form of meningitis, namely, turbidity of the cerebrospinal fluid, caused by overproduction of round cells. He lays stress on this because otitis media can cause the subjective signs of meningitis, and also the objective signs, like neck rigidity and Kernig's sign, without producing diffuse purulent leptomeningitis. On the other hand, a few cases are reported in the literature of abscess of the brain and sigmoid sinus phlebitis, with turbidity of the cerebrospinal fluid, without the autopsy showing evidence of actual meningitis. These he is inclined to think are cases in which the patient has been cured of the disease before death from another cause.

Typical otogenic cerebral abscess differs from otitic meningitis in having a distinct prodromal stage, slower development of symptoms, more frequent focal symptoms and produces slow cerebration and slow pulse. All subjective and objective signs, however, may mislead excepting turbidity of cerebrospinal fluid. Clear cerebrospinal fluid does not absolutely exclude meningitis, as it always takes some time for the fluid to become opalescent. Beside lumbar puncture, there are two other diagnostic methods of value, namely, examination of the hearing and of the static part of the labyrinth by injection of cold water. If the labyrinth is destroyed, no nystagmus is produced, and this points to meningitis caused by destruction of the labyrinth. His experience of the operative treatment is limited to eighteen cases, in all of which the diagnosis was confirmed by lumbar puncture. Three patients recovered entirely, which he thinks is an encouraging result, though he admits the element of chance as having possibly a hand in the success of these cases.

[2] H. Mygind: Jour. Am. Med. Asso., Sept. 11, 1909.

STUDIES CONCERNING THE SURGICAL TREATMENT OF OTITIC MENINGITIS.

Alexander[3] states that meningitis studied in the dead house is hopeless and has led to but little if any advance in the knowledge of the disease. Studied clinically, however, he thinks the subject is not wholly unfavorable. In his paper, which is for the most part a clinical one, he discusses the usual forms of meningitis, that is, serous, purulent and tubercular meningitis. The first two kinds may be circumscribed or general. In connection with serous meningitis there is usually a superficial inflammation of the brain substance. Among the forms of circumscribed meningitis dwelt upon by the writer is circumscribed meningo-encephalitis occurring in connection with diseases of the labyrinth and thrombosis of the lateral sinus.

The writer makes the following classification of meningitis as it occurs in connection with diseases of the ear:

(1) Meningitis with uncomplicated, acute, purulent, middle-ear inflammation.

(2) Meningitis with uncomplicated, chronic, purulent, middle-ear inflammation.

(3) Meningitis with otitic cerebral abscess.

(4) Meningitis with otitic thrombophlebitis and extradural abscess.

(5) Meningitis with labyrinthine suppuration.

In each of these groups three different types of meningitis are found:

(1) Such types as retain an anatomically visible connection with the region of the ear.

(2) Such types as do not show any connection with the ear.

(3) Such types as are due to tubercular forms of meningitis.

SEROUS MENINGITIS.

From the observations made by Alexander on serous meningitis, the following are selected: Serous meningitis as a preliminary stage of diffuse purulent meningitis is more frequent than is supposed. In such cases, if lumbar puncture is made early enough, the cerebrospinal fluid is clear and it is evacuated under pressure. On standing twenty-four hours a fine coagulum appears. Later in the course of the disease the fluid becomes infected and cloudy. Serous meningitis is usually accompanied by a superficial encephalitis. This consists of an inflammatory swelling of the surface of the brain and is indicated at the operation by the immediate protrusion of the brain substance into the incision made through the dura.

Serous meningitis not rarely occurs as a preliminary stage of tuberculous meningitis. It may precede the tubercular form some weeks or months. With serous meningitis, as a preliminary stage of tuberculous meningitis, the pressure of the cerebrospinal fluid is unchanged, whereas it is always increased in ordinary serous meningitis. In these cases it would be necessary in making lumbar puncture to measure the pressure under which the cerebrospinal fluid is evacuated. This is best done by one of the usual manometers, for instance, Sahli's. The pressure in a meningitis serosa occurring as a preliminary stage of tuberculous meningitis will be found to be normal or not essentially increased.

[3] G. Alexander, M.D., Vienna: Arch. für Ohrenheilkunde, vol. lxxv, p. 222, and vol. lxxvi, p. 1, 1908. Trans. by Geo. E. Davis, M.D.: Ann. Otol., Rhinol. and Laryngol., vol. xviii, No. 3, September, 1909.

(To be continued.)

Reports of Societies.

AMERICAN PSYCHO-PATHOLOGICAL ASSOCIATION.

FIRST ANNUAL MEETING, WASHINGTON, D. C., MAY 2, 1910.

SEX SYMBOLISM IN DREAMS.

DR. JAMES J. PUTNAM, of Boston, described, with examples, the remarkable symbolism of the dreams into which sexual emotions enter. As in all dreams, so here, the imagery employed serves at once to reveal and to conceal the emotions that are at work, whether these are related directly to sexual acts or only indirectly. It is a remarkable fact that, although the dream, in general, reflects thoughts and feelings that must be more or less continuously present, even during waking hours, much of the imagery seems foreign to our waking thoughts. The explanation of this is found in the facts that point to the occurrence of unconscious thinking. That is, neither the dream-emotions nor the dream-thoughts are really foreign to our waking thoughts, but they are studiously repressed and suppressed. By a study of these dreams, a great deal of light is thrown on the secondary sexual emotions and their relation to ideas of death, violence, pain, fertility, prenatal life, etc. Many of these ideas belong, in their most striking form, to the mysterious and remarkable period of childhood; and this period is reilluminated by our dreams.

It was decided to have the other papers read and have all discussed together.

THE ACTION OF SUGGESTION ON PSYCHOTHERAPY.

DR. ERNEST JONES, of Toronto, said that the term "suggestion" covers two processes, "verbal suggestion" and "affective suggestion," of which the latter is the more primary and is necessary for the action of the former. Affective suggestion is a *rapport* that depends upon the transference of certain positive affective processes in the unconscious region of the subject's mind. These are always components or derivatives of the psychosexual group of activities. The occurrence is a normal one, but takes place in an excessive degree in the psychoneuroses on account of the presence here of desire that finds no adequate outlet. It is one form of the more general mechanism of "displacement" by means of which an affect is transposed from an original, unpleasant and "repressed" idea to another less inacceptable one. Suggestion plays the chief part in all methods of treatment of the psychoneuroses, except the psycho-analytic one. It acts by releasing the "repressed" desires that are finding expression in the form of symptoms, and allowing them to become attributed to the idea of the physician's person. Psychologically, this means the replacement of one symptom by another, namely, psychosexual dependence on the physician. This is often of temporary, and sometimes of permanent, benefit, but in severe cases the replacement is both inconvenient and detrimental. In psycho-

analysis, the "repressed" desires are permanently released by being made conscious and, hence, can be directed by "sublimation" to more useful, non-sexual social aims.

THE ANXIETY NEUROSES.

Dr. A. A. Brill, of New York City, then read a paper on this subject, in which he said that this symptom-complex was first described by Professor Freud, who separated it from neurasthenia. The causative factors of the disease are somato-sexual injuries. The cardinal symptoms are attacks of anxiety, anxious expectations, irritability and phobias. Besides the pure anxiety neurosis, there is a mixed type, namely, anxiety hysteria. In this, the psychic mechanisms are the same as in hysteria, but instead of the characteristic conversion of the psychic into the physical, there is anxiety. The anxiety is, so to say, the only symptom into which the psychic excitement is converted. To illustrate this type of neurosis, Dr. Brill cited a very interesting case. It was that of a woman, thirty-eight years old, who suffered with periodic depression resembling manic-depressive insanity. By the analysis of a dream, the whole mechanism was discovered, and the patient cured. This case showed the importance of entering into the sexual life and the analysis of dreams.

THE MECHANISM OF DREAMS.

Dr. Morton Prince, of Boston, presented a paper based upon the analysis of a considerable number of dreams in a subject who was particularly favorable for observation. The dreams were observed in unusual detail in hypnosis. In the same way, the associative memories connected with each detail of the dream were obtained, the memories of several hypnotic states, as well as of the normal state, being used. The conclusions arrived at supported the theory of Freud up to a certain point, viz., that there are two dream processes, that of the dream consciousness, which Freud terms the "manifest" dream, and an unconscious process, which is one seen in the dream or motivating process. The latter Freud terms the "latent" dream. The conscious dream symbolized the unconscious dream-process. The motive of the dream could in every instance be traced to strongly organized systems of ideas, which were deeply rooted in the mind of the subject. The material of the dream that the unconscious motive made use of in the construction of the conscious dream could always be found in the recent thoughts of the subject, particularly those passing through the mind just before dropping into sleep. The conscious dream, being a patchwork of this material, was not a literal reproduction of the motivating thoughts, but consisted of sensory hallucinations that only symbolically represented these sleep-rooted thoughts. A dream is, therefore, only a particular type of hallucinatory symbolism. It does not stand by itself as an isolated phenomenon. If the theory that a dream is the resultant of two processes, one unconscious and the other conscious, be true, said the author, then we ought to find evidences of the same mechanism in other types of hallucinatory symbolism. Symbolism, as an hallucinatory phenomenon, occurs in numerous and multiform conditions; and a study of these shows evidence of these same two processes being at work.

(1) The simplest form is the visual hallucination of a number, evidenced by pinching the anesthetized skin of hystericals and their symbolizing the number of pricks.

(2) Artificial and spontaneous hallucinations, which represent symbolically scenes or experiences in the life of the individual.

(3) The hallucinations occurring in sudden religious conversion, which symbolize the previous thoughts of the individual; also those which symbolically answer previous doubts, fears or questions, or represent the "prickings" of conscience.

(4) Suggested post-hypnotic phenomena, such as calculation experiments in which visual hallucinations of numbers come into the mind consciously or subconsciously. These numbers must arise as the result of an unconscious process.

(5) Hypnagogic hallucinations.

All these forms of hallucinatory symbolism can be explained, Dr. Prince asserted, only on the hypothesis of a mechanism that includes an unconscious process (the motivating thoughts) and a conscious process (the hallucination). This hypothesis of dreams, therefore, is in entire accord with that of analogous phenomena.

The writer had been unable to confirm Freud's conclusions in other respects, e. g., that dreams always represent the fulfillment of a wish. On the contrary, he said, a dream may be the non-fulfillment of a wish or the fulfillment of fears, anxieties, etc. As to the exact mechanism by which the unconscious process translates itself into the conscious symbolism, he considered this a matter for future investigation.

DREAMS AS A CAUSE OF SYMPTOMS.

Dr. G. A. Waterman, of Boston, presented a series of dreams illustrating how the prominent emotional conflict of the life of the patient was symbolically represented in the dreams of the individual and gave rise to physical disturbances persisting for days or months. In the analysis of these dreams, it was shown how the explanation of the mechanism to the patient was followed by a disappearance of the symptoms.

Discussion on the five foregoing papers was opened by Dr. Isador Coriat, of Boston, who said that he believed that the Freudian theory had been carried too far in placing all these dreams on a sexual basis, Freud's only reasons for claiming that they have a sexual basis being the deep-seatedness of the sexual instinct and the fact that it may be traced back to the earlier years of life. The speaker thought, however, that these fancies might have a thirst or a hunger element, because the hunger and thirst instincts are just as much a part of our lives, and can be traced as far back, as the sexual instinct. He found that a great many dreams that lie in the unconscious or the conscious life can be traced by the pulse-reaction. In a number of cases, he had given words that he believed to be indifferent to the patients, and had obtained a very marked reaction. Through the use of various psycho-analytic methods, he had traced out the relation of these words to the patient's dream life, and he had found that many of these sexual feelings may go back to early childhood. In one case, they went back to the age of three years, but there were other somata in this case, and not the sexual alone. He stated his belief that hypnosis can do more than some claim, and said that it is nothing but an artificially produced form of absent-mindedness. Every one of the phenomena of hypnosis may be found in normal absent-mindedness — particularly increased suggestibility.

Dr. John Donley, of Providence, stated that he had recently had under his charge two interesting cases. One was that of a woman who had been crossing the street when a car bore down upon her. As she tried to pass, the motorman shouted violently, and she immediately felt pain in her head, shooting down her back and into her arms. This pain disappeared, but it would recur after irregular intervals, no medical treatment being of any avail. He tried to find out the basis of the trouble by means of hypnosis and discovered that she was having dreams in which she was hallucinating the

whole process. The day after each of these dreams the pain would recur in precisely the same situations as just after the accident. She would also dimly remember that she had dreamed during the previous night, but would not ascribe the pain to the dream. After three months of reproducing the dream, and explaining it away, Dr. Donley found it possible to relieve her.

The other case had reference to the transference of affective states in the genesis of an obsession. A young man, twenty-one years old, could not attend the theater with any comfort on account of having a feeling of panic, palpitation and distress each time he went. When he was six years of age, his mother had died, and he was taken under the care of an aunt. She treated him rather roughly, so that he never felt any love for her. This made him feel the loss of his mother very deeply. He would brood upon it, and would cry after going to bed, and this produced a more or less subconscious affective condition to exist all the time. One day, he went to the theater to see a melodrama. One of the scenes in this play suggested to him the loss of his mother, through association of ideas, and he became so uncomfortable that he had to leave the theater. The result was that he transferred his affective state of fear and discomfort from the loss of his mother to the theater, and whenever he would subsequently enter a theater, particularly this one, he would have the same difficulties that most people have in any obsession.

DR. TOM WILLIAMS, of Washington, D. C., thought that the reason given by the first speaker for refusing to accept exclusively the sexual genesis of dreams was not convincing, and said that the sensations of hunger and thirst are quite different from the sexual, in that the former are purely personal, while the latter is sociological. He admitted that some neurologists have sought to attribute too exclusively to sexuality many psychoses that he had found susceptible of being engendered through other affective disorders. He considered the fundamental explanation of these to be connected with the shame reflex that is bound up with the idea of sex. He stated that the same affect belongs to other sociological conditions, such as those connected with dishonesty, untruthfulness, etc. He had had cases in which it was entirely due to these, especially an instance in which there seemed to be no abnormal sensual affects, the whole syndrome being caused by the repression of expansion in social activities. Dr. Williams agreed with Dr. Prince in thinking that the dream is only one avenue toward obtaining a knowledge of psychic life, and said that he had very often been able to gain the same information without the aid of dreams. As a matter of fact, he considered the effort necessary in order to obtain a recollection of dreams to be as great, in some cases, as the effort of recollecting the factors in the mechanisms that have determined the psychoses. His custom is to place his patients in a position in which he can induce them to think of the kind of things that he wishes. He does not suggest thoughts to them, but turns their thoughts in certain directions and endeavors to gain a better knowledge of the processes that are taking place more or less unconsciously in these patients' minds.

Dr. Williams was glad to have heard Dr. Jones call attention to the two elements in the process of suggestion, — the purely ideal and that which pertains to activity, — but he did not agree with that author in believing that the occurrence of ideas depends entirely upon the patient's disposition. He thought that they sometimes occur in spite of an unfavorable affective condition on the part of the patient.

DR. JONES said that it would be well for neurologists to be as precise as possible in the matter of technology. Several of the speakers had used terms in other senses than those in which they are employed in Freud's work. For instance, Dr. Donley had described a case of what he termed "obsession," but Dr. Jones doubted whether any other psychologist would apply that term to such a state, which was really an anxiety state or a phobia. Then another speaker had referred to studying cases by various psycho-analytic methods. Dr. Jones suggested that it would be better to have said, "methods of psychological analysis," "psycho-analysis" being a term invented by Freud to designate one particular method of treatment. In the same way, Dr. Prince had used the word "complex" to describe a process quite different from that meant by Freud when using this term. Dr. Jones thought that Dr. Prince should invent a word to describe his process, and not use the term employed by some one else to indicate something quite different.

DR. PUTNAM did not think that Freud had meant to belittle the importance of other emotions when formulating his sexual theory; neither did he believe that there was any especial conflict among the different methods of investigation and treatment to which reference had been made. He said that Freud's method is, however, susceptible of a more general application than is any other. In connection with the therapeutic difference between Freud's method and others, Dr. Putnam compared it to the difference between exogenous and endogenous trees, and said that it was important that the growth and expansion of human beings should take place interstitially. He believed that, as Dr. Prince had said, memory alone is insufficient to explain all that goes on in the mind during sleep, and thought that Freud also accepted that view, that author having positively stated that the dream is not a sleeping phenomenon alone, but is prepared for during the waking life of the daytime. Dr. Putnam did not consider that anything was to be gained by adopting the conception of residual brain processes, which Dr. Prince had appropriately termed "neurograms," but thought that there exists in the mental life sufficient to afford means of explaining all the manifestations that occur during natural or artificial sleep. He said that memories remain a real mental possession more or less independently of the brain, and suggested that the whole process described by Dr. Jones might be referred to a still deeper process, which might be spoken of as obedience to the law of least resistance. This he thought was what the patient really does in transferring these affections and desires from one person to another.

DR. PRINCE said that he had found the word "complex" used frequently in a sense different from that in which it is employed by Freud, and even by authors who wrote before Freud, that he was inclined to think that this author could not claim it as his exclusive property.

DR. JONES made a motion that a committee on terminology should be appointed by the chair. The motion was seconded and carried.

DR. MORTON PRINCE had acted as President *pro tem.* during this session. He was elected President for the ensuing year. DR. G. A. WATERMAN, of Boston, was elected Secretary-Treasurer. The official name adopted after considerable discussion was the American Psycho-Pathological Association.

Book Reviews.

A Textbook of the Diseases of the Heart and of the Blood Vessels. By DR. ERNST ROMBERG, Professor and Director of the Medical Clinic in Tübingen. Second edition. Stuttgart: Ferdinand Enke. 1909.

This new edition of Romberg's well-known work can be highly recommended both to students who require a clear and complete statement of its subject, and to practitioners of medicine who desire an authoritative opinion and a clear description of recent advances in the study of circulatory diseases. Although the general form of the first edition has been retained, all matters of more recent publication have been so embodied in the text as to give the impression of an entirely new work. The literature has evidently been studied with extreme care that nothing of importance might be overlooked. The bibliographies are full and thoroughly up to date. Of the newer matters described may be mentioned the work of Aschoff and Tawara upon the functional anatomy of the heart, the work of Erlanger, Hering and others upon the pathological physiology, Eithoven's electrocardiogram studies, the percussion methods of Goldscheider and others, controlled by the orthodiagram, and Mackenzie's clinical investigations by means of simultaneous tracings of venous and other pulsations. Korotkow's method of determining diastolic blood pressure is mentioned with favor. The arrhythmias are discussed according to Hering's classification. But far from laying too much stress upon newer discoveries, the bulk of the work deals with the older and better established methods of diagnosis and of treatment. It may be noted that warning is issued against a too-ready acceptance of the intravenous use of strophanthin. This and other statements illustrate the tone of sound conservatism which prevails throughout, in which one cannot fail to recognize the good judgment and well-deserved authority of the author.

Studies in Immunity. By Prof. Paul Ehrlich and his collaborators. Collected and translated by Dr. Charles Bolduan. Second edition. Octavo. Pp. 712. New York: John Wiley & Sons. 1910.

The appearance of a second edition in English of Ehrlich's fundamental studies in immunity is the best evidence of the relatively widespread interest in so technical a work. The first edition appeared in 1906 following the original German edition prepared by Ehrlich. This new edition, to which no German analogue exists, contains the work embodied in the first edition and a number of papers which have appeared since that time. These additional papers include particularly certain articles which are discussed in the recently published "Studies" of Bordet prepared by his pupil, Gay. The combination of these two volumes includes the larger part of the essential advances in immunity for the last fifteen years, and a comparison of the two schools of thought evidences the value of fair-minded, scientific antagonism.

The present edition of Ehrlich is greatly benefited by the addition of helpful indices.

Surgical After-Treatment. A Manual of the Conduct of Surgical Convalescence. By L. R. G. Crandon, A.M., M.D., Assistant in Surgery at the Harvard Medical School; Assistant Visiting Surgeon to the Boston City Hospital; Consulting Surgeon to the Frost General Hospital. With 265 original illustrations. Philadelphia and London: W. B. Saunders Company. 1910.

Of the numerous books on after-treatment which have come from the press during the past two years, Crandon's is probably the best. He professes to write for house surgeons and general practitioners, but in fact his book commends itself to all surgeons who have a proper regard for the comfort of their patients in convalescence. The author acknowledges his obligations to Dr. Albert Ehrenfried, whose "enthusiastic assistance has amounted to collaboration"; to Dr. George P. Sanborn, who has written the chapter on Vaccine Therapy; to Dr. Frank B. Granger, who has contributed the section on electrotherapy; and to sundry other physicians and surgeons connected with the Boston City Hospital and Harvard Medical School.

The book is refreshing, stimulating and instructive from many points of view. For example, the first chapter, on the sick-room and the nurse's duties, is unusually good, while the illustrations of the various positions to be assumed by patients are valuable. The chapter on anesthesia is admirable, especially on that feature of the anesthesia most distressing to the patient, the recovery. One wishes only that more might have been said regarding the striking advantages of gas and oxygen when used as a routine anesthetic. Thirst, pain and sleep, the significance of the pulse, temperature and respiration, are well treated, while the chapters on hemorrhage, transfusion, shock, collapse, coma and sudden death are most informing.

Our space is too limited to dwell in detail on the numerous excellent features of the book, especially on the care of patients after abdominal operations, but one cannot pass by without mention the suggestions regarding certain details of treatment after special operations. For example, the essay on the recovery from thyroidectomy contains all the best recent conclusions of well-known operators, while the author's treatment of persons convalescing from hernia, appendicitis and general peritonitis is entirely satisfactory. One is surprised, perhaps, to find so much said regarding the surgery of orthopedic lesions, — operations on the bones and joints especially, — but every general surgeon must deal with such lesions, and he will do well to read these chapters.

It would be easy, obviously, to differ from the author in many of his procedures and conclusions, but such differing would amount to a discussion of details only and would not affect the value of the book as a whole. Not the least interesting feature of the work is the appendix, which suggests to the surgeon and the nurse a list of invalid foods and recipes. The illus-

trations, mostly photographs, are excellent, and the press work is of the best. We cordially endorse the work and commend it to the profession.

Manual of Tropical Medicine. By ALDO CASTELLANI, M.D. (Florence), Privat-Docent Naples, and ALBERT J. CHALMERS, M.D. Vic. and Liv., F.R.C.S. Eng., D.P.H. Cantab. University Series. New York: William Wood & Co. 1910.

This volume, representing the personal experience of the authors in Asia and Africa, is a valuable addition to the textbook literature of tropical medicine. Of particular interest are the chapters in the second part describing tropical poisons, poisonous weapons and foods, and venomous animals. The clinical section, on the diagnosis and treatment of tropical diseases, is complete, succinct and thorough. The book is illustrated by 373 figures in the text and 14 colored plates. As a whole, it presents in lucid and compact form a vast amount of description, observation and useful information which should make it of great value as a work of reference to any physician who purposes to teach or practice tropical medicine.

Diseases of the Stomach and Intestines. By ROBERT COLEMAN KEMP, M.D., Professor of Gastro-Intestinal Diseases in the New York School of Clinical Medicine; Visiting Gastro-Enterologist to the New York Red Cross Hospital, etc. With 280 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company. 1910.

This volume deserves high commendation as an exhaustive description of the most modern methods of diagnosis and treatment which have been advocated in the management of gastric and intestinal cases. The chapters on special methods of examination and of treatment are of interest since they demonstrate procedures of great ingenuity which have been practiced as yet only in a limited number of clinics. The individual diseases are also thoroughly considered, especially with reference to treatment. The work is encyclopedic in the number of disorders, both organic and functional, which are discussed. Although many diagnostic and therapeutic measures mentioned have not yet received general acceptance, and some are of too complicated a nature for widespread employment, these special methods are not given prominence to the exclusion of procedures applicable in ordinary practice. The book can be recommended, therefore, both to the general practitioner, who will find in it many useful suggestions, and to the specialist who is able to make more elaborate investigations.

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THE NURSING SPIRIT.

THERE seems at present to be so much uncertainty regarding the amount of training a nurse shall receive, and the nature of that training, that a recent article by W. C. Graves,[1] executive secretary of the Illinois Charities Commission, is of more than usual interest.

Mr. Graves declares that in caring for the sick, as in any other art, a spiritual fitness for the service is necessary to attain success, and that in a nurse this is more essential to the relief and cure of a sick person than the same quality in a physician. The nurse is with a patient practically all the time; the physician, as a rule, sees the patient at intervals, and then only for a short space of time. Hence, the nurse who wishes to succeed, in the largest sense of the word, must have the genuine nursing spirit; she must enjoy caring for the sick; she must receive her greatest compensation in the realization that persons are restored to health and the pleasures of life as the result, at least in part, of her care and ministrations, and that those who die pass into the Great Beyond soothed by the knowledge that a sympathetic watcher is with them. Mr. Graves compares the ultrascientific nurse who performs her duties with religious fidelity and machine-like precision, but with absolutely no personal interest in her patient, with the "Heaven-sent creature whose gentle touch and whose encouraging words are added to scientific ministration as an anodyne for the troubled heart and a stimulant for the apprehensive spirit."

These are strong expressions, from a layman's standpoint, which are quite worthy consideration. Instead of teaching nurses laboratory

[1] Ill. Med. Jour., August, 1910.

work, — chemical and bacteriologic, — the feeling at times arises, whether it would not be better to devote more time to training them in the actual care of the patient. Florence Nightingale, the greatest nurse the world has ever known, concerned herself solely with the comfort of the patients. Why, then, should the modern trained nurse consider as beneath her anything which makes for the patient's wellbeing?

In private practice, the nurse should be able to keep her patient cheerful and amused, and she should be willing and able to converse on current topics with those who are convalescent. But how many nurses do this? In the majority of cases, the course of the disease is materially affected by the mental outlook of the patient, and a nurse with the "nursing spirit" will be of inestimable aid to the physician, while the machine-like nurse trained essentially in laboratory and operating-room technic (practically never needed outside of hospitals) may well prove a decided obstacle to the patient's speedy recovery.

We are not advocating employment of untrained nurses, — far from it; simply a different or modified course of training. After all is said and done, the nurse's chief duty is to carry out the orders of the physician, and her training is to enable her to do this intelligently. In large hospitals where the nurses are frequently overworked, it is impossible to give each patient the care and attention which a nurse would be expected to give a patient in private practice. Under such conditions, the nurses necessarily become machine-like in their methods, especially if they lack the true nursing spirit, or what Mr. Graves calls the "mothering instinct."

CONGESTION OF POPULATION IN NEW YORK.

On Aug. 25 the Mayor's Commission on Congestion of Population in New York was addressed, at a meeting held at the City Hall, by Prof. Stanley D. Adshead, director of the Department of Civic Design in the University of Liverpool. While complimenting the city of New York on many of its developments, he stated that the overcrowding in Manhattan was much greater than in any European city. This, he thought, was due indirectly to the peculiar position and shape of the island, and directly to the immense value of the land and the lack of foresight on the part of the public authorities in the past. He expressed the opinion that, as had already occurred in Berlin, Frankfort and Düsseldorf, and was now imminent in London, Manchester and Liverpool, there would be in New York a collapse in the value of property, which is held up artificially by reason of the lack of restrictive measures and inadequacy in measures for distributing the population. Having remarked that the standards at present set by New York as regards light and air in tenements were too low, and the number of inspectors employed by the tenement-house department far too small, Professor Adshead said that the solution of the New York problem appeared to him to be to advocate, as far as possible: (1) The removal of all factories and business establishments out of the restricted area of Manhattan wherever such business can be carried on elsewhere. (2) To encourage in every possible way the construction of more arterial lines of communication, particularly by subway. (3) To open up all undeveloped and desirable building land within twenty miles of the city of New York by constructing new lines of communication, and so decentralizing the city, and at the same time, but not before, to enforce stringent and restrictive measures on the use of land in Manhattan. This may bring about a temporary collapse, but any such collapse will ultimately be followed by a recovery which will be brought about by a more advantageous use of the land. Alterations in the use of or restrictions put upon land should be made as gradually and carefully as possible; the medical operation of drawing the sore is less harmful than the surgical one of removing it.

DR. FLEXNER'S REQUEST FOR POLIOMYELITIS MATERIAL.

In another part of this issue we publish a letter from Dr. Simon Flexner asking assistance in securing specimens of the nervous system from fatal cases of poliomyelitis. Apart from any other consideration, Dr. Flexner's researches have reached such a point that every possible assistance should be rendered him in bringing his promising investigations to a wholly satisfactory conclusion. While very much remains to be determined regarding the etiology and nature of the organism concerned, and the possibility of providing an antitoxic serum, it is evident to those who have followed the subject that the possibilities of the future are great and that results of positive importance are likely to issue from Dr. Flexner's laboratory in view of the work already accomplished there. It is also manifest that the essential means of prosecuting the research to its conclusion is material from early cases of polio-

myelitis. If those physicians who are seeing these cases and who are able to procure a post-mortem examination would unite in forwarding their material to the Rockefeller Institute as requested by Dr. Flexner, there is no question that it would there be used to the greatest possible advantage. We therefore urge physicians not only to secure post-mortem examinations if possible in these cases, but also to preserve and forward the material as early as may be to Dr. Flexner and his associates in New York.

GOVERNMENT ADVICE AS TO THE KEEPING OF DIPHTHERIA ANTITOXIN.

IN Bulletin No. 66, issued in June, 1910, from the National Hygienic Laboratory, Anderson reports a very opportune piece of research on "The Influence of Age and Temperature on the Potency of Diphtheria Antitoxin." It appears that in the past manufacturers of antitoxin have been much in the dark as to the length of time in which their product may be safely kept. Most of them have recalled sera more than nine months old, while some have allowed it to be marketed for one year from the date of its preparation.

By keeping samples of sera from various sources under different conditions, and testing an unbroken package from each set every six months, Anderson found that the average yearly loss in potency of diphtheria antitoxin at room temperature is about 20%; at 15° C., about 10%; at 5° C., about 6%. He found but little difference in the decrease of potency in unconcentrated sera and in those concentrated by the Gibson method. Preservatives seemed to have no effect.

He advises, therefore, that diphtheria antitoxin to be placed upon the market and kept under unknown conditions as regards temperature, should be labeled to be returned within two years and should contain an excess of at least 33% to allow for decrease in potency. He suggests tentatively that perhaps the older a serum is, the less will be its likelihood to cause severe serum reactions.

MEDICAL NOTES.

CULTIVATION OF THE BACILLUS OF LEPROSY.— It is announced from Washington that Dr. Walter R. Brinkerhoff, Dr. Donald H. Curry and Dr. H. T. Hollman working together have succeeded in growing the bacillus of leprosy in pure culture. If this report be substantiated, it evidently paves the way for a rational treatment of this still widespread and fatal disease.

THE CHOLERA SITUATION. — Cholera has diminished in Russia, and it appears on further investigation that the suspected cases in Berlin have proved not to be cholera. There are but two authentic cases in that city, presumably due to Russian immigrants. A number of suspicious cases are under observation at the Virchow Hospital.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Aug. 30, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 32, scarlatina 19, typhoid fever 24, measles 11, smallpox 0, tuberculosis 68.

The death-rate of the reported deaths for the week ending Aug. 30, 1910, was 17.22.

BOSTON MORTALITY STATISTICS. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Aug. 27, 1910, was 221, against 201 the corresponding week of last year, showing an increase of 20 deaths and making the death-rate for the week 18.30. Of this number 116 were males and 105 were females; 215 were white and 6 colored; 141 were born in the United States, 79 in foreign countries and 1 unknown; 44 were of American parentage, 152 of foreign parentage and 25 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 28 cases and 4 deaths; scarlatina, 18 cases and 2 deaths; typhoid fever, 33 cases and 3 deaths; measles, 16 cases and 3 deaths; tuberculosis, 70 cases and 24 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 12, whooping cough 0, heart disease 25, bronchitis 1. There were 18 deaths from violent causes. The number of children who died under one year was 45; the number under five years, 72. The number of persons who died over sixty years of age was 62. The deaths in public institutions were 95.

Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following were non-residents: Consumption, 4 cases and 4 deaths. Typhoid fever, 1 case and 2 deaths. Scarlet fever, 4 cases. Anterior poliomyelitis, 1 case.

Deducting deaths of non-residents, the total is 189 and the death-rate is then 15.65.

GLANDERS IN LYNNFIELD, MASS. — It is reported that three horses in Lynnfield have

died of glanders. A quarantine has been instituted which will, no doubt, prevent the spread of the disease.

Work of the Floating Hospital. — It is reported that Baltimore is about to undertake work similar to that of the Floating Hospital. Dr. R. M. Bruns, a physician of that city, has been investigating the methods of the hospital and will later study the work in New York in the expectation of inaugurating such a hospital in Baltimore.

State Investigation of Infantile Paralysis. — The Massachusetts State Board of Health publishes in this month's bulletin the results of an investigation by Hennelly and Sheppard of the cases of infantile paralysis occurring during 1909 and 1910.

This investigation disclosed nothing of moment as regards the spread of the disease, save that it appears equally by the sea and inland, in crowded centers and in those thinly populated. Of 150 cases carefully studied, 62 were swimming or wading, just before the onset, in water contaminated by sewage. The report also calls attention to the fact that several instances are recorded where children not exposed to the disease, but intimate with others who had had attacks as many as twelve years previously, had contracted infantile paralysis. The presumption is strong that this is a coincidence merely.

The report concludes with a statement of symptoms and methods of treatment, written by six physicians who have had much experience with the disease.

NEW YORK.

A Centenarian. — John Kipp died in the Warren County almshouse, near Oxford, N. J., on Aug. 19, at the age of one hundred and three years, having been born, it is stated, on Dec. 6, 1806. Three years ago he sustained a fracture of the hip, since which time he has been confined for the most part to bed.

Poisoning by Lysol. — A case of poisoning by lysol similar to the recent case in New Jersey has just occurred in New York. Dr. T. A. Gonzales, of Lexington Avenue, gave a prescription calling for "laxol" for a baby one year old. The druggist's clerk who put up the prescription mistook the word for lysol, and a teaspoonful of this was given to the child with fatal results.

Discontinuance of Straus Milk Depots. — Word has been received from Nathan Straus in Berlin that, after the present season, owing to certain criticisms of the work, he will discontinue his stations for the distribution of pasteurized milk in New York. It is stated, however, that this philanthropic work will be continued in Washington and in the several German cities where he has instituted the milk depots. There are, at present, seventeen Straus milk stations in New York.

Bequests. — Among the charitable bequests in the will of the late Mrs. Harriet Coles, of Glen Cove, Nassau County, N. Y., is one of $7,500 for the founding of a free bed in the Presbyterian Hospital, New York.

Among the bequests in the will of the late Mrs. Flora L. Dotger, widow of Andrew J. Dotger, of East Orange, N. J., are $10,000 each to the Orange Memorial Hospital, the Orange Bureau of Associated Charities, and the German Hospital of Philadelphia.

Gangrenous Ergotism. — Five members of a family living in the Fort Washington district of the city have been attacked with a disease extremely rare, if not entirely unknown, in the United States, gangrenous ergotism, and two of the patients are being treated at the J. Hood Wright Memorial Hospital. The Health Department is making an investigation, especially with a view to discovering the source from which the bread infected by the parasitic fungus which was eaten by the family was obtained.

A Check to Osteopathy. — In their efforts to secure official recognition, the osteopaths met with another defeat on Aug. 26, when Justice Putnam, in the Supreme Court, Brooklyn, decided that the Health Department was within its rights in refusing a burial permit where an osteopathic practitioner had attended the deceased. Since the legislature passed a law recognizing the osteopaths in the state of New York, the courts have sustained their right to practise, but, under a new section of the Sanitary Code, they have been denied the privilege of issuing death certificates. Acting on this provision, the Health Department filed a demurrer to their complaint, and, in sustaining the demurrer, Justice Putnam said, "While the state has allowed the practice of osteopathy, it does not follow that it thereby holds one without any practise in surgery or experience in prescribing drugs as fully qualified to certify the cause of death. Granted that the theoretical education of the osteopath is of a

standard equal to that of a doctor of medicine, after he enters on his profession his practice is restricted; so that it does not appear that he can make the tests, by examination of the blood and tissues, by which alone many diseases can be certainly determined. The Sanitary Code is discriminating, but the discrimination is not personal or arbitrary. It is based on a limitation which the osteopath may be said to make for himself, and which deprives him of no rights he ought to exercise consistent with the public safety."

Current Literature.

MEDICAL RECORD.

AUG. 20, 1910.

1. DELAVAN, D. B. *The Influence of the Use of the Automobile upon the Upper Air Passages.*
2. FERRIS, A. W. *First Aid to the Insane, and Psychopathic Wards.*
3. BEGGS, W. N. *Is Mercury a Specific in Pulmonary Tuberculosis?*
4. CARSTENS, J. H. *Hyperchlorhydria and Abdominal and Pelvic Surgery.*
5. MCCONKEY, T. G. *Is Koch's Bacillus the Cause of Cancer?*
6. LYNCH, J. M. *Observations on the Pathology of Multiple Adenomata of the Rectum.*

[L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

AUG. 20, 1910.

1. MEYER, A. W. *Aspects of the Medical Curriculum of To-Day and To-morrow.*
2. HORNBROOK, F. W. *Importance of Bedside Teaching.*
3. PARKER, W. R. *Ophthalmia Nodosa or Caterpillar-Hair Ophthalmia, with Report of a Case.*
4. FOERSTER, O. H. *Primula Dermatitis.*
5. BALDWIN, H. A. *Primary Sarcoma of the Heart, with Report of an Additional Case.*
6. SUTTON, W. S. *A New Incision for Epithelioma of Upper and Lower Lip of Same Side.*
7. STEWART, G. N. *A Clamp for Isolating a Portion of the Lumen of a Blood Vessel without Stopping the Circulation through the Vessel.*
8. PARKES, C. H. *Femoral Hernia of Fallopian Tube without Ovary.*
9. MAYER, E. D., AND GAUB, O. C. *Intradural Tumor of the Spinal Cord with Operation.*
10. WALSH, J. J. *University Medical Schools.*
11. ROYSTER, L. T. *The Prevention of Infant Mortality from an Educational Standpoint.*
12. QUIGLEY, D. T. *Public Health Organizations in Nebraska.*
13. WHITE, J. H. *The Permanent Elimination of Yellow Fever.*
14. *FLEXNER, S., AND LEWIS, P. A. *Experimental Poliomyelitis in Monkeys.*
15. HORSLEY, J. S. *Notes on the Technic of Transfusion of Blood.*
16. LEWIS, S. *A New Method of Inflating the Stomach.*

14. Flexner and Lewis report in their eighth paper the following findings on experimental poliomyelitis in monkeys: It can now be accepted as established that human beings and monkeys who have passed through an attack of poliomyelitis have come to contain in their blood certain neutralizing principles for virus of poliomyelitis; that these principles are readily demonstrated by animal tests for two or more years in humans, and that they probably exist for as great a period in monkeys. It has been shown that monkeys who have recovered from an attack of poliomyelitis are highly refractory to reinoculation with the virus, and it is probable that human beings are similarly protected from reinfection. It has been possible to make monkeys immune also by injecting the virus subcutaneously. This mode of producing immunity is, however, not yet perfected, as some of the animals do not develop a strong immunity and others develop paralysis as a result of the treatment. When an active filtrate containing virus is mixed with serum of actively immunized monkeys and incubated for a period at 37° C. it no longer sets up paralysis on being injected into the brain of normal monkeys. Serum derived from children who have passed through an attack of poliomyelitis has been shown to possess some therapeutic value in monkeys, for when subarachnoid injections are begun twenty-four hours after the intracerebral inoculation of the virus, the development of paralysis can be entirely prevented in a certain number of the animals, while in others the onset of the paralysis is much delayed. Neutralized mixtures of virus and immune serum do not lead, however, to any degree of active immunization.

[E. H. R.]

THE ARCHIVES OF INTERNAL MEDICINE.

JUNE, 1910.

1. *OPIE, E. L. *Inflammation.*
2. BREM, W. V., AND ZEILER, A. H. *A Study of the Hemoglobin of Colored Laborers in Panama.*
3. NEILSON, C. H., AND TERRY, O. P. *Paroxysmal Hemoglobinuria. An Experimental Study of a Case.*
4. *KRUMBHAAR, E. B. *Adams-Stokes' Syndrome, with Complete Heart-Block, without Destruction of the Bundle of His.*
5. *MCCRUDDEN, F. H. *Studies of Bone Metabolism, Especially the Pathological Process, Etiology and Treatment of Osteomalacia.*
6. HUNT, J. R. *The Symptom-Complex of the Acute Posterior Poliomyelitis of the Geniculate, Auditory, Glossopharyngeal and Pneumogastric Ganglia.*

1. This article is an attempt to settle the definition of "inflammation," and to substantiate by proof the various stages of the process. Opie holds that "inflammation is the process by means of which cells and serum accumulate about an injurious substance and tend to remove or destroy it. This process does not include the regenerative changes which replace injured tissue by newly formed parenchymatous elements or by new interstitial tissues." The communication, tracing the phenomenon of inflammation throughout the animal kingdom, presents a definite, comprehensive description of this fundamental process.

4. Krumbhaar reports a case of long-continued Adams-Stokes' syndrome and complete heart-block which at autopsy showed no lesion of the bundle of His. Beyond suggesting that the heart-block may have been due to fibrosis of the sino-auricular bundle of Keith, he offers no explanation of this rare condition.

5. In an extensive research on the metabolism of bones, especially with regard to osteomalacia, McCrudden has reached some very definite conclusions. He shows that, until late adult life, an active process is going on in bones. In rickets, the newly formed bone is deficient in lime. In osteomalacia, the supply of calcium necessary to keep the quality of the bones up to normal falls short, and the typical condition of bone-weakness develops. He refutes the theory that lactic acid in the blood is responsible for this, and shows that the theory of an obscure ovarian influence is unsound. The disease, he holds, is due to the withdrawal of calcium from bone metabolism, due to a demand for it elsewhere, as for the fetus. Thus he explains not only the fact that osteomalacia occurs oftenest in women who have had several pregnancies in rapid succession, but also that in pregnant women there may be a tenderness of the pelvic bones. The occasional occurrence of this disease in unmarried women and in men he touches rather lightly, suggesting that bony deposits in some abnormal part of the body

may be the cause. Hygiene and the prevention of pregnancy he considers the main factors in treatment.
[G. G. S.]

BULLETIN OF THE JOHNS HOPKINS HOSPITAL.

AUGUST, 1910.

1. *HENDERSON, Y. *Fatal Apnea and the Shock Problem.*
2. JONES, W. *On the Threefold Physiological Origin of Uric Acid.*
3. FRANCINE, A. P. *Intrathoracic Displacements in Pulmonary Tuberculosis.*
4. *STROUSE, S., AND CLOUGH, P. W. *Blood Cultures in Pneumonia.*

1. Henderson describes a series of experiments in support of his theory that many deaths supposedly due to what is known as "surgical shock" with the accompanying low blood pressure are not really due to shock, but to a simple failure of the respiratory center to continue its function. This center, as is well known, is stimulated to action and continuance of its efforts by the presence of CO_2 as an irritant. The effect of any severe pain is to produce a type of deep breathing which soon overoxygenates the body and greatly decreases the amount of CO_2 which should be normally present. This when carried to an extreme results in a failure of the respiratory center to act, with death as a result. He elucidates this theory at some length.

4. Strouse and Clough obtained positive blood cultures in 14 out of 25 cases of pneumonia. They report the work of others on this subject and present their own views in tabular form. They conclude that in certain epidemics blood cultures in pneumonia are positive in a majority of all cases, but in such cases the results have no prognostic value. [J. B. H.]

THE LANCET.

JULY 23, 1910.

1. MOORE, N. *The Bolingbroke Lecture. An Exercise on Heart Disease.*
2. TURNER, W. A. *The Morison Lectures on Epilepsy. Lecture III.*
3. HALSE, H. W. *On Ferro-Silicon, with Special Reference to the Poisonous Gases Liable to be Evolved Therefrom.*
4. *FARQUHARSON, R. *On the Notification of Consumption.*
5. GWYNN, N. C., AND GORDON, W. *A Case of Dermato-Myositis which Recovered.*
6. DEAN, H. R. *An Examination of the Blood Serum of Idiots by the Wassermann Reaction.*
7. BECKETT-AVERY, H., HASTINGS, S., AND FREEMAN, A. *The Medical Proposals of the Minority Report. An Appeal to the Medical Profession.*
8. DAVISON, J. T. R. *Tuberculosis in its Relation to the Generative Function.*
9. COLLIER, J., AND BARWELL, H. S. *A Case of Suppurative Perichondritis of the Larynx in the Course of Acute Pneumonia; Recovery.*
10. MABERLY, F. H. *Brief Notes on the Treatment of Rheumatism by Bee Stings.*
11. HIRSCH, C. T. W. *Motoring Notes.*

4. Farquharson, a layman, in discussing the tuberculosis problem, speaks strongly against compulsory notification of phthisis and says that "there is no evidence that it has done any good." (Although it will be realized that this is the opinion of a man not a physician, it seems a pity that such unfortunate views as these should be given wide circulation.—J. B. H.)

JULY 30, 1910.

1. BUTLIN, H. T. *The Evolution of the British Medical Association and its Work.*
2. BRUCE, J. M. *Recent Progress in Medical Science.*
3. BARLING, H. G. *Malignant Disease.*
4. *PAUL, F. T. *The Pathology of Prostatic Enlargement.*
5. *WHYTE, D. *Helminthic Infection and its Relation to Eosinophilia: A Study Based on the Examination of the Feces of 562 Cases and of the Blood of 102 Cases in South China.*
6. PYE-SMITH, R. J. *A Case of Volvulus of the Cecum and Ascending Colon.*
7. MANTLE, A. *The Successful Treatment by Colon Lavation of Some Cases of Eczema, Psoriasis, Urticaria, Acne and Pruritus.*
8. MAXWELL, R. D. *A Note on Cæsarean Section Undertaken in the Presence of Septic Infection, with a Report of a Case.*
9. ROWLANDS, R. P. *The Prevention and Correction of Deformity following Arthritis of the Hip-Joint.*
10. *EWART, W. *On Pre-Tuberculosis and Pre-Pulmonary Tuberculosis and their Diagnosis in Relation to School Inspection.*
11. DODSON, G. *A Method of Staining Deep Colonies in Plate Cultures in Situ in Agar Media.*
12. STRATON, A. A. *A Case of Thrombosis of the Inferior Mesenteric Vein.*

4. Paul considers that prostatic hypertrophy is not due to a chronic inflammation of septic or specific type, nor to a neoplasm, but that it is an involution change similar in character to that which occurs in the mammary gland. He presents his evidence at length in support of this theory.

5. Whyte has made a study of the eosinophilia accompanying the infection of the intestinal tract by various worms. The eosinophiles increase along with the increased numbers of this infecting organism. Patients over forty years showed a less degree of eosinophilia than those younger. The more varieties of parasites infecting a single individual, the greater the eosinophilic reaction.

10. Ewart urges the earlier diagnosis of tuberculosis in children. The ideal condition would be to make such a diagnosis in the so-called "pre-tubercular" stage, but as many other conditions, such as adenoids, enlarged tonsils, poor teeth, malnutrition and anemia may simulate a pre-tubercular one, this is in many cases impractical; he is of the opinion, however, that by finer methods of diagnosis and chest examination the condition which he calls "pre-pulmonary tuberculosis" should be diagnosed earlier than it now is. He discusses the various signs and symptoms which he and others consider of value. (The writer's general idea is undoubtedly a correct one, but the term "pretubercular" is an unfortunate one.)
[J. B. H.]

BRITISH MEDICAL JOURNAL.

JULY 23, 1910.

1. RANKIN, G. *A Clinical Lecture on Duodenal Ulcer.*
2. *PHILIP, R. W., AND PORTER, A. E. *Tubercle Bacilli in the Feces in Tuberculosis.*
3. KRONECKER, H. *The Experimental Evidence for the Theory of the Hemogenic Co-ordination of the Heart Impulse.*
4. *PEARCE, F. H., RANKINE, R., AND ORMOND, A. W. *Notes on 28 Cases of Mongolian Imbeciles.*
5. JOHNSTON-LAVIS, H. J. *Some Examples Illustrating Cases of Chronic Toxemias at Vittel.*
6. GREGORY, A. *Scarlatina Maligna.*
7. BURNETT, E. N. *Recurrent Monstriparity.*
8. ARNOLD, W. T. J. *Turpentine Enemata in the Treatment of Enteric Fever.*

2. Philip and Porter describe their method of staining for tubercle bacilli in the feces in cases of pulmonary and other forms of tuberculosis. One hundred and nine different specimens were examined, 99 of which were from cases of phthisis and in only 34 of which had bacilli been found in the sputum. Of these cases, 79 were found to yield tubercle bacilli; all of those with bacilli in the sputum showed bacilli in the feces; of the 24 cases without sputum, 17 showed bacilli in the stools. As means of early diagnosis, these results may be of great value; from the public-health point of view the frequency of bacilli in the stools is of great importance.

4. Pearce, Rankine and Arnold present an interesting study of 28 cases of Mongolian idiocy, describing the leading signs, symptoms and characteristics of this condition. Among other striking features is the average short duration of life—fourteen to fifteen years—and the large percentage of deaths from tuberculosis in their series—nearly 100%.

JULY 30, 1910.

1. BUTLIN, H. T. *The Evolution of the British Medical Association and its Work.*
2. BRUCE, J. M. *The Dominance of Etiology in Modern Medicine.*
3. BARLING, G. *On Malignant Disease.* [J. B. H.]

THE PRACTITIONER.

AUGUST, 1910.

1. *LEWERS, A. H. N. *On Congenital Hematocolpos, Hemotometra and Hematosalpinx, with Notes of a Case requiring Laparotomy.*
2. *STEVENS, T. G. *The Present Position of Cæsarean Section in Obstetrics.*
3. HOWARTH, W. G. *The Relief of Pain in Tuberculous Disease of the Larnyx.*
4. *BROWN, H. H. *Post-operative Shock: Its Prevention and Treatment.*
5. MCKENZIE, D. *Mucous Polypus of the Nose and its Treatment.*
6. ROBINSON, W. *Esophageal Diverticula; with an Illustrative Case.*
7. MACLENNAN, A. *The Treatment and Prevention of Cubitus Varus and Valgus.*
8. COLLINS, J. R. *The Value of an Examination of the Cerebrospinal Fluid in General Practice.*
9. EDWARDS, A. D. *The Increasing Difficulty of the Diphtheria Carrier.*
10. HERNAMAN-JOHNSON, F. *Remarks on the Etiology and Pathology of Infantile Paralysis.*
11. SLIGHT, J. D. *The Element of Time in Midwifery Practice.*
12. MITCHELL, T. H. *The Ars Medendi of Shakespeare.*

1. Lewers summarizes his paper on congenital retained menses as follows: Simple retention of the fluid in the vagina requires no further treatment than to divide the obstructing septum; in cases of fluid retained in the uterus or tubes — hematometra — it is better to do a laparotomy and to remove the tubes if distended.

2. Stevens, in a general article, discusses the conditions under which Cæsarean section is indicated, the technic, after-treatment, etc., and its status as an operation in the present field of obstetrics.

4. Brown discusses the general subject of shock and its treatment. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 30.

JULY 28, 1910.

1. *TREUPEL. *Experiences and Expectations with the New Ehrlich Remedy in Syphilis and Parasyphilitic Affections.*
2. WECHSELMANN AND LANGE, C. *Technic for Injections of Diaxy-diamido-arsenobenzol.*
3. FRANKE, F. *Operative Treatment in Brain Injury with Hemorrhage.*
4. KLEINE. *Proof of Trypanosomes at Tanganyka and Other Observations.*
5. BAMBERGER. *Paroxysmal Tachycardia in Basedow's Disease.*
6. GRUNERT. *Fracture of the Processus Posterior Tali.*
7. RISEL, H. *Essay on Sick Sucklings and Mixed Form of Alimentation.*
8. VOECKLER, L. *Technic of Ureter Catheterization.*
9. MAETZKE. *Sabromin in Chorea.*

1. Treupel, in his short address, simply endeavors to state the present status of Ehrlich's new arsenic preparation for the treatment of syphilis. The new compound of arsenic — the monochlorhydrate of dioxydiamido-arsenobenzat — may be given intramuscularly or intravenously. After intravenous injection in humans it is not known how long arsenic is excreted by the kidneys. After intramuscular injection, it is excreted from twelve to eighteen days. So far, no harmful results from the inoculations have been reported. At the site of injection there is usually considerable tenderness and reaction. With the symptoms of syphilis the results are most gratifying, as in a few days after one injection the symptoms disappear. Also with parasyphilitic affections the temporary results are gratifying. The permanency of the results and the length of time this treatment should be carried out are points to be decided in the future. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 30.

JULY 26, 1910.

1. *LUBARSCH, O. *Alimentary Arteriosclerosis.*
2. LOEB, H. *Experiences with Ehrlich's Dioxy-diamido-arsenobenzol (606).*
3. *HAUPTMANN, A., AND HÖSSLI, H. *The Wassermann Methods in the Differentiation of Cerebrospinal Lues and Multiple Sclerosis.*
4. MAYER, G., WALDMANN, FÜRST AND GRUBER. *Meningitis and the Question of Carriers.*
5. HAUDEK, M. *Röntgenological Diagnosis of Ulceration in the Pars Media of the Stomach.*
6. BRODNITZ. *Apoplexy of the Adrenals.*
7. RUPPRECHT, K. *Psychology of the Young Criminal of the City.*
8. RÜDIGER, G. *An Apparatus for Making Sponges Free from Loose Threads.*
9. GROAG, P. *Studies on Chlorosis.*

1. Lubarsch fed some guinea-pigs with liver, others with adrenal gland, and still others with horse meat. The animals died or were killed at different times, some took the food well and others badly, so that uniform results could not be expected. Many of the pigs fed on liver developed sclerosis. The smaller arteries chiefly were attacked; the disease began in the media and calcification occurred. The animals fed on adrenal gland showed similar changes in a less degree, and those fed on horse meat showed no vascular change. The writer says that the sclerosis which he produced does not resemble human arterial changes as closely as did that obtained by injecting bacteria or by adrenalin. He believes that human arteriosclerosis has a multiple etiology, that there are several varieties of it, that it is a degenerative, sometimes partly inflammatory, disease, and that it is not a normal or necessary result of age.

3. Tests by the writer seem to show that the Wassermann reaction often fails in cerebrospinal lues merely because insufficient fluid is used for the test. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 30.

JULY 25, 1910.

1. *LIEPMAN, W. *The "Hand" as the Obstetrician's Instrument.*
2. *MICHAELIS, L. *The Application of the Anti-Syphilitic Preparation of Ehrlich and Hata in Neutral Suspension.*
3. MULZER, P., AND MICHAELIS, W. *Hereditary Syphilis and the Wassermann Reaction.*
4. KOCH, M. *Experimental Syphilis of the Testis in Rabbits by Means of Inoculations with Products from Congenital Syphilis.*
5. ARNDT, G. *Concerning the Proof of the Presence of Tubercle Bacilli in Lupus Miliaris and Acnitis.*
6. SCHULTZ, W. *Blood Transfusion in Man in the Light of Biological Experiments.*
7. FISCHER, G. *Studies in Hemolysis.*
8. OPPENHEIM, E. H. *A Case of Extradural Spinal Suppuration.*
9. STERN, H. *Obesity in the Period of Youth.*
10. FLEISCHER, F. *Turgosphygmography or Sphygmography?*
11. DAVIDSOHN, F. *Protective Contrivances in the X-Ray Laboratory.*
12. SAMSON, J. W. *The Newer Surgery of Lung Tuberculosis.*

1. The author makes an urgent plea for a wider use of the hand in obstetrics. This is particularly for the general practitioner. He points out the ease with which these simple maneuvers can be accomplished, and what great aids they are in handling difficult cases. The article is illustrated with several diagrams.

2. This paper goes quite fully into the technic of preparing Ehrlich's "Preparation 606." The author also reports a case of apparent cure of congenital syphilis. [J. L. H.]

Miscellany.

WILLIAM JAMES, M.D., LL.D.

A Tribute.

The death of William James — honored teacher, charming companion, loyal and generous friend — calls out a surge of feelings, some of which deserve especial mention in this journal. Dr. James was, above all things, a lover of his fellowmen and deeply sympathetic with them in their troubles, all the more so because of his medical training and affiliations, and made himself beloved in turn by friends and followers of many lands. With all the warmth of a very warm nature, he cared that every one whose needs were known to him should have his best chance — the chance to set himself free, to choose for himself, to develop on his own lines. He rated, indeed, individual liberty and individual development so high that he was always ready to break a lance in their defense at the cost of personal sacrifice, even when in so doing he incurred the censure of many an honored colleague.

Another dominant feature of his character, akin to this and related also to his hatred of everything savoring of tyranny, was his quickness to detect what seemed to him false notes of over-confidence in many schemes, political, intellectual or moral, that claimed to be of universal application, and if he thought it right, he would oppose them, no matter what their age or dignity or by whom supported. Perhaps his remarkable ability trenchantly to expose the flaws in others' reasoning increased his power to see such flaws, but certainly he had an ingrained disbelief in any one's ability to discover any truth so important for mankind as the truth that every one is bound to keep his own vision clear and his own will free. Thus James the man explains and illustrates James the philosopher. Filled with the love of mankind, or, rather, men; ready to advocate unpopular causes; believing that every one should make himself, his own character, opinions, temperament even, count as active forces; suspicious of absolutism under every form, it is not strange that he should have marched, a welcome ally, under the banners of "humanism," "pluralism," "pragmatism," of "free thought" in the best sense. It would be out of place to discuss here the merits of his philosophic views, still less to do what he has never done, — pronounce them final. But they have accomplished what he wished of them, — they have made all men think and helped many men feel a man's glow of manliness and courage. I well recall hearing him state comparatively recently, and with great earnestness, that the results he had achieved were, in kind, the results that he had wished always to achieve; that (in effect) he asked no more than to be able, by dint of personal weight and by striking a note appropriate to his day and period, to accentuate some wholesome and immediately viable and vital tendency in the thinking world.

For this service at least, and because in his devotion to this mission he brought to so many doubting minds a fuller sense of freedom, Dr. James should be honored by physicians and claimed as a colleague of first rank.

The physician's work is primarily among individuals needing help. And among such individuals in the intellectual world, many of them stunted and unknown, Dr. James moved about like a torch-bearer, calling to one and another, "If you have anything to say on which you are willing to stake yourself, follow me and I will help you to be heard."

James J. Putnam, M.D.

Boston, Aug. 30, 1910.

Correspondence.

TREATMENT OF COMPOUND FRACTURES IN THE SOCIETY ISLANDS.

Boston, Aug. 23, 1910.

Mr. Editor: The medical historian should be a general reader for he will glean much valuable information which is not to be found in the ordinary paths of medical historical research. Having read this summer that most interesting work entitled "A Voyage to the Pacific Ocean; for Making Discoveries in the Northern Hemisphere," by Capt. James Cook, F.R.S., and Capt. James King, LL.D. and F.R.S., four volumes, New York, 1796, I came upon the following rather remarkable description of the treatment of compound fractures by the indigenous physicians of the Society Islands. This voyage was undertaken by Captains Cook, Gore and Clerke in the years 1776 to 1780; consequently this method of treatment was practised by the savages at least one hundred and fifty years or more ago.

In Volume II, Book III, "*On Occurrences at Otaheite and the Society Isles*," Chapter IX, describing the customs and habits of the natives, is to be found the following paragraph:

"In the arts, they are extremely deficient; yet they pretend to perform cures in surgery which our knowledge in that branch has not enabled us to imitate. Simple fractures are bound up with splints, *but if a part of the bone be lost, they insert between the fractured ends a piece of wood made hollow, to supply its place. The "rapaoo," or surgeon, inspects the wound in about five or six days, when he finds that the wood is partly covered by the growing flesh; and, in as many more days, visits the patient a second time, when it is generally completedly covered; and, when he [the patient] has acquired some strength, he bathes in the water and is restored.*"

The italics are mine.

Very truly yours,

Charles Greene Cumston, M.D.

REQUEST FOR POLIOMYELITIS MATERIAL.

The Rockefeller Institute for Medical Research.

New York, Aug. 24, 1910.

Mr. Editor: I would be greatly indebted to you for any assistance that you could render me through the columns of your journal in enabling us to secure specimens of the nervous system from fatal cases of epidemic poliomyelitis, a disease which is widely prevalent throughout the United States and Canada at the present time. We should like to obtain portions of the spinal cord and, by preference, of the lumbar or cervical enlargement, removed as soon after death as possible, and preserved in plenty of pure glycerine, either Squibb's or Merck's or Kahlbaum's, which specimens are to be used for experimental purposes. The specimens can be sent by express at our expense, or by mail addressed to me at the Rockefeller Institute, 66th Street and Avenue A, New York City.

Yours very truly,

Simon Flexner, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 20, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,342	520	Waltham	6	4
Chicago	630	234	Pittsfield	9	3
Philadelphia	—	—	Brookline	7	1
St. Louis	—	—	Gloucester	8	2
Baltimore	—	—	North Adams	9	3
Cleveland	—	—	Northampton	3	1
Buffalo	—	—	Chicopee	5	3
Pittsburg	—	—	Medford	5	4
Cincinnati	—	—	Beverly	4	3
Milwaukee	—	—	Leominster	4	1
Washington	—	—	Hyde Park	4	2
Providence	—	—	Melrose	6	1
Boston	232	78	Newburyport	2	—
Worcester	49	16	Revere	1	1
Fall River	53	32	Westfield	5	2
Cambridge	27	6	Woburn	7	1
Lowell	40	15	Peabody	—	—
New Bedford	40	19	Marlboro	6	1
Lynn	24	7	Attleboro	5	4
Springfield	30	16	Adams	5	2
Lawrence	40	26	Clinton	3	1
Somerville	18	4	Gardner	6	2
Brockton	13	4	Milford	4	2
Holyoke	19	11	Watertown	3	1
Malden	16	8	Plymouth	—	—
Chelsea	7	1	Southbridge	4	3
Newton	10	4	Weymouth	—	—
Salem	14	5	Framingham	6	1
Haverhill	22	10	Wakefield	—	—
Fitchburg	—	—	Webster	5	2
Everett	7	2	Arlington	3	2
Quincy	—	—	Greenfield	0	0
Taunton	24	18			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE FOURTEEN DAYS ENDED AUG. 24, 1910.

PETTUS, W. J., assistant surgeon-general. Granted one month and fifteen days' leave of absence from Aug. 29, 1910.

COFER, L. E., assistant surgeon-general. Granted six days' leave of absence from Aug. 22, 1910.

MEAD, F. W., surgeon. Granted thirty days' leave of absence from Aug. 23, 1910.

WHITE, J. H., surgeon. Granted one month's leave of absence from Aug. 17, 1910.

WILLIAMS, L. L., surgeon. Granted seven days' leave of absence from Aug. 11, 1910, under paragraph 189, Service Regulations.

GUITERAS, G. M., surgeon. Leave of absence for four days from Aug. 9, 1910, amended to read three days from Aug. 9, 1910.

STIMPSON, W. G., surgeon. Leave of absence for twenty days from Aug. 11, 1910, amended to read six days from Aug. 11, 1910.

SPRAGUE, E. K., surgeon. Granted one month's leave of absence from Aug. 28, 1910.

WICKES, H. W., surgeon. Leave of absence for one month from July 15, 1910, amended to read twenty-four days from July 15, 1910.

ANDERSON, JOHN F., passed assistant surgeon. Granted one day's leave of absence, Aug. 20, 1910, under paragraph 189, Service Regulations.

FOX, CARROLL, passed assistant surgeon. Granted ten days' leave of absence en route to station.

MCCLINTIC, THOMAS B., passed assistant surgeon. Granted seven days' leave of absence from Aug. 15, 1910, under paragraph 191, Service Regulations.

GWYN, M. K., passed assistant surgeon. Granted ten days' leave of absence from Aug. 28, 1910.

FOSTER, A. D., passed assistant surgeon. Directed to proceed to New Orleans, La., and report to the medical officer in command for duty and assignment to quarters. Aug. 15, 1910.

LANZA, A. J., assistant surgeon. Granted seven days' leave of absence from Aug. 14, 1910.

MARSHALL, E. R., assistant surgeon. Granted twenty-one days' leave of absence from Sept. 14, 1910.

KRULISH, EMIL, assistant surgeon. Granted one month's leave of absence from Aug. 16, 1910.

DUFFY, BENEDICT J., assistant surgeon. Directed to report to the medical officer in command at Buffalo, N. Y., for duty. Aug. 12, 1910.

CLEAVES, F. H., acting assistant surgeon. Granted fourteen days' leave of absence from Aug. 7, 1910.

GLEASON, C. M., acting assistant surgeon. Granted fourteen days' leave of absence from Aug. 15, 1910.

MACCALLUM, CHARLES, acting assistant surgeon. Granted thirty days' leave of absence from Aug. 12, 1910.

SCHUSTER, B. L., acting assistant surgeon. Granted four days' leave of absence from Sept. 1, 1910.

WRIGHT, F. W., acting assistant surgeon. Granted twelve days' leave of absence from Sept. 1, 1910.

THURSTON, E. J., pharmacist. Granted two days' leave of absence from Aug. 15, 1910, under paragraph 210, Service Regulations.

HERTY, F. J., pharmacist. Granted five days' leave of absence from Aug. 16, 1910, under paragraph 210, Service Regulations.

RYDER, L. W., pharmacist. Granted one day's leave of absence, Aug. 20, 1910, under paragraph 210, Service Regulations.

APPOINTMENT.

DR. BENEDICT J. DUFFY commissioned (recess) an Assistant Surgeon in the Public Health and Marine-Hospital Service, Aug. 5, 1910.

PROMOTION.

WICKES, HENRY W., passed assistant surgeon. Commissioned a surgeon (recess), to rank as such from Aug. 3, 1910.

BOARD CONVENED.

Board of medical officers convened to meet at the Marine Hospital, Memphis, Tenn., Aug. 22, 1910, to determine the fitness of Pharmacist C. R. Ott for promotion to the grade of Pharmacist of Class 2. Detail for the Board: Surgeon P. C. Kalloch, chairman; Acting Assistant Surgeon S. P. Brooks, recorder. Aug. 16, 1910.

RECENT DEATHS.

AMORY, ROBERT, M.D., M.M.S.S., retired, died in Nahant, Aug. 27, 1910, aged sixty-eight years.

CUMMINGS, IRVING OSCAR, M.D., M.M.S.S., died in Brewster, Aug. 2, 1910, aged forty-two years.

DR. JOSEPH J. HULL, of New York, retired, died on Aug. 26, in the seventy-seventh year of his age. Dr. Hull had been incapacitated for some years by ill-health, but formerly was a prominent practitioner and very highly esteemed.

Original Articles.

INDICATIONS FOR ABDOMINAL HYSTERECTOMY.

BY W. P. GRAVES, M.D., BOSTON.

In order to illustrate the various indications for the operation of abdominal hysterectomy, I have selected from my hospital and private practice a consecutive series of one hundred cases, which represent fairly well most of the conditions which require this operation. A discussion of this subject is not out of place on account of the very considerable difference of opinion that exists among surgeons regarding the advisability of hysterectomy in certain pelvic conditions. It affords also an opportunity for an expression of opinion regarding the comparative merits of the abdominal and vaginal route.

A classification of the cases arranged according to pathological conditions follows:

Pelvic inflammation,	35
Fibroids,	35
Cancer of uterus,	12
Ovarian disease,	10
Dysmenorrhea and neurasthenia,	3
Septic uterus,	2
Tuberculosis,	1
Atresia of cervix,	1
Menorrhagia at menopause,	1

GENERAL CONSIDERATIONS.

In deciding on the advisability of any given operation, it is always necessary to consider both the danger of the operation itself and the complications which may possibly ensue. The danger to life in the average operation of hysterectomy is not a particularly serious one, as is shown by the fact that in this series of one hundred cases there was only one death, which occurred in a case operated on for septic uterus, the patient having at the time of the operation an extensive peritonitis which would have proved fatal without operation. Shock and hemorrhage should occur only in operations of great gravity, as, for example, in advanced cancer or in conditions of very extensive adhesions. Only four of the cases in this series required stimulation for shock either during or after operation; one of these was an advanced cancer of the cervix in an old woman; one was a case of an enormous cystic fibroid occupying the entire abdomen with extensive adhesions; one was a case of an adherent primary carcinoma of the ovary, and one was a case of extensive pelvic inflammatory disease.

The accidents which may happen, aside from hemorrhage and shock, are represented by the following: In two cases one of the ureters was cut. One of these cases was the large cystic fibroid mentioned above and the accident was unavoidable. About three inches of the ureter was removed, the proximal end being tied above the brim of the pelvis. The patient had suppression of urine for thirty-six hours, but made a complete recovery without further symptoms. In the other case, a large fibroid, the ureter had been drawn out of position by the growth well up on the side of the fibroid; the ureter was included in the clamp on the uterine artery and cut, an accident which should have been avoided. An end-to-end anastomosis was performed, and the patient made an excellent recovery excepting for a temporary cystitis. In two cases of cancer of the cervix where the disease had infiltrated the bladder wall, the bladder was opened and partially resected; both cases resulted in a vesico-vaginal fistula, one of which healed spontaneously; the accident in these two cases was unavoidable. In one case of a large fibroid the bladder which was adherent to the anterior portion of the fibroid was accidentally opened; the rent was repaired and the patient made an uneventful recovery excepting for a temporary cystitis; the accident in this case should have been avoided.

The complications which may follow hysterectomy are represented by the following. Three cases had an infiltration of blood in the broad ligament, which caused some discomfort for several weeks following the operation. This complication is due either to a careless tying of the uterine and cervical vessels or to an extensive bleeding surface between the leaves of the broad ligament so that it is necessary to close the peritoneum over an oozing dead space. One patient developed an abscess in the broad ligament following operation for purulent pelvic inflammatory disease. The abscess was opened by a vaginal puncture and the patient recovered. Vesico-vaginal fistula occurred in two of the cancer cases, one of them healing spontaneously. Cystitis occurred in the two fibroid cases mentioned above, namely, one where a cut ureter was anastomosed and one where the bladder was wounded. One patient had pleurisy from which she recovered, and three cases had stitch abscesses, two of them being cancer of the cervix cases.

ACCIDENTS DURING THE OPERATION.

Operative shock,	4
Cut ureter,	2
Wound of bladder,	3

COMPLICATIONS FOLLOWING OPERATION.

Blood infiltration of broad ligament,	3
Abscess of broad ligament,	1
Vesico-vaginal fistula,	2
Cystitis,	2
Pleurisy,	1
Wound sepsis,	3
Deaths,	1

With regard to the question of the comparative merits of the abdominal and vaginal route, I am unqualifiedly in favor of the abdominal route for practically all cases. The cases in which shock and injury to the bladder and ureters took place could not have been performed by the vaginal route, and, with the exception of the three cases of stitch abscess in the abdominal wound, the convalescence of the other cases, where vaginal hysterectomy may have been possible, could not have been improved by a vaginal operation. The comparative merits of the vaginal and abdominal route in cancer cases will be discussed later. In cases of fibroids of the uterus it is desirable, when-

ever possible, to perform a supravaginal hysterectomy, which is a much less dangerous operation than a complete hysterectomy and one by which the pelvis can be left in a much more nearly normal condition by suturing the stumps of the round ligaments to the stump of the cervix and then covering over with peritoneum. The pelvis is left in a very natural anatomical relationship and absolutely prevents any possible future prolapse of the cervix and vagina, a complication which is extremely likely to occur after a hysterectomy if the pelvic floor is not supported in some such way. All these advantages are more or less lost by operating by the vaginal route. Vaginal hysterectomy for extensive pelvic inflammatory disease is for the most part not to be considered. The only cases in the entire series where I consider that the vaginal route might have been preferable were the two cases of septic uterus.

CHRONIC PELVIC INFLAMMATION.

The question between a supravaginal hysterectomy and a conservative operation in cases of pelvic inflammatory disease is one of importance on account of the great difference that exists in the ultimate condition of health following the two operations. It may be said at the outset that supravaginal hysterectomy for chronic inflammatory disease is almost always followed by an early and complete cure of symptoms and is one of the most satisfactory in its results of gynecological operations. Conservative surgery in chronic pelvic inflammatory disease, on the other hand, is one of the most unsatisfactory of pelvic operations, for although a certain percentage of even the most severe cases thus treated get well, nevertheless a very considerable number begin again, after a few months of relief of pain, to have pelvic distress, and continue for years in a state of chronic invalidism unless cured by the radical operation. It is not uncommon to see women who have undergone two or even three conservative operations that consisted of resections and releasing of adhesions still suffering vague pelvic discomfort with all the severe nervous symptoms which invariably accompany this disease. It is not the scope of this paper to investigate the pathology underlying the recurrence of symptoms following the conservative operation. In fact, the pathology is not perfectly clear, for although in the majority of cases adhesions reform with corresponding misplacement and immobilization of the organs, nevertheless I have on several occasions found the pelvis completely free from adhesions and the organs remaining from a previous operation in perfect position and yet have effected a complete cure of distressing symptoms by hysterectomy. It can only be said that the damage once done by gonorrheal infection to the pelvic organs is not easily repaired by a breaking up of adhesions and a removal of portions of the organs, but that the injury is often so deeply seated in the tissue of the organs that a symptomatic cure can only be effected by extirpation.

Nevertheless many cases of chronic pelvic inflammatory disease present themselves where the radical operation is out of the question, and where the surgeon must make the best of conservatism. Such cases comprise unmarried girls, young women about to be married or recently married, women whose chief complaint is sterility and women who either themselves or whose husbands object from sentimental reasons to the complete removal of the pelvic organs. The question of childbearing is the one on which the decision usually hinges. As a matter of fact, the woman whose pelvic organs have been even mildly infected with gonorrhea is in most cases doomed to sterility, yet pregnancies have followed reparative operations where the tubes have been completely occluded, and in cases like the above it is the surgeon's duty to improve every chance to restore to a sterile woman her lost function.

In making a decision as to the best procedure in a case of chronic inflammatory disease, I usually adopt the following rules:

1. In young women married or single the first operation should always be conservative unless the disease is so far advanced as to have destroyed both ovaries, in which case a removal of all the organs is indicated.

2. In young women where the conservative operation has been given a full trial without success, and the patient's usefulness is greatly impaired by her condition, hysterectomy is indicated.

3. In middle-aged women who have healthy children, hysterectomy is indicated unless the disease is slight or unless the patient is desirous of having more children.

4. In women beyond the childbearing age hysterectomy is always indicated.

The operation. — Supravaginal hysterectomy for pelvic inflammatory disease, though in many cases a difficult one to perform, is usually followed by a surprisingly good convalescence, apparently due to the immunity which the pelvic peritoneum has gained from its long combat with infection. The difficulty of the operation lies in the release of the pelvic adhesions. Facility in breaking up these adhesions is, however, soon acquired, if it be remembered that it can most easily be done by starting at the bottom of the plevis and working upwards, great care and patience being necessary when the intestines or bladder are involved. I have not yet found it necessary to resort to Kelley's method of bisection of the uterus.

Drainage is not usually necessary, but should always be employed if there is any doubt. Drainage, if used, should in most cases be through the posterior wall of the vagina.

ACUTE PELVIC INFLAMMATION.

Cases of acute salpingitis in the first attack, which demand immediate operation, do not as a rule require hysterectomy, as in most cases the ovaries are not damaged. These cases with proper drainage after a conservative operation often clear up with surprisingly few adhesions and make complete cures, though many do not. In the case of a chronic salpingitis with acute exacerbation the patient can in most cases be

kept in bed under local treatment until the process subsides, when the operation can be safely performed, and the method of operating carried out according to the rules laid down for chronic inflammatory disease.

FIBROIDS.

In cases of large or bleeding fibroids the indication for hysterectomy is perfectly obvious. In cases of small symptom-giving fibroids in childbearing women the indication for myomectomy is equally obvious if the fibroids can be easily enucleated. It should, however, be remembered that an extensive myomectomy is a more dangerous operation than a supravaginal hysterectomy and that any considerable mutilation of the uterus is inadvisable. The treatment of small or medium-size symptom-giving fibroids discovered at an age near or after the menopause is a matter involving considerable difference of opinion among practitioners. The old idea that fibroids atrophy after the menopause is still quite prevalent, and is largely the basis of the difference in opinion with regard to surgical treatment. Personally I have never observed the diminution or disappearance of a fibroid after the menopause, and I am inclined to ascribe many of the statements of such a process to faulty observation; on the other hand, it is a common experience to see fibroids increase after menopause. The possibility of a fibroid becoming sarcomatous later in life is something always to be borne in mind, although this pathological change is a rare one. It is much commoner to find an adenocarcinoma developing in the endometrium where the uterine fibroids are of long standing. These carcinomata are of a malignant nature, and recent observation shows that this condition occurs much more frequently than was formerly supposed. Of the thirty-five cases of fibroids represented in this paper, three harbored a well-developed adenocarcinoma in the uterine canal. There are numerous other forms of degeneration of a more or less dangerous nature, which it is not within the scope of this paper to discuss. The most important factor to consider, however, is the prolonged and exhausting menopause which even small fibroids may produce, with the resultant anemia, nervous exhaustion, etc. My rule is to perform supravaginal hysterectomy in all cases of fibroids which cause symptoms near or after the menopause or which show signs of development. In the case of small fibroids which do not give symptoms, operation is not necessary provided the patient presents herself for examination two or three times each year. Most fibroids may be removed by a supravaginal amputation, which is easier to perform and considerably less dangerous than the complete operation, which involves the removal of the cervix. In all cases the stumps of the round ligaments should be attached to the cervical stump in order to prevent a future prolapse of the cervix and vagina, which is a distressing complication and one which may easily occur even in women who have not borne children. A glance at the table of complications shows that there is little danger to the operation excepting in the severest cases.

CANCER OF THE UTERUS.

Squamous-cell carcinoma of the cervix and adenocarcinoma of the body of the uterus are two such widely different diseases that it is necessary to consider them under two headings. The difference in the two forms of uterine cancer is only one of the many manifestations that show that the cervix and body, though ostensibly belonging to the same organ, nevertheless are histologically, pathologically and physiologically two distinct organs.

Carcinoma of cervix. — In the treatment of this disease more than in any other does the debate between the supporters of the vaginal and abdominal routes deserve consideration. Excellent results by the greatest exponents of these two methods, namely, Schauta and Wertheim, are frequently presented. The claims for the two methods may be briefly summarized thus. Wertheim urges that by the abdominal route a greater field for operation is secured. Infected glands along the iliac veins may be dissected out, a greater percentage of operability is possible and a higher percentage of cures can be demonstrated. Schauta, on the other hand, claims for the vaginal route a smaller operative mortality and less danger to the urinary tract, stating also that cases which cannot be reached by the vaginal route are inoperable by any method. Wertheim's statistics, which are models of painstaking accuracy and fairness, are most convincing.

The question of the percentage of operability in cases of cancer of the cervix presenting themselves for treatment is one that is dependent largely on the skill and experience of the surgeon. Wertheim has within the last ten years increased his percentage of operability enormously, while decreasing his primary mortality and increasing at the same time the percentage of permanent cures. These figures can only be explained by a very great increase in operative skill in the performance of a large number of operations. So long as surgical intervention is the only possible available cure for cancer, the example of work like Wertheim's is a most inspiring one. In general, the question of attacking cancer of the cervix by a radical operation is the same as that when referred to cancer in any other part of the body. I believe it is the surgeon's duty to undertake a radical cure, where there is a possible chance of extirpating the disease, bearing in mind that not infrequently cases of hopeless appearance either get well or have long periods of health and comfort before recurrence. The authentic instances of a spontaneous cure of cancerous tissue left behind from an incomplete operation are also a matter of encouragement in the more desperate cases.

The operability in cases of cancer of the cervix has been enormously increased for the general surgeon by Wertheim's work. He has demonstrated the possibility of removing a large amount of parametrial and paravaginal tissue with little

danger to the ureters and with perfect control of the formerly troublesome vaginal plexus of veins.

In deciding the operability of a given case, one usually considers the amount of invasion by the disease of the vagina, the bladder and the broad ligaments. If the vaginal wall is invaded, and there is some mobility of the uterus, the surgeon must decide the question of operation by his individual ability and skill in removing the vagina. If the bladder is involved and there is mobility of the uterus, it may be remembered that considerable portions of the bladder may be resected without serious results. If the broad ligaments are invaded, the mobility of the uterus is diminished. The amount of mobility of the uterus constitutes, therefore, the chief factor in making the decision as to operation. Before relegating a case with an immobile uterus to the list of inoperability it should be remembered that a large evertent growth from the portio vaginalis may mechanically cause immobility of the uterus, and that when the mass is curetted away the uterus is in reality sufficiently movable to indicate operation. In some cases, also, the thickening of the parametrium may be due to an old pelvic inflammation or an inflammatory reaction from the cancer itself. A decision as to the operation should, therefore, not be made until the excrescent growth in the cervix has been curetted. If there is still doubt as to the operability it is fairest to the patient to open the abdomen and make the final decision by intra-abdominal inspection and palpation. The presence of glands along the iliac vessels does not necessarily contra-indicate operation. Although this complication makes the prognosis of recurrence much less favorable, yet a permanent cure is possible even under these conditions, as is shown by Wertheim's figures.

The operation.—Sufficient time has not elapsed since the cases which are included in this series, and those which have been done since, to make any accurate statement with regard to ultimate cure, in accordance with the formula which Wertheim has laid down. It can be said, however, that, so far as I have followed the cases, the results have been, for the most part, very satisfactory and the operations well worth while. Two of the cases developed vesicovaginal fistulas, one of them healing spontaneously. There were no deaths in the series presented in this paper. This, however, is somewhat a matter of chance, as, of course, in advanced cases the operation is an extremely dangerous one and at best must be attended by a fairly large mortality. In the list of cases which I have operated on since the completion of the series reported in this article, I have had two deaths from operative shock, bringing the mortality in the neighborhood of 11%. I am indebted to Dr. H. T. Hutchins for the technical details of the Wertheim operation.

CANCER OF THE BODY OF THE UTERUS.

Adenocarcinoma of the body of the uterus, being one of the less malignant forms of cancer, offers an excellent opportunity for cure by hysterectomy unless extremely advanced. The diagnosis should always be made by microscope. The best operation is a complete hysterectomy by the Wertheim method, although it need be less extensive as there is usually no involvement of the vagina and rarely any extension into the parametrium. The operation is a comparatively safe one and should be attended by no serious complications. The prognosis as regards recurrence is excellent. The disease usually gives early warning of its presence by bleeding, so that in most cases patients come for operation before it is too late. The possibility of the occurrence of cancer of the body of the uterus should always be borne in mind in patients who bleed after the menopause. In this case the microscopical examination of curettings from the endometrium should always be made. It should be remembered that in the early stages the disease may be localized in a comparatively small area of the uterine canal, so that it is necessary to anesthetize the patient in order to perform a very thorough curetting, bearing in mind the fact that the starting point of the cancer is usually near one of the cornua. It is important, too, that the pathologist should examine *all* the curettings in a suspected case before making a negative diagnosis. When the disease is fairly obvious and the uterus is soft and pulpy the curettings for examination may sometimes be removed without ether.

OVARIAN DISEASE.

The question of performing hysterectomy in case of ovarian disease is sometimes one of much importance and one on which surgeons do not uniformly agree. I usually govern my decision in a given case by the rule that *whenever it is necessary to remove both ovaries, it is best also to remove the uterus.* Comparative observations of the later health of cases where this rule has been carried out, and where it has not, has convinced me beyond all doubt that when feasible the rule is to be recommended. The uterus minus the ovaries is a useless organ, and it would not be difficult to show from records that the presence of such a uterus is commonly the cause of more or less serious trouble. It is rare that a supravaginal hysterectomy adds greatly to the severity of an ovarian operation. In fact, it is usually the case in extensive double ovarian disease that the operation is much facilitated by the removal en masse of all the pelvic organs. These remarks apply to cases of extensive pelvic inflammatory disease and extensive pelvic tubercular disease, bilateral ovarian tumors whether malignant or not, and ordinary castration.

There still remains a series of cases where the decision may be of extreme importance, namely, in cases of unilateral ovarian tumors, the question being whether to remove the other ovary and, consequently, in accordance with the rule, the uterus also. In deciding this question, the knowledge of pelvic pathology is of great value to the surgeon.

When malignant disease occurs in one ovary,

I am accustomed always to remove the uterus and other ovary. The reason for this is that all ovarian tumors, especially the malignant forms, have a tendency to be bilateral, and that the development of the disease in the two ovaries may not by any means be contemporary. There is a case in the present series of a carcinomatous cyst of the ovary which developed thirteen years after the removal, by Dr. Davenport, of a carcinomatous cyst of the other ovary.

The rule of removal of all the pelvic organs in the case of unilateral ovarian cancer is a simple one if the malignant disease is perfectly obvious. It is not, however, always easy to tell by casual inspection whether or not an ovarian cyst is malignant. One may, however, be assisted by remembering a few pathological facts. Retention cysts of the ovary only very rarely become malignant and may be removed without disturbing the other pelvic organs excepting possibly by a partial resection of the other ovary in case it shows a tendency to cystic degeneration. The multilocular pseudo-mucinous cysts do not have a special tendency to become malignant, and may often be removed without disturbing the other organs in case the other ovary is normal. The serous cyst-adenomata, on the other hand, not only have a greater tendency to malignancy than does the pseudo-mucinous type, but they are also more apt to develop bilaterally. This latter fact is especially true when the cysts have apparently developed as a result of a chronic pelvic inflammation.

New growth cysts in middle-aged or elderly women are more apt to become carcinomatous than in younger women, and when they do become so the process is usually more malignant.

As a rule, the carcinomatous process starts on the inside of the serous cyst-adenoma, and a cyst which on the outside has an entirely innocent appearance may contain most dangerous contents, the spilling of a few drops of which in the abdominal cavity may lead to a rapid and malignant growth of seed cancers throughout the peritoneum. One of the cases in the series illustrates this fact. A very large serous cyst-adenoma was removed from a patient of middle age. Extensive adhesions made the operation so difficult that it became necessary to evacuate the cyst of its contents before the operation could proceed; although great care was used a few drops of the fluid leaked out around the trocar. The lining of the cyst appeared normal by gross inspection. Careful microscopical examination of the wall disclosed a beginning carcinomatous process. Several months after the operation there developed a most malignant carcinomatosis of the entire peritoneal cavity.

With these few pathological observations in mind, I am accustomed to adopt the following rules in making a decision as to the best operative procedure when the diagnosis of malignancy in a unilateral new growth ovarian tumor is not perfectly obvious.

1. In the case of new growth tumors of the ovary in middle-aged or elderly women, both ovaries and uterus should usually be removed, unless the tumor is obviously non-malignant.

2. When a unilateral serous cyst-adenoma has developed from a chronic inflammatory process, both ovaries and uterus should be removed.

In these cases the opposite adnexa are nearly always much damaged anyway so that a supravaginal hysterectomy with removal of both ovaries is usually clearly indicated according to the rules observed under the heading of chronic inflammation.

3. In the case of a woman in the childbearing age, when it is important to preserve the other ovary and uterus, unilateral retention cysts may always and unilateral multilocular pseudo-mucinous cysts may usually be removed without disturbing the other organs.

4. In the case of a unilateral serous cyst-adenoma, if it is non-adherent and the other ovary is normal, it may be removed without disturbing the other organs, if it can be shown in all probability to be non-malignant. It should, however, be removed *in toto* without spilling any of its contents no matter how large an incision is required. The trocar should be resorted to only when the mechanical difficulties of removing the entire cyst can be overcome in no other way. After the removal of the cyst it should be opened and the lining wall carefully inspected for cancerous excrescences.

DYSMENORRHEA AND NEURASTHENIA.

Patients occasionally present themselves who suffer such extreme dysmenorrhea that they do not recover between the periods. Nervous and mental symptoms ensue of such a character as to render the patient's life practically useless. All palliative treatment and repeated palliative operations are of no avail and serve only to discourage the patient still more. When every effort to relieve the patient has failed, castration is the only procedure left. In these cases I prefer a supravaginal hysterectomy rather than a removal of the two ovaries, experience having shown that the patient makes a better convalescence and is ultimately more comfortable than if carrying the uterus minus the ovaries. The results in the three cases reported in this series were very satisfactory.

SEPTIC UTERUS.

The indication of hysterectomy for a septic uterus is an extremely rare one, and should be resorted to only in extraordinary cases. One of the two cases recorded in this series was in this class. The patient had had an instrumental abortion performed, and carried a septic fetus and placenta for over a week; cleaning out the uterus did not affect a gradually rising temperature, pulse, and leucocytosis. There was no peritonitis and the sepsis seemed to be confined entirely to the uterus, which was very foul. As the patient was getting rapidly worse, a complete hysterectomy was performed followed by an excellent recovery. Microscopical examination showed the entire myometrium to be packed with pus cells.

The second case was a similar one, excepting that the patient had a peritonitis extending to the umbilicus. The idea of operation was prompted by the success of the case just cited. The patient was not helped and died. The operation in this case was probably ill-advised, though the patient would undoubtedly have died anyway. This was the only death in the series here reported.

COMPLETE PROCIDENTIA.

Of seventy-five cases that I have operated on for a complete procidentia, I have found only one which required a hysterectomy. As a rule, procidentia cases present an enormous hypertrophy of the cervix and with it an atrophy of the fundus; the greater bulk of the uterus is, therefore, included in the cervix. By performing a very high amputation of the cervix, the uterus is thus relieved of its weight, and the atrophied fundus may be made use of as a firm cap to the vagina, and may be employed as an excellent medium by which the vagina can be attached to the abdominal wall (modified vaginapexy). It may, however, happen that the uterus requires removal for some other cause, e. g., fibroids, carcinoma, or chronic congestion with enlargement of the fundus. The case recorded in this series was of the last-named type. In case there is a greatly hypertrophied cervix in addition to a large heavy fundus, it is easiest to perform a so-called combined hysterectomy. On account of the long attachment of the cervix to the bladder which would be difficult to separate from the abdominal side, the cervix is first stripped from the bladder and rectum by the vaginal route as far as the level of the uterine vessels. The patient is then placed in the Trendelenburg position, the uterine attachments tied and cut, and the uterus drawn through the vaginal introitus. The vagina is then attached to the abdominal wall by the so-called operation of abdominal colporrhaphy or vaginapexy.[1]

ATRESIA.

Cases of congenital and acquired atresia of the vagina may usually be cured by the various plastic devices which have been described by me elsewhere.[2] When, however, the atresia or stricture extends to or occurs in the cervix of a menstruating uterus, palliative measures fail, and it is impossible to keep the cervical canal patent by plugs, stem pessaries or any form of plastic surgery. It becomes necessary then to stop mentruation. This can be done either by removing the ovaries and leaving the uterus, or by removing the uterus and leaving the ovaries. The latter is the procedure to be recommended as the uterine contents are usually infected after the various attempts to keep the cervix patent. In removing the uterus, it is not necessary to do a complete hysterectomy, but the cervical mucous membrance should be removed by a cone-shaped incision because of the fact that the glands of the cervix are of the mucous type, and may continue to secrete a certain amount of mucus after the removal of the fundus.

EXCESSIVE FLOW AT THE MENOPAUSE.

The underlying cause of the prolonged exhausting menorrhagia which some women experience at the climacteric age has not yet been satisfactorily explained. The cause most commonly ascribed to it is a chronic gland hypertrophy of the endometrium. Although this condition is usually found in the microscopical examination of the curettings of such cases, nevertheless it is not always so. Some cases are benefited or cured by a curetting. It sometimes happens, however, that even repeated curettings have no effect whatever, and that after many months the patient becomes extremely anemic, and with associated neurasthenic symptoms often of a severe type. The various uterine drugs are practically useless. In a case of this kind when every possible effort in the way of palliative treatment has been made and found ineffectual, the indication is clearly operative. The best operation is a supravaginal hysterectomy with a removal of the ovaries. The alternative operation of removing a wedge from the fundus of the uterus, including the endometrium, has no advantages over hysterectomy either in simplicity or in lessened danger to the patient.

TUBERCULOSIS.

In many cases of tubercular salpingitis the process is found to be almost entirely localized in the tubes, in which case a double salpingectomy is all that is necessary, the prognosis as to further extension in the pelvic peritoneum being extremely good. Extensive tuberculosis of the pelvis, on the other hand, is a serious and difficult condition to treat surgically on account of the tremendous formation of adhesions, and the tendency of these adhesions to bleed on being separated. The indication in this case is a painstaking release of all the pelvic organs from adhesions, followed by a complete hysterectomy and drainage through the vagina.

[1] See American Practice of Surgery, vol. vi.
[2] *Ibid.*

TWENTY-ONE CASES OF ACUTE PANCREATITIS.

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ACUTE pancreatitis was comprehensively described for the first time in 1889, when Fitz, in the Middleton-Goldsmith Lecture before the New York Pathological Society, classified all cases as either hemorrhagic, gangrenous, or suppurative. Since that time, the work of almost every investigator in this field has been based upon this classification. Mayo Robson, however, describes parenchymatous pancreatitis (as distinct from catarrhal pancreatitis) as acute, subacute or chronic. Under the head of acute pancreatitis he places the hemorrhagic type, divided into ul-

tra-acute and acute, the gangrenous type and the diffusely suppurative type. Abscess of the pancreas, which he places in a subacute class, was, nevertheless, found in one of our cases (Case 20) one day after the onset of the symptoms. He distinguishes between the ultra-acute hemorrhagic type, in which hemorrhage precedes inflammation, and the acute hemorrhagic type, in which the order is reversed. This seems a very subtle distinction, one which is rather difficult to make on the operating table. He found two cases, however, which presented the picture of pure hemorrhage and which perhaps justified the subdivision of acute hemorrhagic pancreatitis which he made.

Pathological findings show the leading lesion of all acute pancreatitis to be hemorrhage, gangrene or suppuration. We have looked up all cases proved by autopsy or operation to belong to one of these classes which have occurred at the Massachusetts General Hospital since 1889, and at the Faulkner Hospital since 1902. Twenty one in all, 18 from the Massachusetts, 3 from the Faulkner, were collected. Of these 21 cases, 16 were hemorrhagic, 3 gangrenous, 1 suppurative, and there was 1 case (Case 21) which in the course of two operations showed characteristics of all three types. Eleven cases were men, 11 women. The ages were

	Cases.
From 20 to 30 years,	3
From 30 to 40 years,	5
From 40 to 50 years,	7
From 50 to 60 years,	4
60 years,	1
70 years,	1

Gangrenous pancreatitis is a late development of the hemorrhagic disease. Since the three gangrenous cases and Case 22 began with the hemorrhagic form, and since sixteen of the twenty-one cases were hemorrhagic when seen, it is fair to say that the great majority of all acute diseases of the pancreas begin with hemorrhagic inflammation. Experimental work has shown that a pressure of only a few centimeters of mercury is enough not only to dam the pancreatic secretion, but to force it back through the ducts from which it came. When thus pent in, the pancreatic juice and whatever fluid or infection is mixed with it either digests through or ruptures the walls of the minute ducts and spreads throughout the parenchyma. Once within the tissues, the pancreatic secretion causes their necrosis and corrodes the walls of the blood vessels. Infection, usually by the bacillus coli communis or staphylococcus, which exists in the stagnant secretion, causes an exudate to be formed in the interstitial tissue. From these factors, we get the pathological condition known as acute hemorrhagic inflammation of the pancreas. The process may involve the gland entirely or only in part. In the early stage the affected portion is enlarged, hard and of deep red color. In one case (Case 11) blood was seen oozing from the surface of the pancreas. Somewhat later, the very acute engorgement subsides; the gland is still enlarged, but not so hyperemic. On section, the tissue is streaked or mottled with red, or may be so full of extravasated blood as to present a uniformly reddish surface. Frequently small areas of cloudy, grayish, necrotic-looking tissues are seen, and these may continue to soften until they contain a purulent or blood-stained fluid. Microscopic examination shows blood extravasated between the lobules, a cellular and fibrino-cellular exudate in the interstitial tissue, and "the fat cells empty or appearing as a fibrinated mesh-work of fine granular material, bacteria and acicular fat crystals." (Fitz.)

In almost every case of hemorrhagic pancreatitis the fat about the pancreas is studded with areas of fat necrosis. These spots, first connected with pancreatitis by Balser in 1882, are only a few millimeters in diameter and are due to the alteration of the fat by the escaped pancreatic juice into fatty acids and glycerine. They are white, not elevated, and under the microscope are seen to consist of acicular crystals of fatty acids. It is probable, as has been suggested, that the fat-splitting ferment is conveyed to them through the lymphatics, for in one of our cases (Case 2) they were found on the upper surface of the diaphragm and in the mediastinum, and in another case (Case 13) they occurred in the subpleural fat as high as the top of the pleural cavity.

Hemorrhagic pancreatitis has been attributed to various causes. Fitz thought that people with gastric or gastro-duodenal indigestion were most liable. In only two of the cases we collected was previous digestive trouble mentioned. Opie and Robson regard pathological conditions in the bile ducts a probable etiological factor. A number of experiments along this line have been carried out, perhaps the most final of which are those of Flexner. He found that bile salts were a possible cause of hemorrhagic pancreatitis, and that the fresher the bile, the more acute their effect. If, on the other hand, the bile was altered by the admixture of colloid material such as is yielded by catarrh of the biliary passages, it caused in the pancreas a much more chronic change. A possible method by which bile might cause acute pancreatitis is illustrated by a case of Halsted's quoted by Opie. A small biliary calculus was found in the orifice of the ampulla of Vater, completely blocking the exit of bile, yet not large enough to prevent bile from passing from the common duct into the duct of Wirsung. In one of our cases (Case 12), a similar condition, in which the mucosa of the pancreatic duct was coated with greenish-tinged mucus, was discovered. In another (Case 13) the orifice of the ampulla was occluded by a tenacious plug of mucus. In a third case (Case 1) the common duct was dilated to the size of the little finger, and in the duodenum, apparently just passed, lay a gallstone the size of a hickory nut. As Opie has pointed out, however, the exact anatomical conditions under which a gallstone may convert the common duct and the pancreatic duct into a continuous channel occurs in but "a small proportion of cases."

It is possible, as has been suggested, that edema about the papilla may cause the bile to enter the

duct of Wirsung, or perhaps the orifice of the ampulla, dilated by the passage of the gallstone, admits the duodenal contents into the pancreatic duct. Certainly there is some relation between acute pancreatitis and gallstones. Opie collected a series of 41 cases associated with them. Deaver, in 6 cases of acute pancreatitis, found gallstones in 4. In our 17 cases of hemorrhagic pancreatitis, 6 had gallstones, 2 had thickened gall bladders, and in another the gall bladder could not be emptied by pressure and upon opening it a very dark, viscid bile was found. In 4 cases the condition of the bile passages was not mentioned. Thus 9 in 17 cases showed some evidence of biliary disease. Seven of these 9 cases gave a history of some kind of epigastric or right upper quadrant pain for months or years before their present illness. In another case the past history could not be obtained. The ninth case had had no pain previously. Of two of the cases with normal gall bladders, one had had epigastric pain without jaundice four or five times in as many months; the other had had occasional pain in the right hypochondrium for seven years.

Another possible cause of hemorrhagic pancreatitis, as shown by the experiments of Hlava, may be the entrance of hyperacid gastric juice into the pancreatic duct. A 0.1% solution of hydrochloric acid injected into the pancreatic duct of cats caused a hemorrhagic pancreatitis fatal in three days. The same result has been caused by the injection of fatty acids, of bacterial cultures and other solutions. In some cases, the ligation of the duct of Wirsung alone induced the disease.

Obesity and arteriosclerosis have been thought to predispose to this disease. In our 21 cases, obesity was mentioned in 5, arteriosclerosis in 3.

The general conclusion to be drawn from the foregoing data is that hemorrhagic pancreatitis is an acute disease of the pancreas which is almost always superimposed upon a chronic disorder of the stomach, duodenum or biliary tract.

In almost every account of the symptoms of acute pancreatitis, the description by Fitz is quoted verbatim. This is because no one can improve upon it in brevity, clearness or accuracy; we claim no more originality than the rest. The attack, Fitz writes, "begins with intense pain, especially in the upper abdomen, soon followed by vomiting, which is likely to be more or less obstinate, and not infrequently by slight epigastric swelling and tenderness with obstinate constipation. Normal or subnormal temperature may be present, and symptoms of collapse precede by a few hours death, which is likely to occur between the second and the fourth day."

To this picture the majority of cases of acute pancreatitis are true. In 17 of the 20 cases of hemorrhagic and gangrenous pancreatitis which we have collected, the manner of onset was described. In 13 it consisted of a sudden, griping pain in the epigastrium; in 4, it began more gradually. Upon admission to the hospital, of the 14 patients whose pain and tenderness were located more definitely than in "upper abdomen," 4 had their greatest suffering in the epigastrium alone, 1 in right hypochondrium alone, 6 in epigastrium and right hypochondrium, 1 in epigastrium and right iliac region, 1 in epigastrium and left hypochondrium, and 1, with a tumor across entire upper abdomen, complained of pain only in the left iliac region. In the 17 cases of hemorrhagic pancreatitis were noted vomiting in 11, distention in 7 and cyanosis in 4. Seven at entrance had a temperature of 100° or less; 3 between 100° and 101°, 4 above 101°. One (Case 9) had a temperature of 106.°5. The pulse-rates ranged from 70 to 140, only 3 being above 120. In 10 cases white counts varying from 7,400 to 38,000 were made. Although this series of 10 cases is far too small to allow of any generalizations, it is of interest that of the 5 cases with a leucocytosis of 20,000 or more, 4 showed abnormalities of the gall bladder. (The 3 other cases with biliary disease had no white count recorded.) Three of the acute hemorrhagic cases presented a tumor in the upper abdomen, in every case in the right hypochondrium; 3 others had slight jaundice, as evidenced by conjunctiva or by urine. Sugar was present in the urine of 3 while in the hospital.

In most of these cases, collapse, frequently with cyanosis, preceded a fatal termination. Eleven cases were operated upon within three days after the beginning of their acute attack. Of these, 7 died in from one and one-half hours to four days after operation; one lived and did well for twelve days, then developed an abscess about the pancreas and died about four weeks after the first operation. Of the recoveries, one has been well for three years after operation; another is living, although he has as much as 7% of sugar in his urine, seven years after operation, and the third, two months after operation, is well. Of the 6 unoperated cases in our series, none lived over eleven days. In the Massachusetts General Hospital records for the past twenty-one years, there is only one case recorded as recovering without operation.

To give non-operative treatment its entire due, we must admit that Case 14 recovered from acute pancreatitis without surgical intervention to aid that organ. He was operated on and his appendix was removed; then, through the presence of fat necrosis, pancreatic disease was suspected, the organ was palpated and found "somewhat thickened." He was sewed up tight, and, in spite of delirium tremens, made a good recovery. For two and one-half years he was in the full enjoyment of health; during the past three months, however, a persistent cough and steady loss of weight, perhaps due to incipient tuberculosis, have not improved his condition. As there may have been recoveries without operation which were not recognized as being acute pancreatitis, our figures are not absolute proof of the value of operative treatment.

As regards the pathological conditions present at operation or at autopsy, there is marked uniformity. In 17 cases of the hemorrhagic type the presence or absence of free fluid was recorded in 13, and of these 13 cases, 12 had free fluid. Fourteen

cases are on record as showing more or less disseminated fat necrosis.

In the diagnosis of acute hemorrhagic pancreatitis, the chief diseases to be differentiated are intestinal obstruction following concealed hernia or intussusception, perforation of the gall bladder, stomach or duodenum, or of a high appendix. There are practically no other abdominal crises which have the terrific onset of acute hemorrhagic pancreatitis. Intestinal obstruction, indeed, seldom has an equal acuteness of onset followed immediately by collapse. In pancreatitis the bowels usually can be made to move by enemata. The perforation of a hollow viscus, although it may occur with remarkable suddenness and very severe pain, causes a temporary collapse from which the patient very soon recovers. The signs of peritonitis then gradually increase, with a secondary collapse as their accompaniment.

The picture of typical acute hemorrhagic pancreatitis, distinguished by an agonizing pain, without corresponding tenderness, in the epigastrium; by feeble, slow pulse, normal temperature and persistent vomiting, and by a visible prominence in the epigastrium, is distinct from that of any other abdominal condition. If there is an abnormal amount of fat in the stools, causing a layer of oil to float above them, or if the Cammidge reaction is present in the urine, the diagnosis may be regarded as established.

The Cammidge test, advocated by Cammidge and Robson in 1904, depends upon the presence in the urine of an abnormal amount of pentose. Pentose is a constituent of many organs, but is present in the pancreas to a much greater extent (2.48%) than in any other. (The organ next richest in pentose contains only .56%.) The disintegration of any tissue rich in nucleoglycoproteids yields pentose, but practical tests have shown, according to J. E. Schmidt, that pneumonia and acute appendicitis with peritonitis are the only other diseases in which the reaction is common.

Robson and Cammidge, in 6 cases of acute pancreatitis, found the test positive in every case. The consensus of opinion drawn from the criticisms of Schmidt, Kinnicutt, Speese and Goodman and Ochsner is that, whereas a positive test in itself is not absolutely diagnostic of pancreatitis, it is "strongly suggestive" or "corroborative" evidence of inflammation and disintegration of pancreatic tissue.

This position is seriously undermined, however, by the work of Boos and Harmer, at the Massachusetts General Hospital. In a communication published in the BOSTON MEDICAL AND SURGICAL JOURNAL for June 16, 1910, they report the result of their investigations with the Cammidge test on a variety of diseases. They performed the test forty-seven times, and in no case with a leucocytosis of 13,500 or over did they fail to get a positive result. In most of these cases there was no possibility of pancreatic disease.

As regards the treatment of hemorrhagic pancreatitis, most writers advise against operation during the very acute stage, while the patient is in collapse. Fitz's opinion in 1889 was that operation in any case except one with abscess formation was useless. Reports of successful operations upon the acute hemorrhagic type since then have forced a modification of this dictum, and recently we find Ochsner advocating as early operation as possible. Granted that operating when an abscess is found is most desirable, it is certain that comparatively few cases live, if not operated upon, until that stage. It is equally sure that a certain number of cases will recover when operated upon during the first few days of the attack. We have collected three such cases, and in the literature are now reported a fair number of them.

The object of operating is to supply free exit for pancreatic secretion, and also to drain the infected tissues as in any other forms of diffuse inflammation. Von Mikulicz advocated free incision into the brawny, hyperemic gland. This was done in a case which Robson reports, and by C. A. Porter in Case 8; again, a surgeon of Salisbury, England, excised the affected portion of the head of the pancreas two hours after the onset of the attack. (The patient died fifteen days later of diarrhea, the record states.)

Gangrenous pancreatitis, save in its pathology, differs little from the hemorrhagic type. It is a later development of that type, hence the symptoms at the onset are those of hemorrhagic pancreatitis. If the attack has been of more than two weeks' duration, the symptoms will probably have decreased in severity. It may, however, be well within the limits of an acute attack, as in two of our cases in which, after nine and eleven days respectively, the pancreas was found to be partically or entirely necrosed. The diagnosis cannot be made without opening the abdomen except in those rare cases in which a portion of the gland, sloughing into the bowel, has been passed by rectum. Of the four cases which we collected, one, after a history of three months' illness, recovered from an operation at which the pancreas was found to be "more or less necrotic." Her subsequent history we have been unable to obtain.

Suppurative pancreatitis presents a somewhat different picture. It may consist of small abscesses throughout the gland, of a single abscess of the tissue, or of an abscess filling the omental bursa. It may follow acute hemorrhagic pancreatitis, as in Case 21, in which a sloughing pancreas was found floating in pus, or, as in Case 20, may be only a single abscess appearing one day after the first symptom.

This type is manifested by epigastric pain of rather gradual onset, accompanied by local tenderness, perhaps tumor formation, vomiting and a slight temperature. In one of our cases the white count was 21,600; in the other, 26,000. In neither case did free fluid or fat necrosis exist, and this, Fitz says, is usual in suppurative pancreatitis.

Operation in this class may be undertaken with good hope of recovery. The sooner the operation, the less will the pancreas be impaired.

CONCLUSIONS.

From the literature and the cases which we have looked up, we draw the following conclusions.

Almost all the acute diseases of the pancreas begin as an acute hemorrhagic inflammation, accompanied usually by free fluid in the peritoneal cavity and by disseminated fat necrosis.

Operation is the treatment indicated, unless the patient is in such severe collapse that the additional shock would surely be fatal.

The object of operation is to drain the pancreatic secretion and the products of infection; this is best done by incising the tissue of the gland, as advised by Porter, and by carrying the drainage through the gastro-hepatic omentum, close above the lesser curvature of the stomach.

CASES.

Acute Hemorrhagic Pancreatitis.

CASE 1. June, 1889. F. L., aged sixty, male.

Past history. — For three months had a sharp pain in epigastrium coming on two hours after meals.

Present illness. — Entered Massachusetts General Hospital with vomiting, normal temperature and very severe pain in epigastrium and left hypochondrium. Deep pressure in epigastrium elicited slight tenderness. He failed rapidly and died within a few hours. Before death, cyanosis and a prominence in epigastrium were noted.

Autopsy showed a fat man, slightly jaundiced. Six or eight ounces of free fluid in abdomen. Fat necrosis present. Head of pancreas was opaque, reddish-gray in color, tail was a grayish-pink. Throughout gland were spots and streaks of an opaque white and patches of thickened interstitial tissue. No thrombi in large veins. Surrounding fat tissue was moderately infiltrated with blood. Gall bladder contained more than one hundred stones. The common duct was distended to size of little finger and in duodenum was a gallstone the size of a hazel nut.

Diagnosis. — Acute hemorrhagic pancreatitis; cholelithiasis.

CASE 2. September, 1894. J. H., aged fifty-two, female.

Past history. — "Stomach trouble" for five years.

Present illness. — Two days before entering Massachusetts General Hospital she had a severe cramp in upper abdomen, and vomited. For a short time she was relieved, but the pain returned and continued up to the time she entered the hospital. Examination showed a very fat woman, cyanotic and dull. The abdomen especially in the epigastrium was much distended, very tense, and fairly tender. Temperature was 101°, pulse 110, white count 18,000. She died in three days, without operation, with delirium and a failing pulse.

Autopsy showed blood-stained fluid and fat necrosis in peritoneal cavity. The necrosis extended even along the upper surface of the diaphragm into the mediastinum.

Duct of Wirsung appeared normal. Pancreas was twice normal size, firm, dry, of dark, blackish-red color, mottled by opaque yellowish-red patches. No normal structure could be seen. Splenic vein was partly thrombosed. The urine showed 6.1% sugar.

CASE 3. November, 1894. H., aged seventy, male, clerk.

Past history. — Good.

Present illness. — Three days before entrance into Massachusetts General Hospital he noticed dull pain extending from epigastrium to right iliac fossa. This had continued, but had not been extremely severe. He vomited at the onset and had vomited every day since; the day before entrance vomitus was stercoraceous and his bowels did not move.

Examination showed an old man in good condition. Abdomen not distended. In right upper quadrant was a mass, flat on percussion. He was not operated upon, but gradually grew feebler, dying eight days after entrance.

Autopsy showed hemorrhagic pancreatitis. (Further details could not be found.)

CASE 4. August, 1895. C., aged forty-seven, female, dressmaker.

Past history. — For fourteen years she had pain in epigastrium radiating to back and right side. The attacks would end in vomiting and at times were accompanied by slight jaundice.

Present illness. — During five months before entrance she had had eight such attacks, usually occurring two or three hours after eating. Examination showed a tumor the size of an orange below right costal margin. She entered the Massachusetts General Hospital.

Operation showed a thickened gall bladder and general fat necrosis. A hard mass with adherent intestines was felt in the epigastrium. The abdomen was sewed up tight and the patient died three days later. There was no autopsy.

CASE 5. October, 1896. J. O., aged forty, male.

Past history. — Frequent flatulence. Digestion otherwise good. Never jaundiced.

Present illness. — Four days before admission to Massachusetts General Hospital he was seized with pain in upper abdomen, vomiting and distention. He became steadily worse. Examination showed a well-nourished but cyanotic man; abdomen extremely distended, with tenderness in epigastrium and dullness in right flank. Temperature, 105°. Pulse, 140. He died three hours after entrance.

Autopsy showed 500 ccm. of dark brown, rather sticky fluid in abdomen. Posterior wall of stomach was freshly adherent to pancreas, which was of blackish-red appearance, with extravasated blood in the tissues about it and some fat necrosis. Gall bladder was free and distended.

Diagnosis. — Acute hemorrhagic pancreatitis.

CASE 6. July, 1898. C. H., aged twenty-six, male.

Past history. — Very alcoholic.

Present illness. — One and one-half hours before being brought to Massachusetts General Hospital he was found by a doctor to be very cyanotic and in a state of collapse. He was vomiting and was slightly jaundiced. Abdomen was distended and rather rigid. Temperature, 100.8°. White count, 11,200. He died the same day.

Autopsy (medico-legal) showed acute hemorrhagic pancreatitis.

CASE 7. August, 1898. F., aged forty-four, female.

Past history. — Not recorded.

Present illness. — For two days she had pain in right hypochondrium. She entered Massachusetts General Hospital in poor condition, with temperature 100°; pulse, 135; respirations, 28. Examination showed a fat woman with a tumor the size of a cocoanut at umbilicus. At operation, tumor was found to be a twisted cyst of the omentum. This was removed and an omental hernia was also discovered. Nothing abnormal about pancreas was noted. She was sewed up tight and died a week later.

At autopsy there appeared fat necrosis of peritoneum. On section the tail and middle portions of pancreas showed softened black and red necrotic areas with cheesy centers. The gall bladder contained a stone the size of a hickory nut. The duodenal mucosa was dark-red, soft and thickened. The urine in the bladder contained sugar.

Diagnosis. — Hemorrhagic pancreatitis.

Case 8. February, 1903. S. P., aged thirty-six, salesman.

Past history. — A year before this he was in Massachusetts General Hospital with pain in right hypochondrium, which he had had at times for seven or eight years.

Present illness. — Two and one-half days before entrance he had another attack of pain felt all over abdomen, but worst in right hypochondrium, right groin and right flank. It became more severe and he began to vomit. Examination showed a slightly distended abdomen, dull in both flanks. Tenderness was most marked in right hypochondrium and in epigastrium. He looked sick. Temperature, 100°. Pulse, 80. He was operated upon the day of entrance. A reddish-brown fluid was free in abdomen. Peritoneum injected with disseminated fat necrosis. Gall bladder and ducts appeared normal. Pancreas was enlarged and hard, of deep purplish-red color. Median incision closed. Five-inch incision along left costal edge. Duct of Wirsung found free from stones. Incision into left half of anterior surface of pancreas showed some areas of necrosis. Drainage was placed to this incision. Patient did fairly well and nine days later was etherized and wound dressed. Pancreas appeared the same, but one third smaller than at operation. In ten days pancreas was again inspected and necrosis found to be not increasing. About six weeks later, owing to signs of abscess formation, an incision was made over gall bladder, which was adherent. An abscess was found in the pancreas and drained. After this he did well and was discharged much relieved. During convalescence sugar appeared in his urine three times.

In answer to a letter sent him this month, seven years after his operation, this patient informs us as follows: Since operation he has had no further similar attacks; he has no digestive disturbance or vomiting, but is constipated and for over three years has had diabetes.

(This case, which was operated upon by Dr. C. A. Porter, was reported in 1903 by Von Mikulicz, to support his theory that the pancreas should be incised.)

Case 9. April, 1904. R., aged twenty-four, female.

Past history. — During four months before coming to the Massachusetts General Hospital the patient had four or five attacks of acute epigastric pain without jaundice.

Present illness. — Four days before entrance she was seized with sudden severe pain in epigastrium; the pain remained constant until entrance. She suffered also from vomiting and constipation. Examination showed a very stout woman, very sick, with temperature, 106.5°; pulse, 136; respiration, 40, and white count, 8,000. There was dullness in the right flank and an indefinite, tender mass below the liver.

At operation the same day considerable free bloody fluid was found. The omentum was dark with fat necrosis. Gall bladder was normal. Pancreas, as it was greatly enlarged and indurated, was incised and drained. Death occurred within two hours. There was no autopsy.

Case 10. September, 1904. S., aged thirty, female.

Past history. — Seven months before entering Massachusetts General Hospital she had an attack of pain in right hypochondrium, associated with jaundice and vomiting.

Present illness. — Four days before entrance she had severe pain in epigastrium and vomited. Felt better the next day. The morning of entrance had a similar attack.

Examination showed a very fat woman, not jaundiced, whose abdomen, except for tenderness in epigastrium, appeared normal. Temperature, 100.4°; pulse, 80; respirations, 38; white count, 21,000. Operation the same day showed much bloody fluid in abdomen and disseminated fat necrosis. The gall bladder was thickened. Pancreas was tremendously enlarged, hard and hemorrhagic. The head was not involved. The body was incised, with the escape of much bloody fluid, a counter incision made and drainage inserted through both wounds. The patient died in twenty-four hours and was not autopsied.

Case 11. Faulkner Hospital. August, 1906. W., aged forty, factory hand.

Past history. — Fifteen years before patient had an attack of pain similar to her present attack, but without vomiting. Three weeks before entrance she again had such an attack. Never jaundiced.

Present illness. — Two weeks before entering hospital awoke with severe pain in epigastrium, which became more severe and extended over abdomen. Continued vomiting ever since. Had not passed even gas by bowels for three days. Examination showed a pale woman with feeble pulse. Abdomen distended, dull and tender in epigastrium and right hypochondrium. Temperature, 102°; respirations, 6; pulse, 120; white count, 31,600. Upon operation a hemorrhagic dark-brown fluid and some areas of fat necrosis appeared. Gall bladder, slightly distended, contained several large stones which were removed. Pancreas three times normal in size, hard, nodular, dark red throughout. Slight hemorrhage was seen oozing from it. Pancreas drained. Collapse and death followed in one and one-half hours. At autopsy a section through long axis of pancreas showed throughout its entire extent opaque, greenish-yellow and often softened areas .5 cm. or less in diameter. A preparation from one of these showed B. coli and streptococcus. There was general arteriosclerosis.

Case 12. January, 1907. B., aged thirty-four, female.

Past history. — In five years before entering Massachusetts General Hospital patient had numerous gall-stone attacks without jaundice.

Present illness. — Three days before entrance she was seized with sudden severe pain in epigastrium and vomiting. Pain radiated to the back. Pain became general, but worst in epigastrium. Examination showed an obese woman in collapse. Abdomen distended and dull in flanks. Temperature, 104.5°; white count, 38,000. At operation there was free, greenish-yellow, cloudy fluid. No fat necrosis was seen. Gall bladder was distended, but no stones were found. The case was thought to be one of intestinal obstruction; the intestine was drained and the patient died the same day.

At autopsy, innumerable minute black mulberry-like concretions were found in the gall bladder. A similar concretion completely occluded the ampulla of Vater. No duct of Santorini was found. The mucosa of the duct of Wirsung was smooth, but was coated with faintly greenish-tinged, foul, mucous material.

The pancreas was considerably enlarged, its tissue rather soft; in the head and body were grayish or whitish clay-like, necrotic-looking areas. In the tail such areas were fewer. Some necrotic areas were reddish, yielding foul, red fluid. Some veins were thrombosed. There was a moderate amount of fat necrosis.

Case 13. May, 1907. O., aged forty-five, female.

Past history. — During fourteen years before coming to Massachusetts General Hospital patient had six attacks of pain in epigastrium and right hypochondrium, accompanied by vomiting and jaundice.

Present illness. — Two days before entrance she was taken with sudden pain in epigastrium and vomiting, both of which increased in severity up to time of admission. Patient was a rather obese woman in collapse.

Although she did not appear jaundiced, there was bile in the urine. Her abdomen was distended and tender, without any palpable mass. The white count was 19,500. She was in too poor condition for operation, became uremic and died three days later.

Autopsy.— Abdomen contained brownish, blood-stained fluid and disseminated fat necrosis which extended even to sub-pleural tissues at top of chest. Aorta was moderately sclerosed. The gall bladder contained about fifty whitish calculi. Two calculi were in common duct, which, however, was not dilated. Orifice of ampulla was blocked by a plug of tenacious mucus. The pancreas and surrounding tissues were replaced by dark-brown or red, almost homogeneous, material, with opaque grayish patches and some semi-fluid areas. In the tail, the most affected portion of the gland, was a cavity containing a gritty, sandy, brown substance. The duct of Wirsung was not dilated nor bile stained. No duct of Santorini was found.

Diagnosis. — Hemorrhagic pancreatitis with necrosis.

CASE 14. June, 1907. S. H., aged thirty-six, hotel keeper.

Past history. — Patient had been a steady drinker.

Present illness. — Four days before entering Massachusetts General Hospital, after taking morphia "for his nerves," he began to vomit. He felt something in his epigastrium "give way," followed by severe abdominal pain which soon decreased. His abdomen was moderately tender, with slight spasm to right of umbilicus. There was some tenderness in right loin. White count was 7,400; temperature, 100°; pulse, 90.

At operation the same day his appendix was removed through a lower right rectus incision. Some fat necrosis was seen, and his pancreas, on palpation, seemed somewhat thickened. The wound was closed, however, without drainage. During convalescence he had delirium tremens, which did not prevent his leaving the hospital in three weeks, well.

A note from him one year after operation stated that his condition was better than it had been for years. At the present time he complains of persistent cough and loss of weight, but has had no digestive disturbances.

CASE 15. Faulkner Hospital, August, 1908. A. N., aged fifty-one, housewife.

Past history. — For eight months patient had had "girdle pains" requiring much codeia for relief.

Present illness. — Three days before entrance she had an attack of epigastric pain, not especially severe at first, followed by vomiting. Pain increased in spite of drugs, and patient showed signs of collapse. Abdominal distention then appeared, and just before entrance she suffered a collapse, followed by unconsciousness for one-half hour. Temperature, 99°; pulse, 130. She was operated upon soon after. There were free fluid and numerous areas of fat necrosis in omentum and parietes. Abdomen drained. Her condition did not improve and four days later she died.

CASE 16. Faulkner Hospital, April, 1910. A. H., aged fifty-two, salesman.

Past history. — Occasional digestive disturbance of slight degree.

Present illness. — Two days before entrance, following a dinner of steamed clams, patient had "stomach ache." This continued the next day and by evening there was tenderness in epigastrium and right hypochondrium. Pain also localized in epigastrium. Temperature was 98.6°; pulse, 80; white count, 18,000. The next morning he felt better, but at 8 A.M. white count was 22,000. Between eight and nine o'clock he suddenly felt a terribly acute pain in the epigastrium. The upper abdomen was rigid. He was thought to have a perforated duodenal ulcer, and operation was at once performed. There was some free fluid, and the omentum, which was relatively much fatter than was the patient, had a peculiar, porky appearance. Gall bladder appeared normal, but could not be quite emptied. The head of the pancreas was thickened and presented an area, about an inch and a half in diameter, of reddish tissue with a white center. Drainage was led to pelvis and pancreas and into gall bladder. The patient did well and recovered. During convalescence, the tissues about the fistula to pancreas showed auto-digestion.

Gangrenous Pancreatitis.

CASE 17. August, 1894. C., aged fifty-one, male, collector.

Past history. — Unimportant.

Present illness. — Six days before entering Massachusetts General Hospital he had an attack of vomiting followed by pain in left iliac fossa. The vomiting has continued, and his stools have been streaked with blood. Examination showed a doughy tumor extending from right costal margin obliquely across abdomen above umbilicus and reaching left iliac fossa. Rectal examination negative. Temperature at entrance, 100.5° F.; pulse, 100.

Operation the following day showed omentum rolled up in a mass covered with fat necrosis. A hole made through this revealed thickened tissue which bled freely. Drainage. Patient died in three days.

Autopsy showed marked arteriosclerosis. Greater peritoneal cavity normal except for fat necrosis. Lesser cavity walled with dirty black exudate. Central portion of pancreas disorganized. Thrombosis of splenic vein.

CASE 18. April, 1897. F., age forty-nine, grocer.

Past history. — A similar attack five years before admission to Massachusetts General Hospital.

Present illness. — One week before entrance he was seized with a sudden griping pain in epigastrium, from which he became unconscious. The pain immediately subsided, he vomited and felt well enough to get about. His malaise continued and he came to hospital. Examination showed a fairly well-nourished man, slightly jaundiced. Abdomen generally tympanitic and tender, with resistance and dullness in right hypochondrium. Temperature, 101.8°; pulse, 100; respiration, 36. At operation clear free fluid was found in abdomen. The omentum was adherent about a pale, friable, necrotic mass. This was drained, but the patient died within three days after operation.

Autopsy showed peritoneal fat necrosis. There were four or five small black stones in cystic duct and neck of gall bladder, but common duct was free. The tail of the pancreas presented about 3 cm. of dark-red, somewhat softened necrotic-appearing tissue. In the head were opaque, whitish, soft spots like abscesses. "All the fat about the pancreas was changed to a dirty, black, semi-fluid, shreddy, necrotic, grumous material." Bacillus coli and staphylococcus aureus were grown.

CASE 19. July, 1906. L. L., aged forty-four, female.

Past history. — Unimportant.

Present illness. — For three months before coming to Massachusetts General Hospital she had pain accompanied by vomiting on an average of once a week. She had lost weight. Abdomen was full, rather rigid in upper half, especially on the right. Liver was enlarged and patient was jaundiced. Temperature, 101°; pulse, 120. After three days in the hospital she was operated upon. Gall bladder appeared normal. Omentum was rolled up in a mass and necrotic. No pus was found, but pancreas throughout was "more or less necrotic." Drainage was placed to pancreas. The patient recov-

ered and left the hospital with a discharging sinus two months after operation.

At present her whereabouts cannot be ascertained.

Suppurative Pancreatitis.

Case 20. April, 1898. E. H., aged twenty-eight, female.

Past history. — Not important.

Present illness. — One day before entering Massachusetts General Hospital patient had some abdominal pain, most severe in epigastrium. She worked that day, but the following night vomited. She came to hospital with temperature, 103°; pulse, 120; white count, 21,600. She was not jaundiced. Her abdomen was slightly distended and tender everywhere, with slight spasm in right hypochondrium. At operation a small abscess containing about 1 dram of pus was found in the head of the pancreas. Gall bladder was normal. Abdomen was flushed out with salt solution and abscess drained. The patient recovered and was discharged one month later. She has not been heard from since.

The following case is entitled to a place under each of the three preceding classes of pancreatitis.

Case 21. July, 1899. O'B., aged thirty-four, bartender.

Past history. — Not obtained.

Present illness. — Had been drinking heavily for three weeks. Two days before coming to Massachusetts General Hospital he woke with severe pain in epigastrium and vomited. The pain continued and he entered hospital with temperature, 99.8°; pulse, 130; respirations, 20; white count, 9,200. Except for distention and dullness in flanks, his abdomen showed nothing abnormal. Operation disclosed free coffee-colored fluid and fat necrosis. Gall bladder was normal. Head of pancreas was enlarged and injected. Abdomen was washed with salt solution and a wick placed to pancreas. For twelve days he did well. Then his temperature rose, white count went up to 26,000 and he began to vomit. Four weeks after the first operation he was again operated upon. An abscess of the omental bursa, with the pancreas entirely sloughed away, was found and drained. Two days later the patient died.

There was no autopsy.

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SOME OBSERVATIONS ON THE SURGERY OF THE VASCULAR SYSTEM.*

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ARTERIOVENOUS ANASTOMOSIS FOR GANGRENE.

What treatment is offered at present to the patient who seeks advice for senile gangrene? Amputation so high above the gangrenous area, even though it be small, that the patient is shocked at its extent, and the surgeon dreads the crippling effect of the operation for his patient, appreciating but too well that he is too old to become at all skillful with the use of crutches or an artifical leg. What is to be said to the younger men with pre-senile gangrene? Much the same. The amputation must be equally high, though its effects may be less crippling, as the patient is young enough to learn how to get about by artificial means.

How attractive would be an operation which would offer to the patient improvement in the circulation sufficient to prevent the increase of impending gangrene, or to make it safe to remove only the gangrenous area itself, with a fair certainty that the flaps would heal kindly. How eagerly would both patient and surgeon accept such an operation. It is to review the possibilities of such a procedure that this paper is written.

In 1906 Carrel and Guthrie [1] demonstrated by experiments on dogs that it was possible to divide the femoral artery and vein and then to anastomose them in such a way that the circulation in the leg would be completely reversed, the vein carrying arterial blood and the artery returning venous blood. They demonstrated beyond dispute that the technic was surgically possible on animals and that the joints would remain patent. At first thought it would seem that the valves in the veins would offer an obstruction to the reverse flow. They showed, however, that the valves, in a comparatively few moments, yielded before the arterial pressure. Inasmuch as senile gangrene is due to an insufficient amount of blood reaching the part through the arteries, the suggestion was made by them that such an operation might be of benefit to man in the treatment of this condition. Could the blood be sidetracked and delivered to the part through the veins, a greater amount of blood would necessarily reach it, since the capacity of the veins is much greater than that of the arteries.

A knowledge of the pathology of the two conditions, senile and pre-senile gangrene, is necessary for a clear understanding of the mechanics of the operation. For the operation to be beneficial, the deep veins must necessarily be patent.

Freeman [2] mentions two theories advanced to explain senile gangrene:

1. Winiwarter believes that senile gangrene is due to a definite form of inflammation of the internal coats of the arteries (endarteritis) which produces narrowing and finally obliteration of the channels by the formation of granulation tissue.

2. More recent studies by Zoege-Manteuffer and Weiss have shown that the principal if not the sole cause is sclerosis. This narrows the caliber to a point where thrombosis easily occurs on the roughened surface, thus completing the obstruction. The arterial sclerosis may be either diffuse or nodular, or both together.

Buerger [3] finds that the obstruction to the flow in pre-senile gangrene or thrombo-angiitis obliterans comes from the formation of obturating thrombi which later become organized and canalized. The process is not secondary to the existing gangrene and occurs even when no

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gangrene is present. He finds that the thrombi may form in the veins as well as in the arteries.[4] In nineteen cases of this condition the arteries were more or less affected. There was obliteration of the deep veins in seven and of a large part of the internal saphenous in one. Because of the extent of the disease, the veins in six offered no better channel for the blood than the arteries. In these six, therefore, arteriovenous anastomosis would have been a useless operation. To determine the patency of the deep veins, he has suggested a simple test. The leg is allowed to hang down a sufficient length of time for a fair degree of cyanosis to appear. The veins are then obliterated by a tourniquet above the knee; the leg is then raised high and the bandage loosened sufficiently to remove pressure from the deep veins. If the cyanosis is slow in disappearing, or fails to disappear, it is a fair conclusion that the deep veins are not functioning.

The inferences to be drawn after this examination has been made are, unfortunately, not infallible. This was shown recently to me in a case seen with Dr. L. E. Somers, of Cambridge. A man of sixty-five, whose right leg had been amputated for senile gangrene, was seen because of discoloration of the left foot. It was evident that gangrene was about to begin in that foot also. An attempt, therefore, seemed justifiable to save the leg. With a tourniquet tight about the thigh, the leg was allowed to hang. The cyanosis of the foot increased within a few minutes. The tourniquet was then loosened sufficiently to control the superficial veins and the leg raised, and the discoloration disappeared. I felt, therefore, that the deep veins were patent. At the operation the femoral vein and the artery were firmly adherent together. The artery contained a clot, and the lumen of the vein was obliterated by an organizing thrombus, through which small canals ran in an irregular manner. An arteriovenous anastomosis was, of course, out of the question.

In an old man whose gangrene presents the appearance of ordinary senile gangrene, there may be an intermixture of a former condition of thrombo-angiitis obliterans with the senile condition. It would be well to try Buerger's test before attempting an arteriovenous anastomosis, but not to put too much importance on the result. Certain cases of gangrene of the lower extremity will, undoubtedly, be found to be unfit for the operation; others will, however, remain where there is no physical contra-indication for carrying out the operation.

When a new surgical cure is under discussion, it must fulfill satisfactorily three tests before its place is assured. (1) It must be demonstrated that the procedure can be carried out on animals. (2) That the surgical technic is possible in man. (3) That the operation when completed is of benefit.

The first requisite has already been fulfilled by the experiments carried out by Carrel and Guthrie, as previously mentioned. It is to be my object to convince you that the second requisite has also been fulfilled by three recent cases. The third requisite must still be left undecided, although it would seem that it were about to be fulfilled. The three cases mentioned above I will now cite in some detail.

Weiting[5] reports the following case which evidently comes under the classification of thrombo-angiitis obliterans. A man forty years old had his right leg amputated a year previous because of spontaneous gangrene in the foot. When he came under observation, the left foot and the ankle were livid and cold to 15 cm. above the malleolus. When the foot was raised it became white; shiny edema was present, as well as paresthesia and pain. Under spinal anesthesia the femoral vessels were cut down upon; the vein was tied below the junction of the internal saphenous; the artery was divided above the origin of the profunda; the proximal end of the artery was then intubed into a lateral incision in the vein below the tie and caught in place by sutures. A month and a half after the operation, there was scarcely any difference in appearance between the left foot and a normal foot. It was warm and free from pain. In two months he was discharged from the hospital.

Second case by Hubbard.[6] A man of seventy-seven years with threatened gangrene of half the foot and much pain in the leg. No pulsations in the vessels. An arteriovenous anastomosis was done under ether. At first the pain was much relieved by the operation, and the color of the foot was decidedly improved. On being allowed to hang the foot down, seven days later, slight edema appeared which gradually increased until the leg became very much swollen and woodeny in feeling. The circulation in the foot continued to improve, but the pain was unbearable, and five weeks after the anastomosis the thigh was amputated below the site of the anastomosis. At the amputation arterial blood spurted from the femoral vein.

Third case by Muller.[7] Patient fifty-one years old. When admitted he had gangrene of some of the toes. Under spinal anesthesia an end-to-end anastomosis was carried out by the Carrel method. Complete reversal was not attempted. Following the operation, a line of demarcation developed at the tibio-tarsal joint. About two months later the leg was amputated four inches below the knee. At this time the veins showed feeble but distinct pulsation.

In two of these cases it was demonstrated beyond dispute that the arteriovenous anastomosis was functioning after five to eight weeks, and in the first case the clinical evidence is such that it must be taken for granted that the joint was patent. The technic of the operation is, therefore, possible.

As to the permanent benefit of the operation, it may be said that Weiting's case had had no further trouble after two months. In my own case, circulation in the foot was, without doubt, better than before the operation. The pain, however, had not evidently been relieved and extreme edema had developed.

According to Freeman, writing in Keen's "Surgery," the origin of the pain in gangrene is not clear. Two explanations have been offered: The first that it is due to degenerative or inflammatory changes in the nerves, and the second, to the reaction of the nerves to acute anemia. Whether a complete reversal of the circulation would have prevented this, and section of the nerves, as suggested by Bryant and Buck, have relieved the pain, can be learned only by future work.[8] Stretching the internal and external popliteal nerves has given moderate relief to the pain of gangrene, while resection of 5 cm. of them has arrested pain at once. They now advocate simply severing the nerve. This would relieve the pain and give an opportunity for the nerve to regenerate later.

In presenting the advisability of an arteriovenous anastomosis to a patient who has already a slight spot of gangrene, it is fair to state definitely that the operation has no shock; that it is possible, under proper technic, to make a tight joint; that there is a chance of much benefit resulting from the operation; that if it fails he is no worse off than before as to the height of the amputation above the gangrenous area. I am not prepared yet to suggest it to the patient who has no real gangrene present, except under the most extraordinary circumstances, as under those present in the case of Weiting.

DIRECT TRANSFUSION OF BLOOD.

I will turn now to the other branch of vascular surgery in which I, personally, have had experience, namely, direct transfusion of blood. It is to Crile that we owe the successful carrying out of the technic of direct transfusion of blood, and it is from his work and enthusiasm that the procedure has taken a very definite place among the various methods of treatment. There is no question of its efficacy in certain conditions. In other conditions its effects are still under judgment, and in still others it is of no benefit.

Since Crile has described his canula, various men have modified or altered it entirely with the idea of simplifying the procedure. There are now many canulæ on the market, and various methods of performing the operation have been described. It seems to me there are several requisites. In the first place, the canula must be made in several sizes or be adaptable to any size, for it must fit the vessel of the newborn baby as well as that of the adult man. The technic of putting it in place must be as simple as possible, and the means by which it is fastened in place must be sufficiently strong to withstand an occasional pull, as during the half hour or so the blood is running from the donor to the patient it is impossible at times to prevent a certain amount of pull on the joint. Carrel simply sutures one vessel to the other, but this, with the ordinary surgeon, is entirely out of the question. He is not sufficiently skillful to carry out the technic; therefore, some mechanical aid in the operation is necessary.

Various modifications of Crile's canula and technic [9] have been made by Ottenberg,[10] Levin,[11] Vickery,[12] Elsberg,[13] Bernheim,[14] Hepburn,[15] Brewer, Hartwell, and, doubtless, others. Personally, I have finally given up all technics except that described by Elsberg, and my advice to one who wishes to make himself proficient in the technic of direct transfusion of blood is for him to experiment with the various canulæ which appeal to him, and then to finally settle on one and learn how to use it. The technic of direct blood transfusion is very fussy at times. There is no reason why any one who is willing to do a few experiments should not learn how to use a canula, though at times it tries the patience of every one before the operation is finished. I should like to lay stress on the importance of not delaying before attempting this method of treatment so long that the patient is really past recovery. The technic, as I have said, is, at times, difficult, and it may be an hour or two before the blood is flowing properly. It has been my misfortune to have patients die while I was at work and before the transfusion had been completed.

Hemolysis is held up as a danger in direct blood transfusion. It is defined by Crile as a toxic condition, which gains its name from the fact that the red corpuscles are destroyed to a more or less extent. It is thus a toxemia from the transfused serum.

In the ordinary emergency case, where blood transfusion is indicated as a life-saving means, there is no time for carrying out a test for hemolysis, and in my experience I have been fortunate enough to have seen no accidents from the mixing of bloods. I doubt very much whether the test is necessary in cases of hemorrhage of any character or shock. When it is a question of improving the condition of one who has been sick for some time to such a point that he may be operated on, then there comes the possibility of the hemolysis, in which case a test should be made. Pepper and Nisbet [16] refer to a case of hemolysis where the condition appeared after a second transfusion from a second donor. I have transfused a patient a second time, three days later, from a second donor, a cousin of the first donor and a sister to the patient, with no ill-effects.

After the canula is in place, I have found it difficult at times to determine whether the blood was flowing, and have made several mistakes, I feel sure, by being too impatient to obtain results, and have cut out the canula and done the operation over again. I now feel that if one is sure of his technic it is much better to leave the canula alone and wait for from fifteen to twenty minutes before considering the operation a failure and doing it over again. Such a length of time sometimes is necessary to show the first change in the patient. With the first suggestion of restlessness or sighing on the part of the donor, it is well to stop the transfusion, as there then remains but a short time before the donor will feel the effects of the loss of blood.

The dangers of direct blood transfusion have always seemed to me to be more to the donor than to the recipient, because of the dissection of the radial artery close to the numerous flexor tendons

of the wrist. It is exceedingly difficult not to break asepsis when it is time to connect the vessels of the two persons. Should the donor's wrist become septic, one can imagine the disastrous result to the usefulness of his hand. I have always picked out the left hand in those who were right-handed, and so far have had no mishaps.

It has not been my good fortune to carry out a blood transfusion for all the conditions for which it is recommended. There is, however, no doubt, as I have said before, but that in traumatic or post-operative hemorrhage or shock it is a life-saving method. I will mention the following case simply as an example:

I first saw the patient eight hours after operation.[17] A laparotomy had been done for removal of the spleen. When I saw him his pulse was imperceptible at the wrist, 160 at the heart; his body was cold and exsanguinated; his respirations 40 and shallow, and he had not recovered consciousness since the operation. After the transfusion his pulse dropped to 108 and became full and strong at the wrist; his respiration dropped to 18 and became full and deep; his lips and skin became pink and he recovered consciousness, began to laugh and talk, and complained of the pain of the needles in suturing the wound in his arm, whereas before a dissection of his vein had been done without any cocaine and without causing pain.

With toxemia, such as eclampsia, transfusion seems, in certain cases, to be of benefit. Without doubt there are various types of eclampsia (i. e., pregnancy, convulsions, kidney irritation). As yet we do not know enough about these different types to know which it will benefit and which not. Crile reports in his book the recovery of two cases of eclampsia following transfusion, to which I can add another.

(BOSTON MEDICAL AND SURGICAL JOURNAL, Feb. 17, 1909.) Primipara, forty years old. A few days before the date of expected confinement patient had a convulsion, with other symptoms of eclampsia. She was immediately delivered. The urine from a catheter specimen contained a large amount of albumin, much abnormal blood and many casts. In spite of treatment for the first twelve hours after operation the patient's condition remained practically unchanged, remaining dull and apathetic and passing no urine. A catheter passed thirteen hours after delivery found the bladder empty. It was at this time that I saw the patient. After consultation, and at the suggestion of Dr. Patterson, a transfusion was done. At the end of the transfusion the patient was conscious and clear mentally. Six hours after the transfusion the patient began to pass urine spontaneously and passed 90 oz. in the next twenty-four hours, and the bowels began to move for the first time since delivery. On the second day patient passed 160 oz. of urine, which showed no blood and only an occasional cast. The convalescence from this time on went along satisfactorily until recovery.

A second case of a very different type was a failure. Convulsions developed on the second day after delivery. The urine was secreted in fair amount and contained a good trace of albumin. The patient had numerous convulsions and became distended. Various methods of treatment were tried and finally a transfusion was done. As a result the patient became much more quiet, her pulse improved and gas began to pass by rectum. The patient improved for a while and then began to lose ground, in spite of the fact that the kidneys and bowels were functioning. She was, however, still irrational and unable to see. Finally, just before death, she was transfused a second time without any benefit. She died several hours later.

Direct transfusion has been recommended in the treatment of hemorrhage of a hemophiliac to increase the coagulability of the blood, and cases have been reported as cured. Unfortunately, the intervals between the attacks of bleeding may be so long that the treatment is declared to be curative, whereas there has simply not been time for a second hemorrhage. Such a case I saw last fall with Dr. W. D. Small — a young girl who with her periods almost bled to death. Her history had been gone into carefully, and the case was considered one of hemophilia. Finally, after various methods of treatment had been tried, she was transfused, about a year before I saw her. The surgeon reported the case as cured by transfusion. Later, however, she began to bleed again freely with menstruation. When I saw her she was exsanguinated from the loss of blood and within comparatively few days bled to death, her parents objecting to any further surgical intervention.

In another case, recently seen with Dr. H. L. Smith, in a woman who was considered a hemophiliac, a secondary hemorrhage followed an operation on the nose of sufficient amount to cause fainting. Transfusion had, apparently, no effect on the coagulability of the blood, for a few hours later the bleeding from the nose recurred. Ligature of the common carotid was finally resorted to to control the hemorrhage.

A very similar case is reported by Lambert.[18] A child was admitted to the hospital bleeding from a tonsillectomy done on the previous day. She soon collapsed from loss of blood. Her pulse became imperceptible and she lost consciousness. At this time she was transfused. At the end of the operation she was in excellent condition, with a pulse of 124. She was perfectly conscious and all hemorrhage had ceased. About four hours later there was a profuse hemorrhage, lasting for some twenty minutes, which was followed by a continuous flow of bright blood. Her pulse again became rapid and small. There was no bleeding point which could be seen in the bed of the tonsil. The left external carotid artery was then ligated and the bleeding entirely controlled.

In hemorrhagic disease of the newborn, it appears that a large proportion of the babies can be saved. The technic in them, however, is exceedingly difficult, because of the size of the vessels. Such cases, however, are most satis-

factory. The following case was seen with Dr. F. S. Newell and Dr. J. L. Morse:

About twenty-eight hours after birth the baby began to vomit and spit up blood and to pass blood by rectum. A diagnosis of hemorrhagic disease of the newborn was made, and a transfusion done several hours later. Following the transfusion there was no further bleeding.

Crile and Lenhart [19] recommend transfusion as the best treatment for illuminating gas poisoning. I have had one such case, where the man was brought to the Relief Station. He had been found unconscious with a tube from a gas pipe in his mouth. The odor of gas had been noticed around the house for several hours. He was unconscious and bright pink. About an hour after he reached the Relief Station he became conscious, but was hysterical and hard to control. Ether was necessary to keep him sufficiently quiet to carry out the technic of the tranfusion. He left the hospital four days after entrance with no abnormal symptoms. Dr. Drown, resident physician at the Relief Station of the Boston City Hospital, who sees many such cases, felt that this man had taken a sufficient amount of gas to cause derangement of various organs within a few days. He felt that such a case would eventually die. Personally, I have not had sufficient experience with such cases to know.

In closing these few scattering remarks about direct transfusion of blood, it may be fairly said that it is now a recognized method of treatment in hemorrhage and shock, and in hemorrhagic disease of the newborn; that it is perhaps of benefit in some cases of eclampsia and illuminating gas poisoning, and perhaps in hemophilia and as a means of improving the condition of a feeble patient to such a point that an operation may be undertaken.

DISCUSSION.

Dr. Lewis M. Palmer, of South Framingham: Mr. Chairman, I would like to ask the reader what governs him as to the quantity of blood taken from one to the other in transfusion. I think it is very hard to determine how much blood it is wise to take in a given case.

Dr. Hubbard: I think it is very hard to determine how much is taken from the donor. The blood is usually allowed to run until the patient is sufficiently improved, or until the donor begins to show signs of feeling faint. The exact quantity I cannot tell you.

Dr. F. B. Lund, of Boston: In one experience I found very serious symptoms on the part of the donor after running the blood for three quarters of an hour. It was run that length of time because the vessels seemed quite small and we did not think we were getting very much. The symptoms that occurred were that the donor drew one long breath, his jaw dropped, and he went through all the motions of dying, but rapidly recovered on elevating the feet.

I have been limited in doing transfusions by the fear of doing them in cases of hopeless cancer. One owes some responsibility to the donor. And I do not like to transfuse a patient before an exploratory operation on the abdomen, because I have taken blood from a man to brace up a patient so that he would stand an operation, and found the patient I was operating on had a serious malignant disease; in such a case I feel that I have done the donor a wrong. Under such circumstances my procedure has been to do an exploratory operation first and find out whether the case is malignant, and then, if necessary for other symptoms, to do a transfusion. Nine times out of ten at exploration you will find that transfusion, if you had done it, would have been unnecessary.

Dr. Hubbard: It is important to emphasize the necessity of watching the condition of the donor during the transfusion. The effect of the loss of blood appears usually suddenly. The first evidence comes from the character of the respiration. Strangely enough, the pulse changes very little until it suddenly becomes very poor. As soon as the donor begins to take an occasional long breath or sigh it is time to stop the flow, for within a few moments, if the flow is allowed to continue, he may become very pale, his pulse of very poor character, and he may faint with relaxation of the sphincters. The condition is very alarming. Fortunately those that I have seen have regained consciousness within a few moments. It may require, however, several days for the donor to regain a normal condition.

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TWO UNUSUAL CASES OF DISEASE OF THE MAXILLARY ANTRUM.*

BY J. PAYSON CLARK, M.D., BOSTON.

The cases which I shall report to you this evening have not only interested me very much, but have been very instructive. I have never, that I can recall, seen any other cases exactly like them, nor have I seen just such cases reported. Dr. Algernon Coolidge, Jr., has seen one or two cases which resemble them. They also have many points of similarity to some of the cases of hay fever and asthma reported by Dr. Jacob E. Schadle which were cured by treating the maxillary antrum. I shall speak of some of these cases again later. Dr. W. E. Casselberry has reported two cases of "serous" disease of the antrum and has given a number of references to literature.

* Read at a meeting of the New England Otological and Laryngological Society, March 30, 1910.

The cases which I have to report might very appropriately be called "mucous" disease of the antrum. Their chief points of difference from Casselberry's cases are the presence of a thick viscid tenacious mucus in the antrum with an apparently unusually large ostium maxillare, while in serous disease the antrum contents is thinner so as to be easily drawn into an aspirating syringe, and the ostium is extremely small or completely obstructed. Also in the mucous disease the vasomotor symptoms are prominent, while they are much less so or even wanting in serous disease.

CASE I. Miss H., age thirty, was referred to me on account of frequent attacks of what she called cold in the head. She had had these attacks for a good many years, but had put off consulting a physician because of her dread of operative interference. Finally she suffered so much and so frequently from nasal obstruction that she was persuaded by her relatives to seek relief. I saw her first on Nov. 2, 1903. Examination showed a deviation of the septum to the left, with a marked thickening or ridge at its base, especially obstructive rather far back in the nose. The turbinates in both nostrils were swollen and the right lower turbinate hypertrophied. There was considerable polypoid tissue in the left middle turbinate region. The patient was given a wash containing salt, bicarbonate of soda and borax. On Nov. 9 the nasal wash was omitted, as it seemed to aggravate the swollen condition of the mucous membrane. Some of the polypoid tissue was removed by snare. On Nov. 11 a portion of the hypertrophy of the right lower turbinate was removed by snare and the patient was given normal salt solution for a nasal wash, and citrate of lithia internally. On Nov. 18 the right nostril was quite clear and the nose had been much better for three days. I then did a Watson-Gleason operation on the septum, at the same time removing with a saw most of the ridge. At the two subsequent visits I removed the rest of the hypertrophy of the right lower turbinate and a small polyp from the left middle turbinate region. The septum operation was a success and the note on Jan. 20, 1904, says: "Both nostrils clear. Question if there may not be ethmoiditis on the left, as there is some mucopurulent material in that region." The patient now had no annoying symptoms, however, and could breathe well through the nose, so nothing more was done. I saw her again on April 6, when I removed some polypoid tissue from the left middle turbinate region. No pus could be seen. I did the same thing on April 13 and 23, May 7 and June 10. All this time she was breathing well through her nose and had no nasal trouble. On Jan. 5, 1905, she came to my office with the history of a "cold" for several weeks. The left nostril was obstructed by swollen edematous mucous membrane bathed in a watery secretion. The right nostril was comparatively clear. She complained of a dull pain in the teeth of the left upper jaw. On transillumination, both antra were dark. On account of the dental symptoms on the left, an exploratory puncture was made into the left antrum through the inferior meatus and the antrum irrigated with a warm boric acid solution. One large mass of thick very tenacious mucus literally flopped like a big oyster into the basin. It had a somewhat reddish-brown tinge, probably from blood pigment. The condition responded readily to treatment and, after three more washings, on Jan. 18 the solution used in washing came out perfectly clear. She was not seen again until Nov. 1, when she came with a similar story of a "cold" for a few weeks. The symptoms were as before distinctly on the left side, and in washing the antrum in the same way an equally large mass of mucus, almost identical in every way with that washed out nine months before, appeared. On Nov. 4 and 20 smaller clumps of mucus were washed out, and on Nov. 27 the solution came out clear. Each time the swelling in the nostril and other symptoms rapidly disappeared as the trouble in the antrum subsided. In October, 1906, the nose was stopped again for a week or two after a visit to the seaside, but the patient recovered from this attack without treatment. On June 21, 1907, polypoid tissue was again present in the left middle turbinate region. I removed it and on June 27 washed the left antrum as before, obtaining two small clumps of thick mucus. Recovery was again prompt under the same treatment. I saw her again on Sept. 17. She said she had suffered from hay fever all through August. She had never had it before. On June 6, 1908, the nose was clear, but it had been stopped at times; there were no polypi in the left middle turbinate region, but the mucous membrane of the turbinate was somewhat edematous.

Dec. 10, 1908: "The nose has been stopped more or less for several weeks. The left nostril looks well, but now the turbinates on the right are swollen and edematous. There is some thick mucus under the middle turbinate, apparently coming from the antrum." The right antrum was washed through a trochar puncture in the inferior meatus and several clumps of thick mucus washed out. The right antrum was washed again on Dec. 28, and the solution was clear except a little blood. The turbinates in the right nostril had assumed their normal appearance. On Jan. 15, 1909, the nose looked well and there was no evidence of mucus in either antrum.

This patient came to see me about two months ago in response to a letter. The nose was clear and both antra equally translucent. On my inquiry how her nose had been, she said, "I have not thought about my nose since I came to see you last."

As I review the history of this case there is one thing that strikes me at once as more than a probability and that is that this trouble with the antra, characterized by acute exacerbations, existed long before I discovered it; indeed, was probably the principal cause of the frequent "colds" with nasal obstruction for which she sought relief. If I had made a practise at that time of transillumination as a routine procedure in nasal cases, as I do to-day, I might have suspected the antrum trouble when I first saw the patient instead of over a year later. Even then I failed to attach sufficient importance to the opacity of the right antrum. Indeed, I think it is more than probable that the undiscovered long-standing inflammation of the right antrum was the cause of the attack of hay fever which she had. It is also interesting to note in this case that of the six acute attacks which she had in the more than five years during which she was under my observation, five were on the left, the side obstructed by the deviated septum, and one on the right. Of the five attacks on the left side, two got well without treatment after the deviation of the septum was corrected.

CASE II. Mrs. X., age thirty-two, was first seen by me on Sept. 26, 1905. She had been troubled a good

deal with obstructed nasal breathing for about a year. She had been treated in New York four years previously for "catarrh" and had had a ridge on the septum in the left nostril removed. Examination showed the right lower turbinate enlarged with a dependent polypoid hypertrophy. Her physician thought an operation not advisable, as she was three months pregnant, so she was given a spray of normal salt solution and another of adrenalin, 1–10,000. For the next month the nose was much obstructed at times by swelling of the turbinates till finally the removal by snare of the polypoid hypertrophy of the right lower turbinate gave some relief. But on Nov. 1 the turbinates and mucous membrane of the septum in the right nostril were swollen and edematous and covered with a watery secretion. On shrinking with cocaine and adrenalin, a string of thick tenacious mucus was seen protruding under the right middle turbinate. On transillumination the right antrum was decidedly dark, while the left lit up beautifully, including the pupil. On Nov. 23 the patient showing no improvement by other treatment, the right inferior meatus was punctured with a trochar and a large mass of thick tenacious mucus having a reddish-brown tinge was washed out. The antrum was washed on Nov. 25, Dec. 1, Dec. 8 and Dec. 16, the clump of mucus expelled getting smaller and smaller and the turbinates gradually shrinking until the right nostril was clear. On Dec. 16 the right antrum was translucent. The patient then went to New York for the Christmas holidays. There she caught cold and returned Jan. 2 with hoarseness and cough. I found an inter-arytenoid swelling which gave me some anxiety for a time, as I feared tubercular laryngitis. This condition, however, got well under local treatment and I did not see the patient again until Oct. 16, 1909, over four years. The right nostril had then been obstructed for three weeks. The nasal mucous membrane was red, swollen and edematous, the right antrum dark on transillumination. I punctured the inferior meatus again with a trochar and washed out a large clump of thick mucus similar to that previously described. The right nostril was at once clearer, but became stopped again on the 19th, when I again washed out some thick mucus. Between this date and the 15th of November the antrum was washed eight times. The last two times the clump of mucus was clear and transparent and about the size of a pea. The antra now transilluminated equally except the right pupil did not light up as well as the left. Dr. J. Homer Wright kindly examined some of this mucus for me under the microscope and found that it contained a number of leucocytes, but no bacteria in the smears. On Dec. 22 the right nostril was again somewhat obstructed, thick mucus was visible under the middle turbinate and the right antrum was dark on transillumination. This was somewhat discouraging. The patient did not want to go through the treatment so soon again, and I did not want to do it if it could be avoided. So I determined to wait for a time, having her use a mild alkaline nasal wash. I saw her again on Jan. 8, 1910, when she was much better. The nose was then fairly clear. On Feb. 2 there were no symptoms and on transillumination the right antrum was again almost as translucent as the left.

Both these cases were young women. In both the attacks of nasal obstruction were almost identical except that in the first case the nasal obstruction was more marked because both antra were affected. In Case II there was also considerable obstruction of the left nostril (the side of the unaffected antrum) due to a sympathetic swelling of the turbinates, but these bodies were not covered with a watery secretion and did not look edematous as on the affected side. The gross characteristics of the mucus were in every way identical. The ostium maxillare was apparently unusually large in both cases. I came to this conclusion from the rapidity and ease with which the large clumps of mucus were expelled.

Dr. Schadle, in his interesting and valuable article on "The Relation of Antral Sinusitis to Hay Fever and Asthma," describes several cases with similar symptoms. In my cases, however, the vasomotor symptoms were not so marked. There was little or no sneezing as a rule with the attacks (except the one seizure of hay fever which the first case had), nor were there any eye symptoms. It will be seen by the following quotations that the material washed from the affected cavities was much the same in his cases as in mine. In the first case reported in the above-mentioned article he says: "Pus was not present, but a large quanity of ropy, muco-purulent material was dislodged and discharged into a drainage vessel by means of injections of a warm Dobell's solution." Of another he says: "What came from the right cavity was thick, bluish in color, and jelly-like in consistency." And again: "Large quantities of a substance resembling milk curdle came from both sinuses. Besides this, mucoid contents, jelly-like in consistency and bluish-gray in appearance, were forced from the cavities." He also lays stress on the large size of the ostium maxillare in his cases. The etiology of this catarrhal inflammation of the antrum is not perfectly clear. Schadle says that in these cases "the abnormal ostium forms the predisposing medium of irritation or infection. Unlike the nose, the antrum, under normal anatomic conditions, is practically a sterile sinus, and, apart from the *very small* ostium, is substantially a closed cavity. When, however, malposition of the ostium exists, or when the opening deviates from its normal size and course, the foundation is laid for the development of infection." If there is a bacterial infection in these cases, why does the secretion remain mucous in character, no matter how long the trouble persists, and not become purulent, as in the common form of sinusitis? The only answer I can make to this question is that the infection must be a comparatively mild one. For we know that in the common head cold the severity is measured by the variations in the relative proportions of the mucous and purulent elements in the discharge. If the ultimate cause is not an infection, I am at a loss to say what it is. It is evident from the history of these cases that the individual who has had an attack is liable to another. The diagnosis of this affection is not difficult, after a careful examination. The symptoms have been sufficiently described in the report of the cases. The nasal symptoms are evidently due to the irritating nature of the antral discharge. Schadle found this discharge to be acid. The prognosis as regards recovery from a given attack is good. If Schadle's theory as regards the causative factor of

a large-sized ostium is correct, it would seem as if some method for reducing the size of the ostium should aid in a permanent cure. What one could do in this direction I am as yet unprepared to say. The rather inaccessible position of the ostium makes the proposition a somewhat difficult one. In the treatment I used a normal salt solution containing 2 to 3% of boric acid and sometimes, after the first few washings, a normal salt solution alone, in order to have as nearly as possible an unirritating solution.

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CERTAIN ASPECTS OF THE BACTERIOLOGY OF BACILLARY DYSENTERY.

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THE object of this paper is to present very briefly certain facts concerning the bacteriology and biochemistry of the dysentery bacillus and associated intestinal flora in bacillary dysentery; to outline in a few words the fundamental principles relating to their activity in the alimentary canal, and to mention the procedures which are theoretically logical for the restoration of a normal intestinal flora.

Full details both of the bacteriological and clinical aspects of this subject will be published later.

The fundamental principles underlying this work are: (1) The fact that bacteria in the presence of protein (and protein decomposition products) and fermentable carbohydrate select and act upon the carbohydrate in preference to protein in the vast majority of cases. The organisms break down enough protein merely to satisfy their nitrogen requirements in such instances.

(2) In the animal body, carbohydrate likewise can be utilized to a very considerable extent to prevent the metabolism of the body nitrogen.

(3) The majority of bacteria, including those commonly found in cases of bacillary dysentery (*B. dysenteriæ*, *B. coli* and the streptococcus), are facultative in respect to their dietary requirements and attack fermentable carbohydrate in preference to protein or protein decomposition products.

(4) Bacteria acting upon protein produce putrefactive products of various degrees of toxicity, but do not form these products when grown in media containing in addition carbohydrate which they can utilize, since in the latter case the fermentation takes precedence over putrefaction, at least until the sugar is exhausted.

The products of the dysentery bacillus which cause the most harm are largely, if not wholly, protein decomposition products. The formation of these putrefaction products can be prevented if a utilizable sugar is present.

(5) The blood of normal human beings contains about 0.2% dextrose as such.

(6) The normal sugar for man is lactose, a sugar of animal origin, in contradistinction to most other sugars, which are of vegetable origin. The lactose is utilizable by relatively few bacteria other than those of intestinal origin, while the animal sugars are fermentable by many types of organisms.

The bacterial flora of the intestinal tract in cases of bacillary dysentery is putrefactive, chemically speaking, because there is, as a rule, little or no sugar present in the intestinal tract of the body for them to act upon. This is equally true for those organisms which succeed in penetrating into the body itself, since the small amounts of dextrose normally present in the blood are usually metabolized early in the disease, particularly under a starvation diet.

The remedy for this condition, from the standpoint of bacteriology, is to add an excess of sugar which can be utilized by the bacteria within the intestinal tract and to restore to normal the amount of dextrose in the blood, so that even those organisms which have succeeded in penetrating within the body itself may have an opportunity to act upon sugar rather than upon the nitrogen of the tissues of the body.

Dextrose infusions (2.5% chemically pure dextrose in normal saline solution) tend to restore this normal dextrose, and also to furnish the body with a considerable amount of fluid. The patient is benefited in two ways: (*a*) By protecting the tissues of the body to a considerable extent from metabolism by the body itself, thus acting as a food which is immediately utilizable for the body needs, and (*b*) by providing a certain amount of dextrose for the invading organisms to utilize, thus further sparing the body nitrogen and reducing the production of toxic products by the bacteria themselves.

Feeding lactose by mouth (5% solution) brings about a similar change in the chemistry of the intestinal bacteria. The lactose furnishes food for the patient as well, reinforcing that obtained by the infusion of dextrose.

The intestinal bacteria, acting upon the lactose and its decomposition products (dextrose and galactose), change their chemistry from the putrefactive to the fermentative type, i. e., produce acids, principally lactic, in place of putrefaction products which must be detoxicated by the body if they are absorbed.

The colon bacillus, for example, in the presence of sugar, forms lactic acid and consequently becomes an antagonist of the dysentery bacillus, in place of being a symbiote forming putrefaction products, as would be the case if there were no sugar present. The putrefaction products in such instances (absence of sugar) would be derived from the breakdown of the intestinal secretion if the patient were on a starvation diet.

Coincidently with the changes in the chemistry of the organisms mentioned, bacteria characteristic of the intestinal flora of normal nurslings begin to appear. The most prominent of these

are *B. bifidus* and *B. acidophilus*, principally the former. These two organisms still further antagonize the dysentery bacillus, since these bacteria are energetic producers of lactic acid. They are among the most desirable and beneficial organisms which could be present under these conditions, since they perform the same functions in dysentery cases that they do in the intestines of normal babies, i. e., antagonize and tend to keep down bacterial putrefaction in the alimentary canal.

The after-treatment will not be discussed here, but will appear in detail in a later publication.

Clinical Department.

A CASE OF CROSSED HEMIDYSERGIA AND TREMOR, WITH ASYNERGIA OF BINOCULAR MOVEMENTS: COMMENTS.

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THE following case seems worthy of publication, as it may in the future afford material with which to answer the problem of the anatomical distribution of the cerebello-fugal systems comprised in the rubro-spinal and vestibulo-spinal tracts.

In some respects the patient conforms to the syndrome of Foville (1858) as described by Grasset before the Neurological Society of Paris in 1900. This type consists of a crossed paralysis of the limbs on one side of the body and of the face on the opposite side, along with the loss of power to rotate the eyes to that side. My case, however, differs from the Foville type in that he presents no paralysis, but a most marked dysergia, which, however, in its distribution, is the same as that of the paralysis in the syndrome of Foville.

J. T., colored, aged thirty-two, a laborer, was seen at the Emergency Hospital Clinic of Dr. Dudley Morgan in April, 1908. He complained of inability to walk steadily, and clumsiness of the left hand. While walking in the streets, "silly thoughts," chiefly about wealth, occupied his mind.

The previous and family history is negative so far as can be ascertained in his present slow-witted state.

Present illness. — About six months ago, he began to feel weak and dizzy, and had severe pains in the loins and back of the head and neck, intense enough to keep him awake at night. In this state, he dragged through his work for about three weeks, until he was sent to bed under medical orders, and there he stayed about two months in a lethargic state. After this he was able to sit about the house and to walk a little, but could not return to work for some little time. He had complained of a "misery in the head" after taking his medicine, or when alcohol was given.

Later he returned to work, and states that he could walk quite well and did not tremble. About two months ago, the left hand became clumsy, swallowing was difficult, and the foolish thoughts, generally vague, though about money, began to occupy his mind. About a month ago he began to tremble, and walking became difficult.

Physical examination. — Motility: Face — at rest, there is slight asymmetry of the face, but no drawing of the mouth nor smoothness of the brow, such as occurs in facial paralysis. When movements are made, however, a violent intentional tremor occurs in the right lip, cheek, jaw and tongue, and there is poor control over the mouth. This tremor is at first very extensive and violent; but when the position is maintained for some seconds, the excursion of movement becomes less extensive and more regular, its frequency being about eight to ten per second. The left side of the face does not tremble, but is, of course, moved by the communicated oscillations from the right side.

The speech is slow, slurring, indistinct and thick.

The eye movements are unsteady and difficult to control; but there is no nystagmus. The pupils react well to both the light and accommodation. The movements of the left arm are slow, clumsy and inaccurate, and there is marked adiadocokinesis. Intentional movements are accompanied by a tremor similar in character to that of the face. It ceases when a position has been maintained over ten seconds. There is no muscular weakness. The movements of the left leg are still more incoordinate, and it also drags upon walking. He walks "*aux petits pas.*"

The movements of the trunk are slow, especially at commencement, and poorly maintained, and there is a rigidity which seems to prevent ready bending movement of the right side. The eyes are also unsteady when turned to the right. On protrusion of the tongue, its right side is agitated by a similar tremor, which almost ceases in about ten seconds, after which interval there is also more control over the facial trembling.

In the left arm there is slight asthenia, considerable impairment of the attitude sense, decided clumsiness and marked impairment of the diadocokinesis. There is also an intention tremor, finer than that of the face, and not maintained more than ten seconds. The general sensibility is very acute and there is no true muscular weakness.

Rotation tests show no anomaly of vestibular sense; the pupils react well to light and accommodation.

The movements do not tend to continue when the resistence is removed, and there is recoil. There is no atonia.

The sensibility is not impaired, with the exception of the notion of attitude in the left arm. There is no anomaly of discernment of rotation.

Reflexes are exaggerated on the right side; but there is no flexion of the great toe on stroking the sole.

Psychic examination was not systematic; and, beyond his dull and confused state, I could find no definite gaps in the memory, attention, perception or judgment. There had been causeless crying, and he had been generally miserable. He stated that there had been no automatic laughter, rage nor emotionalism in general. As to the will, he had felt useless and incapable, but his condition justified this attitude.

Progress. — On April 23, after two weeks of potassium iodide, he was in every way worse and had developed dissociation of the ocular movements. On protrusion, the whole tongue jerked violently forth and back. The control over the facial movements was much impaired. The arms shook violently, and the walk was very difficult. All the movements can be performed, however, when he is emphatically urged.

The speech is very uncertain, and toneless.

When binocular fixation is attempted, asynergic dissociation occurs. The kaleidoscopic series of squints which ensues produces a most weird effect. When

either eye is closed, however, the other can perform all movements, although the right eye only does so with much difficulty and wide tremor. On looking widely to the right with both eyes open, the left eye moves across normally, while the right fails to follow sufficiently. The same phenomenon occurs with the left eye when the gaze is directed towards the left. In each case, vehement urging overcomes the motor incapacity, and the eyes for the moment fix the same spot, the laggard, however, quickly relapsing. When he endeavors to fix with his gaze a point 18 inches distant, he sees double, and the optic axes are noticed to converge.

April 30 he had been taking hydrargyri iodidum gr. ¼ t.i.d., and can now converge and externally rotate the right eye in binocular vision with less difficulty and urging than before, though he cannot maintain the position completely and though diplopia still exists. The diadocokinesis and incoordination of the left leg and arm have improved, and he can better control the protrusion of his tongue. The face trembles less, but his attempts at grimaces are accompanied by associated movements, especially in the left finger. There is no apparent asynergia revealed by the leaning back or chair-mounting tests.

May 4 the ocular movements are better performed; there is less ataxia. The speech is clearer, but the diadocokinesis is still much impaired.

Nov. 15. He failed to return to the hospital during the summer, and the mental symptoms and trembling became much worse, but two months ago a local practitioner accidently treated him, and caused a remission of the *debacle*. When examined, he presented much less tremor of the right cheek, though now the whole tongue trembled coarsely, somewhat in the same manner as, though less extensively than, on April 23. The movement is more of a dysmetric than of a trembling kind. The control over his facial muscles in general is poor, though he can succeed after some effort to elevate and depress the eyebrows. He is unable to whistle. There is no longer dissociation during binocular vision, and all the movements can be effected, although with slowness and difficulty.

The control of the limbs, more especially the left, is slow, hesitating and trembling. The right hand when at rest on his knee exhibits an oscillatory tremor like that in paralysis agitans. This he can inhibit quite easily. When he extends the arms, they move up and down rhythmically through a space of about an inch, and at a rate of about six per second. With the left hand and arm he is particularly clumsy, failing to button his coat; and when he endeavors to touch any distant object, moves it with a series of jerks. The speech varies, sometimes being thick and indistinguishable, and sometimes quite clear. The tendon reflexes are much exaggerated. The examination was very difficult on account of his suspiciousness and unwillingness to make the movements requested. His parents state that he can do light work in the house, but that he loses himself in the streets and sometimes laughs without cause, though he never cries unless beaten, as for disobedience and gluttony, for he has become very voracious.

The outstanding features of the case are hemi-asynergia and intentional tremor of the left arm and leg, intention tremor and possible asynergia of the right face, and tremor of the right tongue. Along with these occurred a dysarthria and exaggeration of the reflexes, a fugitive diminution of the attitude sense of the left arm and a temporary dissociation of the ocular movements and apparent enfeeblement of the movements of the right eye, more especially in levo-gyration.

It is unlikely that the pyramidal tract is seriously if at all affected, for the sign of Babinski is not present and there is no true spasticity nor inability to perform any movement, the incapacity merely extending to the *co-ordination* of several muscular contractions into a determined act. This attempt on the part of the left hand and right face and tongue always provokes tremor.

Now lesions in the neighborhood of the nucleus ruber[1] are known to provoke tremors without in any way implicating the pyramidal tract. They do so by interrupting the impulses which descend in the cerebello-rubro-spinal tract. The tremors are usually, however, mono- or bilateral, and this is the first case of which I am aware which presents a syndrome comprising a crossed tremor due apparently to a single lesion.

I venture to explain the occurrence by the implication of another system of fibers, viz., the ponto-olivary, which traverse the median raphé on their way from the nuclei of the pons and which are thought to receive their afflux through the cerebello-fugal fibers of the middle peduncle. If those of the left system were implicated on the left side while en route to mediate the kinetism of the facial, trigeminal and hypoglossal nuclei, the lesion which interrupts them would necessarily be upon or near the course of the rubro-spinal tract, which mediates the kinetisms of the limbs and trunk of the crossed side of the body. It crosses, however, in the decussation of Forel almost immediately below the red nucleus, and composes the ventral of the two decussations of that region. Hence, in the aforesaid situation in the brachium pontis, it has already crossed and is on its way to mediate the muscular acts of the side of the body upon which it is now situated. Thus the lesion, if in the left medullary-pontine region, would implicate at the same time the left rubro-spinal tract en route to the left limbs and trunk at the same time as it interrupted the impulses as they passed across from the nuclei of the pons to govern the movements of the opposite right side of the face, jaw and tongue.

There may be much uncertainty in the interpretation of symptoms in any particular case where the cerebellar apparatus is implicated. In the case before us the tremors are very significant of an impairment in the course of the cerebello-rubro-spinal efferent system, as has been shown by the cases reported by Gordon Holmes.[1] In some of his cases, however, the lesion was shown to be more widespread by the additional symptoms, such as a definite oculomotor palsy, outbreaks of crying or laughter without external cause, a rigidity of half the face much resembling that in paralysis agitans, and the hesitating steps of the *marche aux petits pas*.[1]

The emotionalism arises when the ventral thalamic nucleus is affected. This is just a little

forward and to the middle of the nucleus ruber, the part of the cerebellar system implicated in many of Holmes' cases. The oculomotor palsy is, of course, due to interruption of the fibers of the third nerve, which run just internal to the nucleus ruber and through it. The short steps are due to the timidity which comes from the disturbance of the patient's control over synergic movements; for though he can make volitional simple movements as easily as before, yet he has lost the power of combining the movements of different joints into harmonious act, except by the exercise of much volition. This requires close attention, which in turn rapidly induces fatigue, one of the prominent symptoms of defect in any part of the cerebellar apparatus.

Rigidity of the face is, on the other hand, due to an exaggeration of cerebellar influences, either by the cutting off from the cerebrum, or by a lesion which stimulates the efferent fibers of the cerebellar system.

The monotony and tonelessness of the speech again are derived from diminished cerebellar influx. In these cases, speech, like the other movements, is often begun with great slowness and difficulty, and it also quickly tires.

The muscle rigidity may affect the trunk, and may take the form either of the bowed forward attitude seen in Parkinson's disease or, on the contrary, the forced extension and even complete opisthotonos shown by some of Hughlings-Jackson's early cases and one of the author's. We do not yet know what determines these attitudes respectively, though we do know that section of the brain stem between the colliculi produces the state of decerebrate rigidity,[2] of which opisthotonos is a feature. The cause of this is the unrestrained exercise of cerebellar afflux, through interruption of the afflux from the neopallium. The tonic nature of the influence exerted by the metencephalon is shown by the character of the fits caused by intravenous injection of absinthe [3] before and after removal of one cerebral hemisphere. While the pallium is intact, the whole convulsion is a clonic one similar to that in a convulsive phase of an epileptic seizure. After one hemisphere has been removed, the opposite side of the body manifests a rigidity similar to that in the tonic phase of the epileptic fit, while the other side of the body is convulsed, as before, clonically.

Very different is the state caused by *destruction* of the cerebellar apparatus; here muscular flaccidity dominates. It is often so severe that the patient cannot sit up, although individual movements are performed quite well, through the agency of will. Its distribution is homolateral, and it has no relation with the state of the deep reflexes. A useful clinical test in the limb is for the observer, after resisting the patient's movements, to suddenly cease to do so. If cerebellar atonia is present, the patient's limb continues its movements to the extreme point, and there is no recoil.

The tremor in these cases is purely kinetic, but does not always increase towards the end of the movement.

As regards attitude, a very characteristic one is that where the occiput is rotated towards and pulled down to the homolateral shoulder, the face thus necessarily looking upwards and to the side away from the cerebellar lesion. The eyes, however, look in the reverse direction back towards the lesion, or in some cases present skew deviation. This consists of the homolateral eye turning inwards and downwards, while its fellow looks outwards and slightly upwards. Horsley has found [4] this experimentally producible by stimulation of a spot in the neighborhood of Deiter's nucleus, which is known to send decussating fibers into the posterior longitudinal fasciculus, the coordinating path of the ocular movements.

The functions of the cerebellum are both static and dynamic. It is a center of energy and of reinforcement for all movements. It maintains tonus, and is necessary for the harmonious co-ordination of separate movements. Interference with its functions, therefore, leads to asthenia, atonia and astasia.

These perturbations are more manifest when the subject is deprived of ocular and vestibular sensorial aids.

The cerebellar syndrome may be summarized in its clinical aspect by calling it a dysbasia with relative integrity of isolated movements. The walk is not exactly ataxic, for the person does not throw out his legs as does the tabetic; it is that of the drunkard. The upper limbs show incoordination; and clumsiness is often shown in the writing. The speech is generally slow and scanning. This is due to the loss of the tonus-regulation, which normally takes up the slack of the muscles (so to speak) so that they respond quickly to nerve impulses, having little inertia to overcome.

This normal diadocokinesis cannot be accomplished when the cerebellum or the tracts which emanate from or lead to it are interfered with. The lack of tonus, too, is the cause of the asthenia, and the fatigability is due to the need of constant cortical intervention for the regulation of movements. This connotes volition, which is the most quickly tired of all functions. This atony may be so extreme as to prevent walking, the patient falling in a heap when placed upright.

A valuable clinical law is that the fall is towards the side of the lesion. When the head is drawn to one side, it is also generally but not always towards the lesion; but the face will look to the opposite side, as the head is rotated by the sternomastoid of the affected side, and hence must look in the opposite direction. The eyes, however, when turned, look back towards the lesion. An apparent exception was shown by Gordon's four cases.[5]

Asynergia [6] is shown firstly in walking by the trunk not following the limbs. Secondly, in standing, if the patient is pushed backwards, the lower limbs remain fixed even without the

bending of the knees and ankles, which naturally automatically tends to maintain equilibrium in the normal person. Thirdly, on endeavoring to sit up, the thighs flex and the heels fly up in the air, and, fourthly, in touching with his foot an object above and in front of him, the patient does so by the movement of the thigh succeeding that of the leg, and jerking like a mechanical doll. Fifthly, by intentional tremor of the hand and arm,[9] and of the ocular movements (nystagmus). All this is generally combined with an exaggeration of the power of static equilibrium.

The deep reflexes may be exaggerated on the affected side.

It is very important diagnostically to determine the complete integrity both of the sensibility and the intelligence, for lesions of the frontal lobe sometimes give rise to a dysbasia not very different from cerebellar titubation.[7] When a neoplasm is in question, the situation of the headache and tenderness on percussion should not receive too much stress, though they are valuable if they do not conflict with the physical signs. When it occurs, the implication of cranial nerves and the sensory tract is usually upon the side of the lesion, though in one extraordinary case of Guldenarm [8] there was left facial palsy, neuralgia, mydriasis and tendency to fall to the left, due to a fibrous sarcoma below the right tentorium. It was the size of an apple and crowded the pons against the left side of the basi-occiput, thus causing the contra-lateral symptoms.

Tumors of the vermis are apt to cause falls backwards, stiffness and extension of the neck, and opisthotonos, along with the foregoing symptoms.

But there was hardly a question of a tumor in our case, for it was most unlikely that so much retrogression could have occurred in symptoms affecting so important a region as the bulb-pons had a new growth been present. Moreover, mercury seemed to be the beneficial agent. Although no lumbar puncture was permitted and the Wassermann test was not then available, yet syphilis was a very probable cause of the symptoms. A basal meningitis causing the abundant exudation followed by absorption so characteristic of the Frascatorian lues could have interfered with both abducens nerves and prevented external movement, but such a lesion could not account for the loss of binocular movements, while those of the eyes singly were retained. Hence, even though meningitis was probably present, it is certain that central lesions also existed in very close proximity to the fasciculi which mediate the activity of the nuclei of the ocular nerves. Indeed, the ocular dysergia was merely a part of the general dysergia syndrome, and, like the latter, was not complete, but was mainly homolateral.

The permanence of the symptoms make it likely that the destruction or interruption of tracts in the mid-brain and isthmus were due to gummatous or arteritic ischemia, a common enough phenomenon, and the interest of the case lies in the rarety (for I have found none other like it) of an attack of the efferent coordinating mechanism of the cerebellar apparatus, the distribution of which attack resembles that of the syndrome of Benedict (type Foville) where the cerebrospinal system is concerned.

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A POINT IN THE TECHNIC OF THE USE OF NITRATE OF SILVER IN THE TREATMENT OF CHRONIC SUPPURATIVE OTITIS MEDIA.*

BY GEORGE L. RICHARDS, M.D., FALL RIVER, MASS.

ALTHOUGH suppurative otitis media has become less frequent since the operation for the removal of adenoids and the early treatment of the acute cases of suppurative ear trouble have become more general, many such cases, both acute and chronic, still exist and require treatment. Theoretically, in chronic suppurative otitis, the actual removal of all of the diseased tissue — the so-called radical operation — would seem to be indicated, and there are cases where no other operation can be considered. In many other instances radical surgery will be refused by the patient on account of the loss of time, the expense and the absence of symptoms which to the patient and his friends seem to demand so severe an operation. Even where the radical operation has been done, the results have not always been entirely pleasing to the operator or the patient, as the suppuration has not always stopped. It is difficult to find sufficient material with which to epidermize the enlarged tympanic cavity. Skin grafting has been used, but it is not wholly successful. The new mastoid flap of Dr. Leland is another attempt to accomplish this result and lessen the time of healing, and marks a distinct advance in radical mastoid surgery.

In the absence of urgent symptoms, conservative measures are tried, and the variety of these shows the difficulty of attaining the desired result, which is drainage and the cessation of the secretion. Adequate drainage has been hard to get on account of the anatomic arrangement of the structures with which we have to deal and their relation to the mastoid cells, antrum and attic.

Syringing has its advocates and is valuable, but unless the drum membrane be entirely gone, or nearly so, it is difficult with any type of attic syringe to adequately reach and remove all of the

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débris or purulent material which is present, and even then it is not always possible. Furthermore, the attic syringe is painful in its manipulation unless the patient possess sufficient self-control to sit perfectly still and the hand of the operator be very steady. Suppurative ear cases with small perforations do not do so well as those with large ones. This is probably wholly due to the inadequate drainage. In all cases of suppurative ear disease, especially in children, it is essential to look out for adenoids, even though the other symptoms of adenoids are not present. Many powders have been used in the treatment of suppurative ears, and in many cases they seem to do a great deal of good. They are all open to the objection that they cannot, as a rule, be brought into direct contact with the diseased area unless the perforation be a very large one. Solutions of silver nitrate and other caustics have been applied on the cotton-tipped applicator directly to the diseased area, and frequently with good results. Very often there is the same difficulty in reaching all of the diseased area as in the case of syringing and powders.

To obviate, in a measure at least, this difficulty, I have for a few months been using silver nitrate in a somewhat different manner than formerly, and so far with a measurable degree of success. The procedure is a simple one, and I recommend its trial in suitable cases. If it fails, no harm will have been done. The method is as follows: Cleanse the suppurative area as thoroughly as possible, doing this very carefully, using syringing, wiping and suction as may be needed, and removing any polypi, granulation or débris that may be present. If the perforation is very small, enlarge it, but in the cases in which I have used the silver, this has not been necessary. Lay the patient's head over so that the affected ear lies uppermost and absolutely horizontal. Instill with a dropper a sufficient quantity of the nitrate of silver solution to nearly fill the external canal. Keep the head in the horizontal position for five minutes, then dry the canal thoroughly and put in a light wick of cotton or gauze. I begin with 3% silver solution, and, if necessary, gradually increase until I use 20%. As the silver does not penetrate very deeply, owing to its forming a coagulum at the point of application, it will in most instances have to be used a number of times. Few patients will object to this and will almost always prefer to make trial not only of one but many methods of local treatment before consenting to the radical mastoid or even to ossiculectomy. The diseased area, so far as it is visible, shows white when examined. The treatment is repeated from every other day to once a week, according to the nature of the case and the ability of the patient to follow up the treatment. The silver works best in cases where the probe shows but little bare bone and but limited bony destruction. In the presence of extensive caries, it is doubtful if it would have much value. As a rule, the application is painless, and in only one instance have I seen any reaction. In that case there was pain for a few hours, but the ultimate effect was excellent, resulting in complete healing of the suppurative ear, which had lasted for years. Occasionally the solution goes down the Eustachian tube, causing some annoyance. I do not by any means claim that this method is always successful or that it displaces the radical operation. It is simply one of many procedures that may be tried in these cases, and it has the advantage that by gravity the silver solution is brought into very nearly direct contact with all the diseased area.

I have no series of cases to offer, not having gone over my records to determine in how many cases I have used it. Five illustrative cases are appended as showing the type of cases in which I have found it useful; many more could be given.

Case 1. A. G., age three, with a history of having discharge from each ear for three years, bloody for the last year. Chloroform required for examination. Polypi in each ear. Curetted lightly on several occasions, each time under chloroform, until all of the granulation tissue was removed, then applications of nitrate of silver were made every other day for two months, at the end of which time each ear was dry. This was a case of extensive destruction of the middle-ear structures of the child, and at first it seemed as though a radical mastoid operation would be required on each ear. By continued treatment of cleansing and stimulation with the silver, both ears were brought into good condition and without apparently much loss in hearing. Of course it is possible that the suppuration may start up again; if so, the same method of treatment will be used, as it seems to me desirable to avoid the radical mastoid in the young child if possible.

Case 2. Mrs. L., first seen by me in 1900. The right ear had run for six months and the left one for several years. The margin only of the left drum remained, and in the right ear there was no evidence of any drum visible. The remnant of the left drum was removed, together with the malleus, which was carious. There was cholesteatoma in the attic. As there was pretty fair hearing, and great tendency to dizziness, the ears were treated locally from May until September, at which time they were both dry, the treatment consisting of syringing and gauze wicking. In 1901 she returned, and again in 1902, some cholesteatomatous débris being removed at each time. I did not see her again until 1909, when she returned with both ears discharging and a large polyp in the right ear. This was removed and the instillations of nitrate of silver used in each ear at intervals of five days. In four weeks the right ear was dry and in six weeks the left one was also dry. No syringing was used. Each ear was carefully cleansed, and solutions of first 3% and afterwards 12% were used in the manner previously described. There is still pretty fair hearing in each ear, and it seems to me that conditions are better for her hearing than if a radical mastoid had been done in 1900. The ears have dried up quicker under the nitrate of silver than they did under the previous treatment. That the cure will be any more permanent I would not say; I am under the impression that it will be.

Case 3. M. B., a girl of seventeen, first operated on radically by me for subacute mastoid after a Wilde's incision in January, 1903. She recovered and was not seen again until Feb. 27, 1909, when she returned with pus in the external canal and a temperature of 103. She had worked in the mill until noon of this day, and said that up to this time there had been no trouble whatever in the ears. The mastoid was re-operated upon, revealing the fact that some cells had evidently escaped removal at the time of the previous operation,

especially along the borders and above and behind, these having become reinfected. As at the first operation there was a fistulous tract directly over the entrance to the mastoid antrum and a portion of the periosteum was very much necrosed, a radical operation was done. In doing the secondary operation I found it difficult to make a proper flap to cover the opening, as a considerable amount of the flap of the former operation was more or less cicatricial. The girl was in poor condition, and the convalescence from the operation was very slow. She had general anemia, acne and boils. After her discharge from the hospital the posterior wound healed very slowly, and at one time there was a small fistulous tract leading from the tympanic cavity. She was again given ether and the area curetted. The curette went backward and upward, and seemed to strike an area of bare bone as though there might be a small sequestrum. On carrying the probe backward, it went either through the dura mater into the cerebral cavity or else through the opening of the foramen ovale into the labyrinthine cavity, but it was impossible to determine which. A rapid flow of almost colorless fluid followed, either cerebral or labyrinthine, and the operation was not carried further. The temperature rose to 102 the next day and there was nausea and vomiting. Cerebral trouble was feared, but the temperature slowly went down and the headache and nausea disappeared. The discharge from the ear, while diminishing, continued in spite of cleansing and mild curetting from June 17, 1909, when she left the hospital, until November, 1909. Treatment was continued at my office with occasional curetting of the posterior wall and the Eustachian tube area, from both of which points pus seemed to come. She remained stationary, without much improvement, until in October I began to use the nitrate of silver by the method given, when improvement became rapid, the discharge ceasing by Nov. 1. Examination of her ear a few days ago shows complete healing everywhere, the discharge from the Eustachian tube ceasing after one forcible instillation of the silver. She complained once of considerable discomfort when the silver went into the post-nares. This case also illustrates the fact that even a radical mastoid may not be an absolute success, and that one cannot be sure whether it is or not until many years have elapsed. There were six years between the operations, with a history of no trouble in the interval. Of course I admit the possibility of the first operation not having been sufficiently thorough. As it is sometimes impossible to remove every cell, I think it must be conceded that even apparently thorough operations may possibly require a reoperation at some future date, even some of those that we do at the present day, when the endeavor is made to remove every cell and every vestige of a cell; in spite of this, some cell may be overlooked and reinfection occur.

CASE 4. Miss Z., acute inflammation of the middle ear, mastoid tenderness, ear incised. Patient sent to hospital and ordered cold applications to mastoid, warm syringing to ear, salicylate of soda internally. Acute symptoms all subsided, but the ear kept on discharging. At the end of two weeks the nitrate of silver instillations were begun, and after the third treatment the ear was dry. Of course it may be said that the ear might have become dry in the same time anyway. This is perfectly true, and no attempt is made here to claim that some other method of treatment might not have answered perfectly well.

CASE 5. Mrs. O., occasional suppurative ear for several years, never quite drying up. After four applications of the silver solution complete cessation of the discharge took place. Some hours after the third application there was some pain and I was a little apprehensive whether some injury might not have been done, but the pain soon subsided, and on examining the ear two or three days after it was found to be nearly dry, and after the next application it became completely dry, showing that no harm whatever was done except the discomfort of the pain. This is the only instance in which any patient complained of pain following the application.

Medical Progress.

REPORT OF PROGRESS IN OTOLOGY.

BY HARRIS PEYTON MOSHER, M.D., BOSTON.

(Continued from No. 9, p. 366.)

CIRCUMSCRIBED MENINGO-ENCEPHALITIS.

To the groups of cases classed as circumscribed meningo-encephalitis belong those cases of circumscribed meningitis with great swelling of the cerebellar hemisphere of the posterior cranial fossa in the region of the lateral sinus occurring in connection with infectious thrombophlebitis. It is striking how frequently a circumscribed meningitis is found associated with otitic sinus phlebitis. This may depend upon the fact that the sinus phlebitis is almost always associated with a pachymenigitis externa and not seldom with a pachymeningitis interna.[4]

GENERAL MENINGITIS.

Cases of brain abscess are usually associated with a diffuse meningeal affection. This seldom shows a localization to the diseased side. Alexander reports a case of healed purulent meningitis due to streptococci. This he says is the first reported case which is free from objections. Grademigo was the first, however, to report a healed purulent meningitis (staphylococci). Other cases have been reported by Bertelsmann, Brieger, Grossman and a number of other observers. The organisms usually were diplococci. Once the bacterium coli was found, and in a few instances staphylococci and pneumococci. The healing of streptococcic meningitis has not as yet been proved, but the present case shows that at least in exceptional cases even streptococcic meningitis may get well.

THE PRESSURE OF THE CEREBROSPINAL FLUID.

There may be many variations in the pressure under which the cerebrospinal fluid is discharged. An approximate estimate is sufficient for clinical purposes, so that a special apparatus is not necessary. Under normal pressure the fluid is discharged from the canula in the arc of a circle. With increased pressure it is discharged in the arc of an ellipse, whereas if the pressure is decreased, the fluid leaves the end of the canula at an angle or drops from it. In rare cases a negative result follows lumbar puncture in cases of purulent meningitis where there is thick exudate in the posterior cranial fossa and obstruction to the foramen of Magendi.

[4] Alexander: Monatschr. für Ohrenheilkunde.

In withdrawing the fluid it is important not to contaminate it with blood. This is best avoided, where blood is present, by collecting the fluid in parts in three test tubes. What blood follows the puncture will be collected in the first two tubes, leaving the third tube to collect the fluid in the condition in which it exists in the spinal canal.

INFERENCES TO BE DRAWN FROM CHANGES IN PRESSURE AND COLOR.

Increased evacuation pressure is always a sign of increased intra-meningeal pressure and, therefore, a sign of meningitis. Increased pressure is found chiefly in serous meningitis and in purulent meningitis. Normal pressure is frequently found in tubercular meningitis.

The cerebrospinal fluid should be colorless. White or yellow and cloudy fluid indicates a purulent meningitis. The transparency of the fluid, however, is of more importance than the color. If normally clear fluid contains very small white dots or threads, accompanied by clinical signs of meningitis, meningitis is generally present. In some cases it may be very difficult to distinguish with certainty between true purulent and purulently clouded fluid. It is well to remember, therefore, the fact that in some of the cases determined with certainty a general purulent meningitis may show only a slightly clouded fluid and that in some instances the fluid is entirely clear in the beginning.

As a rule the cerebrospinal fluid in serous meningitis is clear, but Alexander reports a case identical in symptoms with a case which gave clear fluid where the fluid was yellowish-gray and very cloudy.

Alexander repeatedly refers to the importance of finding a cloudy, sterile fluid evacuated under pressure (Brieger, Koerner, Leutert, Wolff, Alexander). This he says may be taken as a characteristic feature of otitic brain abscess. However, cloudy fluid frequently seems to occur only in the manifest stage of brain abscess or immediately before its rupture. Until the last few years this exceedingly important character of the cerebrospinal fluid was unknown. Without going into the question of micro-organisms, the purulent cloudy fluid was regarded as a sign of purulent meningitis, and a contra-indication to an operation, for the reason of not promising success. The autopsy revealed a brain abscess! With a timely diagnosis the patient might have been saved. This point of view has been abandoned. Too much stress cannot be given to the fact that, notwithstanding the great importance of lumbar puncture for diagnosis, and perhaps also for therapeutics, it is of none whatever as an operative indication. As long as the clinical phenomena permit, even a purulent liquor containing micro-organisms should not stop us from operation. Further, it must always be remembered that a markedly purulent cloudy fluid may occur in cases of labyrinthine suppuration or sinus thrombosis.

THE COAGULATION OF THE CEREBROSPINAL FLUID.

If, after the fluid has stood for three to twenty-four hours, a coagulum appears in it, this is an important sign. When the fluid is evacuated clear and under pressure, the appearance of a coagulum is characteristic of serous meningitis.

THE MICROSCOPICAL FINDINGS.

In cases of purulent meningitis, the presence of polynuclear leucocytes and micro-organisms gives a characteristic picture. The microscopical examination, however, is not sufficient evidence upon which to make a judgment as to the virulence of any given case because the bacteria may be dead. Only animal inoculation can give an idea of the virulence of the infection. In the majority of cases, cloudy, gray or yellowish fluid holds bacteria. Even clear fluid, also, may contain micro-organisms. Finally, even in cases of fully developed purulent meningitis, the fluid may sometimes be found clear and sterile. Of especial importance is the result of the lumbar puncture with purulent, inflammatory diseases near the dura, having, however, an extradural course. Such instances are found in cases of purulent sinus phlebitis and large extradural abscess. In these cases more or less numerous polynuclear leucocytes are present in the fluid. Sometimes cloudiness of the fluid depends upon the existence in the fluid of great numbers of polynuclear leucocytes, yet the fluid proves to be sterile.

In cases of meningitis, if an operation is to be done, it must be performed at once. Often it is not justifiable to wait for the results of a microscopical examination. To wait for coagulation to appear, or for the result of inoculation of animals, also, is at times not advisable. Therefore, a judgment must be made from the character of the fluid as it comes from the needle.

THE OPERATION TO BE PERFORMED IN CASES OF MENINGITIS DUE TO EAR DISEASE.

The first end to be accomplished is to remove the suppurative focus from the ear. In acute cases this is done by antrotomy, and in chronic cases by the radical operation. If labyrinthine suppuration exists, a wide opening is to be made into the labyrinth, starting from the vestibule and the promontory of the external semicircular canal. The operation is continued until there is a free flow of fluid. In some cases this means the exposure of the internal auditory canal.

In operating cases of purulent meningitis, the object to be obtained is free drainage of the middle and posterior cranial fossæ, which are chiefly involved in otitic meningitis. In order to accomplish this, first the lower part of the squama and the tegem tympani are removed, and then the sinus and the dura of the posterior cranial fossa in front and behind the sinus are exposed. Both openings are made the size of a dollar and are connected at the level of the tentorium. In cases of labyrinthine suppuration the exposure of the dura of both cranial fossæ

precedes the operation on the labyrinth. Finally, the intradural spaces are drained. This drainage is obtained by a free incision of the dura. Alexander at present recommends four incisions, two in the middle cranial fossa, one between the sinus and the labyrinth and one behind the sinus. Each incision should be about ½ cm. long. By simultaneous puncture of the ventricle the drainage of the cerebrospinal spaces is accomplished.

It is not necessary to make multiple incisions in all cases. If the operator is convinced from clinical symptoms and from the operative findings that meningitis is limited to a region easily accessible for surgical treatment, a single incision in the diseased area may be sufficient. It is recommended, for example, in sinus phlebitis with meningitis, to incise the dura between the sinus and the labyrinth. With purulent labyrinthitis and the clinical phenomena of a meningitis limited to the posterior cranial fossa (marked rigidity of the neck, abductor paralysis), one incision into the dura of the posterior cranial fossa will be sufficient.

The drainage of the intradural spaces is maintained by frequent changes of dressing. The first change may take place on the day of operation. During the first week the dressing is limited to the removal and renewal of the outer layers of the dressing. The lumbar puncture should be repeated after two or three days. At each puncture 20 ccm. of fluid can be withdrawn without risk.

THE PROGNOSIS IN CASES OF MENINGITIS DUE TO DISEASES OF THE EAR.

In arriving at a conclusion as to the prognosis to be given in a case of otitic meningitis, the factors to be considered are:

(1) Whether any micro-organisms are present, and their virulence.

(2) Whether the meningeal changes discovered at the operation show a typical relation to the ear.

In regard to the first point: The virulence of the exciting cause is the important factor. A favorable outcome in cases of purulent otitic meningitis depends upon a low degree of virulence in the infection. Animal experiments alone can settle this point. The mere presence of polynuclear leucocytes indicates meningitis. If bacteria are present as well, a purulent meningitis is present.

In regard to the second point to be borne in mind in making a prognosis: The mode of the development of a meningitis is indicated by the first attack. The more acute and violent the course of the first symptoms, the worse will be the prognosis. A prolonged initial stage and uncertain symptoms make the prognosis of a case more favorable.

Meningitis which is caused directly by a local purulent process in the region of the ear usually from the beginning shows the characteristics of an abscess. It retains this character and remains localized. The more a purulent meningitis represents a remote consequence of ear disease, the more liable it is to become a general meningitis from the beginning. From the practical standpoint the following facts should be borne in mind. With the clinical symptoms of meningitis, the findings during operation will enable the physician to make a probable diagnosis as to the extent of the meningitis. If the inflammatory changes extend from the ear to a circumscribed focus on the dura, and into the dura, there will usually be a partial, encapsulated or circumscribed meningitis. If the purulent changes do not extend from the ear to the dura, there is usually a general meningitis.

At the operation, if the region of the dura about the temporal bone is unaltered and the bone itself shows no necrotic changes, such cases are unfavorable. Finally, that form of purulent meningitis in which the intradural infection starts from multiple inflammatory plaques on the meninges is unfavorable.

A NEW VESTIBULAR SYMPTOM IN DISEASES OF THE CEREBELLUM.[5]

When the Romberg test is applied in cases of left-sided rotary nystagmus of vestibular origin, the patient falls to the right. When the head is turned 90° to the right, the patient falls backward; when turned 90° to the left, he falls forward. This occurs in accordance with a law which Baranay discovered that, in disturbances of equilibrium of the vestibular apparatus, the direction of the fall is influenced by changing the position of the head. Disturbances in equilibrium noted in diseases of the cerebellum differ from those of vestibular origin in that the strict relation between the character and direction of the nystagmus and the direction of the disturbances in equilibrium is lost.

For example, the patient falls to the left with rotary nystagmus, or, as frequently observed, he falls backwards with horizontal or rotary nystagmus. In such cases of disturbed equilibrium, a change in the position of the head does not change the direction of the fall. Cerebellar disturbances in equilibrium have this feature in common with disturbances of equilibrium of hysteric or neurasthenic origin. In two cases of unilateral affection of the cerebellum (clinical observations) Baranay has noted a reaction which may be of great value in the diagnosis of diseases of the cerebellum, especially for localizing right or left-sided site of the affection. In both cases he tested the caloric reaction of the vestibular apparatus (Baranay) and found a typical, well-developed caloric nystagmus on both sides. The disturbances of equilibrium accompanying the caloric nystagmus were, however, atypical. The disturbances of equilibrium of the apparently healthy side could be influenced by changing the position of the head as above described, but on the diseased side equilibrium was not disturbed.

THE DIAGNOSIS OF DISEASE OF THE LABYRINTH.

The subject of labyrinthine nystagmus, when reduced to its lowest terms, is not only very

[5] Dosent Dr. Baranay, Vienna: Laryngoscope, vol. xx, No. 5, May, 1910, p. 560.

pretty, but relatively simple. Looked at in this way, the subject presents itself as follows: Experiments on the semicircular canals in animals have proved that changes in the fluid contained in the canals will cause a change in the position of the eyes. This change is an oscillating movement or nystagmus. The nystagmus takes place in the plane of the canal in which the motion of the fluid is stimulated, and the motion is towards the side of the stimulated canal. With a patient sitting in the upright position, the external horizontal canal is the one in which the motion of the contained fluid is most easily stimulated or changed. The two ways by which the motion of the fluid in the canal is stimulated or changed are, revolving the upright patient about a vertical axis, much as a child spins himself about in order to make himself dizzy, and by injecting into the external auditory canal, for some four or five minutes, hot or cold water. By changing the position of the patient's head all the semicircular canals in succession can be brought under the influence of the turning test. Each pair of semicircular canals can be made horizontal for the time being by changing the position of the head. For instance, by bending the head forward on the chin the two superior vertical canals become horizontal, and by putting the nose in the air, or, better, by having the patient lie on his back, the superior vertical canals again become horizontal. If the head is bent sharply to the right or to the left, so that it lies as nearly as possible on the shoulder, both posterior semicircular canals become horizontal. If one will take the trouble to get a model of the semicircular canals, or will make a rough one out of wire, he will be repaid for his trouble, for immediately he will see how changing the position of the head will in turn make each semicircular canal horizontal. Pictures, owing to the perspective of the drawings, do not make this point clear. Once seen, the point is exceedingly simple.

With the fundamental facts in mind, let us take the next step. The next step is this. When each labyrinth is functioning normally, an equal stimulus is sent from each labyrinth to the eyes. Irritate one labyrinth, as by disease, and the irritated labyrinth sends a greater stimulus to the eyes and pulls the eyes towards the side in which the stimulated or diseased labyrinth is placed. Suppose the disease which at first irritated one labyrinth is sufficient to destroy it. A dead labyrinth ceases to function and sends no stimulus. The well labyrinth, however, still sends its stimulation to the eyes, and as it is unopposed by the dead labyrinth it dominates the situation and causes the eyes to move toward itself or toward the sound side.

(To be continued.)

According to a report made recently by Governor Frear, of the Hawaiian Islands, the birth-rate of Hawaii is decreasing in proportion to the population, while the death-rate is increasing. Last year the deaths numbered sixty-one more than the year before, whereas the births numbered six hundred less. — *Med. Record.*

Reports of Societies.

NEW ENGLAND OTOLOGICAL AND LARYNGOLOGICAL SOCIETY.

A meeting of this society was held at the Boston City Hospital on March 30, 1910.

A. C. Getchell, M.D., *President.*
W. F. Knowles, M.D., *Secretary.*

Dr. J. Payson Clark read a paper entitled

TWO UNUSUAL CASES OF DISEASE OF THE MAXILLARY ANTRUM.[1]

DISCUSSION.

Dr. A. Coolidge: I had seen one or two cases similar to these when Dr. Shaedel's paper came out in 1907. I reported at that time two or three cases in which not only vasomotor symptoms, but other peculiar nervous symptoms were present. They seemed to be relieved when the antrum was washed out. In none of these cases was there any pus in the antrum in which the bacteriological culture was negative. In cases of polypoid degeneration we have all noticed the osteomaxillary is large, almost invariably, if the nose and antrum are full of polypi. We can always get into the antrum with a large-sized probe. In cases of long-continued empyema of the antrum without polypi, the osteoma becomes large, so it does not readily probe. It has always seemed as though the large osteoma was the result of the disease. Dr. Shaedel's idea was that it was the other way; that it was on account of the large-sized osteoma that the antrum became irritated, and, secondly, that we had vasomotor disturbances. I do not think he proved his case at all, but certainly, in a certain number of cases, there is a connection between the secretion in the antrum and vasomotor disturbances.

Within a month I have seen a case in which the antrum contained a mass of thick mucus which dropped into the basin when the antrum was being washed out. The case had vasomotor symptoms. It was pale and swollen. It evidently and probably was proved to be the case that the irritation in the nose was due to a sarcoma in the nose, which was then hidden and unsuspected. That rather looks as though this thick mucus was simply a secretion from vasomotor rhinitis in certain conditions. I mean that the thick mucus we sometimes find in the nasal cavity becomes impacted there and forms this tenacious mass. On the other hand, there is something about this we have not yet discovered, because, in a certain number of cases, the mere washing out of the antrum will mysteriously relieve indefinite vasomotor symptoms. I think it is a subject it is well to bear in mind and investigate as these cases arise, because I think there is something which is still hidden which we do not fathom entirely.

Dr. F. C. Cobb: I think these cases are interesting from the causative standpoint, to me particularly. It seems to me that the only evidence on which the assumption can arise that the mucus in the antrum has irritated the rest of the tract is that it has improved the rest of the nose, occasionally, washing it out. Of course we know that washing sometimes results in an improvement of the nose because the washing is pretty thorough. The water comes down from the upper meatus and clears the nose out pretty thoroughly. That does not seem to have always taken place. In one case after each washing there was less and less mucus until the thing improved; then the patient would go away to New York or somewhere and come back with a cold

[1] See Journal, p. 395.

and more mucus. Why are not these cases, then, an inflammatory condition or a vasomotor condition of the nose, accompanied by a vasomotor condition of the antrum, or inflammatory condition, if you like, or a mixture of the two? Because we know the natural mucous membrane is thickened and that the prognosis in transillumination is due to thickening in the antrum, not the secretion in it. Is not the antrum part of the whole inflammatory condition in the nose, in the cases cited, and the amount of mucus simply the mucus secreted by the antrum, and is the antrum, therefore, the cause of the general vasomotor rhinitis? It seems to me that this is hardly probable. The antrum may not be a factor, but a part of the whole general inflammatory condition.

DR. GEORGE L. RICHARDS: I knew Dr. Shaedel very well. Dr. Coolidge spoke of his paper in 1907; I do not know whether Dr. Coolidge saw the paper published after Dr. Shaedel's death. There is one thing in regard to his work that Dr. Cobb's work calls to my mind. Dr. Shaedel claimed that he cured a great many cases by the application of a solution into the antrum which would seem to have proved therapeutically that the curative agent was introduced into the antrum.

DR. J. P. CLARK: I have nothing to say in concluding except in answer to what Dr. Cobb said. In the first place, there was no thick mucus in the nose at any time except what came out of the antrum; the secretion of the nose was watery. In the first place, I used washes in the nose for some time, only to make the symptoms worse. It was not until I washed out the antrum that the nose got better.

Then as regards — Dr. Cobb spoke of these cases recurring. Perhaps I did not make clear that the intervals were very long. In one case the patient did not have any trouble for four years, so it could not have been a constant condition in the nose all that time.

Book Reviews.

Surgery: Its Principles and Practise. Vol. V. Edited by W. W. KEEN, M.D., LL.D., Hon. F.R.C.S., England and Edinburgh, Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Philadelphia: W. B. Saunders Company. 1910.

The fifth and final volume of Keen's Surgery is composed of seventeen monographs, with a total of 1,200 pages. As in the previous volumes, each monograph is called a chapter and the first two chapters make one half of the entire volume, the others varying from 13 to 90 pages. The articles are: "Surgery of the Vascular System," Rudolph Matas, M.D., 334 pages. "Surgery of the Female Genito-Urinary Organs," E. E. Montgomery, M.D.; John M. Fisher, M.D.; P. Brooks Bland, M.D., 236 pages. "Surgical Technic," John H. Gibbon, M.D., 68 pages. "Ligation of Arteries in Continuity," Warren Stone Bickham, M.D., 77 pages. "Operations on Bones and Joints," James Peter Warbasse, M.D., 58 pages. "Amputations," Warren Stone Bickham, M.D., 89 pages. "Plastic or Reconstructive Surgery," John B. Roberts, M.D., 36 pages. "Surgery of Accidents," Walter L. Estes, M.D., 33 pages. "Surgery of the Parathyroid Bodies," Charles H. Mayo, M.D., 16 pages. "The Intracranial Surgery of the Fifth and the Eighth Nerves," Charles H. Frazier, M.D., 36 pages. "General Anesthesia and Anesthetics," Hobart Amory Hare, M.D., 45 pages. "Local and Subarachnoid Anesthesia," Karl G. Lennander, M.D., and Fredrik Zachrisson, M.D., 56 pages. "The Surgery of the Infectious Diseases," George E. Armstrong, M.D., 42 pages. "The Use of the X-Ray and Radium in Surgery," Ernest Amory Codman, M.D., 37 pages. "The Legal Relations of the Surgeon," Hampton L. Carson, Esq.; 18 pages. "The Laboratory as an Aid to Surgical Technic and Surgical Diagnosis," Wm. McLete Caplin, M.D., 13 pages. "The Surgical Organization of a Hospital," Albert J. Ochsner, M.D., 24 pages.

Matas' article upon the Vascular System would make a fair-sized volume itself; it is exhaustive and goes into minute details; its bibliography is extensive and is given in sections, each following one of the many divisions into which this admirable monograph is divided. The writers upon the surgical aspects of gynecology have made their chapter about one third shorter than the one preceding (Matas'), an unusual and praiseworthy proceeding; all that is essential to the subject is concisely presented; we miss a little some illustrations which would probably have been included had space permitted; it is to be commended for its sound judgment and moderate conservatism.

Gibbon has written the best chapter on technic that we have read; it is entirely satisfactory. The two chapters by Bickham maintain the high standard of his larger textbooks both in matter, manner and illustration; exceptionally good are the pictures of cross sections of the extremities; much the same sort of praise must be given to Warbasse for the treatment of bone and joint operations.

Roberts writes most interestingly upon plastics, and has many excellent illustrations, besides a long bibliography. Estes, on accident surgery, has written one of the best articles in the book — a statement which may be immediately repeated in relation to Mayo's short chapter on the parathyroids. Frazier writes admirably upon the fifth and eighth nerves, a chapter which might have been well placed in Vol. III, which contained the surgery of the head. Anesthesia is very properly given 100 pages; general anesthetics are covered in Dr. Hare's well-known and efficient manner; local anesthesia was necessarily divided into a chapter excluding spinal anesthesia, and another devoted to that subject, owing to the unfortunate death of Lennander, before the latter article was finished; his assistant, Zachrisson, has completed the work. Taken together, the subject is most satisfactorily treated, and the enormous field of this growing method is convincingly demonstrated. Codman has, in our opinion, produced the best article upon the use of the x-ray that has yet appeared in print.

This volume completes what may be literally described by the hackneyed phrase, "a magnificent work." Dr. Keen points out that 5,500 pages have taken the place of the 4,000 of the original plan, that the work has grown one quarter in the making. It is the common history

of textbooks, and one greatly to be deplored. While convinced that this is the best system of surgery that has appeared in America, we are equally convinced that it would have been twice as effective if it were half the size. Somewhere between 1,000 and 6,000 pages must the ideal textbook be found. We are confronted, however, not so much with the ideal as the real, and if we must have a system, let us have this of Dr. Keen.

American Practice of Surgery. A Complete System of the Science and Art of Surgery. By representative surgeons of the United States and Canada. Editors: Joseph D. Bryant M.D., LL.D., and Albert H. Buck, M.D., of New York City. Complete in eight volumes. Profusely illustrated. Volume VII. New York: William Wood & Co. 1910.

This Volume VII will probably appeal to the general surgeon more than have any of its predecessors. It is a truly interesting collection of important monographs by well-known contributors to surgical literature.

Charles H. Peck, of New York City, and C. A. Porter and William C. Quinby, of Boston, contribute the first two essays, — Peck on the Surgery of the Bony Pelvis and Porter and Quinby on various minor diseases of the extremities, diseases which have not been discussed in previous articles in this series. Peck's essay is a good one, and is modern. He deals especially, and in an interesting fashion, with such topics as sacro-iliac disease and pelvic deformities, as well as the more frequent ailments, — fractures, pilonidal sinus, and the various tumors and inflammations of the region. Porter and Quinby discuss, among other topics, such interesting lesions as x-ray burns and the malignant changes which may complicate them, the various forms of bursitis which recently we have come to understand and several familiar but little discussed topics, such as ingrowing toe-nail and paronychia. The chapter is interesting because it deals with every-day subjects. It is fairly well written.

J. D. Griffith, of Kansas City, writes on Surgical Diseases of the Abdominal Wall. Every system of surgery contains such a chapter, and the writer of it must groan in its production. Griffith has done extremely well with a most uninteresting but necessary topic.

M. L. Harris, of Chicago, discusses in his usual brilliant fashion the Diagnosis of Abdominal Tumors, and while his writing covers but eight pages, it is extremely well worth reading.

William McD. Mastin, of Mobile, follows with a chapter on Abdominal Section. The writing is rather fragmentary, but the chapter contains a good deal of useful routine information.

R. G. LeConte and F. T. Stewart, of Philadelphia, follow with an extremely readable and modern chapter on the Pericardium, Heart and Blood-Vessels. We doubt if they add any special notes of importance to the large literature of the subject, but their collection of facts, both historical and critical, is probably the best yet made. The casual reader, especially, will be interested in their descriptions of the suture of blood-vessels and the modern method of treating aneurism. It is too bad that all writers on aneurism have to fall back on the rather crude sketches which Matas first supplied to the *Annals of Surgery* eight years ago.

A. J. Ochsner, of Chicago, contributes one of the best chapters in the book, that on the Stomach and Esophagus. While the writing is rather discursive and disjointed, the subject-matter is full and satisfactory. The great experience of the writer is well illustrated by the admirable sketches in the text.

To J. C. Reeve, Jr., of Dayton, Ohio, is assigned the rather difficult subject of Diseases of the Diaphragm and Subphrenic Abscess. He has acquitted himself admirably and has made of his writing a truly interesting and readable chapter.

The lamented Andrew J. McCosh, of New York, has left behind for publication in this volume two admirable essays on the Surgical Treatment of General Peritonitis and on Diseases of the Vermiform Appendix. McCosh was a satisfactory writer, as he was a painstaking and thorough clinician. Both of these chapters bear witness to his experience, resourcefulness and unusual skill, as well as to his fairness of mind and maturity of judgment. The chapter on appendicitis, especially, may almost be ranked as a classic.

Nathan Jacobson, of Syracuse, contributes an excellent article on Tuberculous Peritonitis, excellent and final so far as our present knowledge reaches.

E. Wyllys Andrews, of Chicago, always interesting in what he has to say, writes the chapter on Abdominal Hernia. His illustrations, especially, are of unusual value, more particularly the original sketches of his own well-known operation for inguinal hernia. The writing is well balanced and the descriptions good.

C. W. Oviatt, of Oshkosh, has not often of late been a contributor to surgical literature, but his present chapter on the Intestines, Omentum and Mesentery is thoroughly worth reading. His illustrations also are satisfactory, and his advice regarding methods of diagnosis of intra-abdominal lesions, and the surgical treatment, especially, of intestinal disorders, is sound and illuminating.

Perhaps the most interesting chapter of the book to general surgeons is the last chapter, by J. P. Tuttle, of New York, and S. T. Earle, of Baltimore. They write on Surgical Diseases of the Anus and Rectum, and their writing is unusually forceful and instructive, while their illustrations are particularly satisfactory. We have mentioned several times this subject of illustrations, because illustrations enter largely into the proper composition of modern surgical writings.

We trust sincerely that in the next volume a proper general index to the whole edition may be supplied.

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RESULT OF THE FOURTH OF JULY PRECAUTIONS.

IN the current number of the *Journal of the American Medical Association* are presented the statistics of injuries during the Fourth of July celebration of 1910. This is the eighth consecutive year that this journal has undertaken this laborious task, which certainly is bearing fruit in calling attention to the extent of the accidents and to their alteration for the better under certain legal restrictions. It appears from these figures that there were this year only seventy-two cases of tetanus, as contrasted with one hundred and fifty last year. In connection with this it appears that the number of blank cartridge injuries shows the astonishing decrease from twelve hundred and twenty-five in 1909 to only four hundred and fifty in 1910. Injuries from the use of blank cartridges are most frequently the cause of tetanus, hence it is evident that the greater precautions which have been taken and the decrease in the number of cases of tetanus is not a mere coincidence. It appears that in the seventy-two cases of tetanus, antitoxin was employed in twenty-five instances, but in only one case before the active symptoms had supervened. Of the cases occurring this year, ninety-three per cent ended fatally, a somewhat larger percentage than for the three or four previous years. The reason for this is apparently not stated, unless it may be attributed to the imperfect and incomplete administration of antitoxin. Sixty-four persons were killed by the use of fire works of various sorts, which, added to the sixty-seven deaths from tetanus, bring the total mortality up to one hundred and thirty-one, a most gratifying decrease from immediately preceding years. In fact, this is the lowest number of deaths since 1903. There were 2,792 injuries incurred which were not fatal, but this again is but little more than half the total of last year.

Among the implements causing mutilating wounds, the giant fire cracker with a short fuse easily holds first place. The astonishing number of 1,050 injuries were due to the giant fire cracker alone. Naturally fire arms and other less dangerous means of celebration constitute a cause of numerous injuries, but the number is small considering the extent to which they are used.

The excellent showing made this year is unquestionably due to an awakened public spirit as well as to definite restrictive legislation in various parts of the country. For example, Trenton, N. J., had no injuries, due undoubtedly to a prohibitive ordinance passed last year; Cleveland had but one injury, and in that city also a prohibitory ordinance is in force. The same is true of Washington and Baltimore. Our contemporary is inclined to think that the responsibility for the majority of the Fourth of July injuries rests with city governments. If this be true, the means of still further reducing the mortality and lessening the number of injured is self-evident. There is no reason to suppose that if the authorities will take sufficient interest in the matter, means of enjoyment fully as keen and far safer may be devised for the amusement of the public on Independence Day. Recent events have demonstrated that the tendency is strong in this direction and that before many years have passed the danger-dealing forms of amusement may be limited only to responsible persons, and the people at large find means of expressing their patriotism in less harmful and really more enjoyable ways. In the meantime we trust the *Journal of the American Medical Association* will continue its statistical inquiries, which will do more than any other one method toward determining the exact situation and the exact problem to be met by restrictive or prohibitory legislation.

MEDICAL ENROLLMENT.

THE enrollment of medical students will be watched this year with even greater interest than heretofore owing to the possible effect of Mr. Abraham Flexner's investigations and conclusions regarding the status of various medical schools throughout the country. For some years past there has been a distinct tendency toward an elevation of standard, which among other and more subtle causes has no doubt led to a certain

diminution in the number of men undertaking the medical profession. Exactly what effect Mr. Flexner's careful and outspoken criticism of existing conditions will have is as yet purely problematic. It is possible and certainly to be hoped that one result will be a more generous enrollment of students at our better high standard schools and a diminution in the number attending those of lower standard. It is not probable that the schools which Flexner considers unworthy of existence will forthwith close their doors unless public opinion as represented by student enrollment forces them to this measure. On the other hand, it is to be hoped that the strictures which have been brought against methods still in vogue in this country may have a salutary effect in forcing home the lesson that if a school is ultimately to maintain itself with credit and with usefulness to the community it must raise its standards from the low level with which many institutions have hitherto been contented. Flexner has undoubtedly shown by actual figures that the United States is very decidedly overstocked with physicians. He has also shown that this overstocking is with physicians of poor education rather than with those who are likely to advance the science and art of medicine. These facts as presented by him cannot be evaded and we have confidence enough in the awakened public spirit of the country to believe that lower grade medical schools must accept the fact, unwelcome as it may be, and either leave the education of prospective physicians entirely to other and better equipped institutions, or raise their own standards. In either case benefit will result and the tendency be established for persons of poor training to seek other means of livelihood than medicine. It may in general be said that our best medical schools have not enough students, a matter to which we have continually referred in the past years. That this situation may gradually change for the better is perhaps possible, but we believe improbable under existing conditions. However this may be, we shall await with extreme interest any indication of improvement in the general situation as shown by the forthcoming opening of the schools.

WORKMEN'S COMPENSATION ACT.

On Sept. 1 the new Workmen's Compensation Act, passed at the last session of the New York Legislature, went into force. It is, it will be remembered, based on the principle that the burden for industrial accidents not due to the wilful misconduct of the employee should be borne by the industry, instead of, as is now the case in the majority of instances, by the man injured or his family. The changes effected by the bill fall into two classes. The first amends the general employers' liability law so as to give the employee certain advantages. The second provides a scale of compensation, optional in the ordinary trades, but mandatory in certain occupations (designated under eight heads), which are recognized as especially dangerous. In these, it is stated, extraordinary risks to the life and limb of workmen engaged therein are inherent, necessary or substantially unavoidable. Consequently the law provides the following schedule of compensation: (1) In case of death, four years' wages, not to exceed $3,000; (2) in case of total incapacity for a period not to exceed eight years, 50% of the workman's average weekly earnings; (3) in case of partial disability for a period not to exceed eight years, 50% of the difference between his average weekly earnings before and after the accident.

While the employer is bound to pay this rate of compensation in these "especially dangerous" kinds of work, and cannot plead the contributory negligence of the workman in his defense, the employee is not obliged to accept such compensation. He may waive his rights under the mandatory clauses, and sue the employer under the general employers' liability act; but once he has decided to do this, he cannot demand the statutory scale of compensation. Some doubt has been expressed as to the constitutionality of these mandatory provisions, on the ground that they constitute the taking of property "without due process of law." On the other hand, the supporters of the new measure claim that the obligatory clauses are merely an exercise of the police power of the state. It is recognized, however, that this constitutional point will have to be taken to the highest courts for settlement. The same scale of compensation may be applied to other than the "especially dangerous" occupations by the mutual consent of the employer and the employee. If this agreement is entered into, the employee waives all his future rights under the liability act, and is limited to the compensation laid down in the schedule, unless there has been serious or wilful misconduct on the part of the employer. In the same way, the employer cannot escape paying the fixed rate of compensation unless he can show serious and wilful misconduct on the part of the employee. It is not claimed that

this law is a final solution of the problem concerned, but merely the inauguration by the state of a new policy, which, it is hoped, will eventually lead to its satisfactory settlement.

MEDICAL NOTES.

RADIUM. — It is stated from Paris that Madame Curie has announced the discovery of pure radium. Up to this time radium has been known only in the form of salts.

CHOLERA. — In view of the presence of Asiatic cholera in Russia, Italy and Germany, Health Officer Doty of New York, is taking precautions with all incoming vessels. Not only the steerage, but the cabin passengers are subjected to a thorough examination. All passengers who show suspicious symptoms will be transferred to Hoffman Island for observation. The steamships will be disinfected before being allowed to come up to the city. On Sept. 2 the Cunard liner *Lusitania* was held in quarantine for thirteen hours because of the illness of a Roumanian steerage passenger. Some of Dr. Doty's staff worked all night in the laboratory to make the required bacteriological tests, but the result showed that the man was suffering from ordinary cholera morbus and not Asiatic cholera. One result of the delay of the *Lusitania* was that Dr. Henry, surveyor of the port, has recommended to Collector Loeb that no steamships be permitted to dock at night until the disappearance of cholera in Europe.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Sept. 6, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 26, scarlatina 18, typhoid fever 26, measles 12, smallpox 0, tuberculosis 56.

The death-rate of the reported deaths for the week ending Sept. 6, 1910, was 15.56.

BOSTON MORTALITY STATISTICS. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Sept. 3, 1910, was 188, against 185 the corresponding week of last year, showing an increase of 3 deaths and making the death-rate for the week 15.56. Of this number 104 were males and 84 were females; 34 were white and 8 colored; 126 were born in the United States, 59 in foreign countries and 3 unknown; 34 were of American parentage, 129 of foreign parentage and 25 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 32 cases and 2 deaths; scarlatina, 13 cases and 1 death; typhoid fever, 30 cases and 2 deaths; measles, 12 cases and 2 deaths; tuberculosis, 67 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 9, whooping cough 2, heart disease 18, bronchitis 4. There were 11 deaths from violent causes. The number of children who died under one year was 54; the number under five years, 71. The number of persons who died over sixty years of age was 39. The deaths in public institutions were 88. Cerebrospinal meningitis, 1 case. Anterior poliomyelitis, 4 cases and 1 death.

Of the above infectious diseases the following were non-residents: Anterior poliomyelitis, 1 case. Cerebrospinal meningitis, 1 case. Consumption, 3 cases and 1 death. Diphtheria, 4 cases. Scarlet fever, 1 case.

Deducting deaths of non-residents, the total is 169 and the death-rate is then 13.99.

DONATION OF BED TO FLOATING HOSPITAL. — Nathan H. Reed, of Somerville, Mass., has endowed a bed on the Floating Hospital in memory of Mrs. Clara B. Reed, who formerly was much interested in the work of this charity.

OPENING OF SCHOOLS IN FALL RIVER DELAYED BY POLIOMYELITIS. — Owing to the prevalence of poliomyelitis in Fall River, Mass., a recommendation has been made by the Board of Health to defer the opening of the public schools to Sept. 19, two weeks later than the usual date.

MEETING OF HAY FEVER ASSOCIATION. — The annual meeting of the United States Hay Fever Association, which ended its sessions Aug. 31, showed an increased membership and greater enthusiasm than heretofore for the work which the association has set itself to do. Methods of combating the affection were reported.

TYPHOID FEVER IN GLOUCESTER, MASS. — It is reported that twenty-five or more cases of typhoid fever have appeared in the Portuguese section of Gloucester, Mass.

NEW YORK.

POPULATION AND THE BUDGET. — While the increase in the population of the city of New York in the last ten years has amounted to 39%, the

increase in the city's budget has been much greater than this. Thus, the annual appropriation for the Health Department, on account of the growth of medical knowledge and the pressure of modern conditions, has had to be increased to about 124%. In 1900 this was $1,055,515, and in 1910, $2,737,723. Yet, in view of the demands upon the department, by reason of its campaign against tuberculosis and of the more strict supervision over the milk supply and child hygiene, as well as the laboratory work in tuberculosis, diphtheria, tetanus, rabies and other diseases, this large increase in the annual appropriation is declared by those familiar with the situation to be entirely inadequate for the most efficient carrying on of the work of the department. Of course, an important element in the increase has been the greatly augmented number of officials required.

Medical Officials of the Health Department. — In view of the fact that the Bureau of Municipal Research has addressed a communication to the 1911 Budget Committees of the Academy of Medicine and the County Medical Society, in which it is suggested that there might be less preventable illness and mortality in the city if the medical officials of the Health Department were expected to give their time exclusively to the work of the department, Dr. L. Emmett Holt has sent a letter to the bureau, in which he says that the question has two distinct sides to be considered: (1) The needs of the department, and (2) the needs of the physicians themselves. "In point of view of efficiency there is no doubt in my mind that it could be increased if a physician's time were not divided between his private practice and his public service. But how about the physicians themselves? There is no inducement whatever for the best medical men, or even fairly good medical men, to enter the service of the city with a view to continuance." In citing as an instance the position of Health Commissioner, Dr. Holt says that at the end of his four years' service such a one finds his position gone, his practice helplessly scattered and perhaps himself practically out of everything medical. To build up a new practice is almost an impossibility at the probable age of a retired health commissioner. The department, the letter continues, could not hold other specially qualified men for a month if they were obliged to devote their entire time to department business. Unless the city is prepared to pay department heads $10,000 and make their positions permanent, and to pay $5,000 and $3,000 for subordinate positions, it cannot hope or expect to retain men of even moderate ability. Supposing for a moment the subordinate positions of inspector, diagnostician or even attending physician to special hospitals were made permanent, and paid salaries of from $2,000 to $5,000, the places would naturally come under civil service rules, and a man once in could not be removed except for cause which the courts would sustain. Incompetence and inefficiency are very difficult things to prove. I feel sure that a much worse state of things than at present exists would be the result of such a system. The city cannot hope, under any conditions which seem even remotely probable, to secure the full time of any considerable number of men for its medical service. It is greatly in need of a few men of this character, whose tenure of office should be permanent, not depending upon a civil service examination for their appointment, or the success of a political party to keep them in office. Such a group of from three to five in number could organize the department and make efficient the work of the corps of physicians who compose the ranks. Such latter class will certainly be drawn from able young men, who hold their positions for a few years until somewhat established in practice, but who have enthusiasm and energy, or from unsuccessful older men who have tried but failed to support themselves by practice alone. The latter might be willing to give all their time, but their service will be much less advantageous to the city than that of the younger group referred to.

Current Literature.

The American Journal of the Medical Sciences. July, 1910.

1. Trudeau, E. L. *The Value of Optimism in Medicine.*
2. *Elliott, A. A. *The Treatment of Arterial Hypertension.*
3. *Schwartz, H., and Ottenberg, R. *The Hemorrhagic Disease of the Newborn, with Special Reference to Blood Coagulation and Serum Treatment.*
4. Cole, L. G. *The Radiographic Diagnosis and Classification of Early Pulmonary Tuberculosis.*
5. Wells, E. F. *The Medical Aspects of Those Toxemias of Pregnancy which Tend toward Eclampsia.*
6. *Alvarez, W. C. *Disturbances of the Thyroid Secretion in Northern Mexico.*
7. *Marchildon, J. W. *Typhoid Spermatocystitis and Prostatitis and Their Relation to Chronic Typhoid Bacilluria.*
8. Sedgwick, J. P. *Von Graefe's Sign in Myotonia Congenita (Thomsen's Disease).*
9. Griffith, A. C. *Torsion of the Great Omentum.*
10. *Kaplan, D. M. *The Theoretical Consideration of the Wassermann Reaction and Its Practical Application, Based upon a Study of 2,750 Cases.*

11. TOWLES, C. *Calcium Metabolism, with Special Reference to Exophthalmic Goiter.*
12. *RANDALL, B. A. *How Far is Heredity a Cause of Aural Disease?*

2. Elliott's article is an eminently rational consideration of the significance and management of arterial hypertension. He deals chiefly with those cases, the great majority where this condition is present, of arteriosclerosis and chronic nephritis. The chief cause of hypertension he considers to be toxic influences, abnormally retained in kidney disease, originating probably in the alimentary tract. The brunt of the disturbance is borne by the heart, which first, for a time, hypertrophies, but later dilates and becomes unequal to its work. The blood vessels also, notably the cerebral arteries, may give way under the increased strain. In treatment, the chief indication is detoxication. To this end he advises a diet of restricted amount and low proteid content, with, during hypertensive crises, periods of starvation with restriction of fluids, or a diet solely of bread and fruit. Salt is to be avoided in proportion to the severity of the case. Sweats may be of benefit. Daily purgation by a saline laxative is, perhaps, the best single measure. With regard to the use of vasodilator drugs, while in general he accepts the views of Krehl and of Janeway that high blood pressure is a compensatory process which it is dangerous to directly combat, still he maintains that in certain cases the cautious use of sodium nitrite may afford relief of symptoms; the coincident use of iodide may increase this effect. It is well to test the efficiency of the heart by Gräupner's method, following the course of blood pressure after measured exercise, weak hearts failing to show the normal increase, but giving rather a decline in pressure. If this test shows a tendency to ventricular weakness, the nitrites should not be used, but rather rest and digitalis.

3. Schwartz and Ottenberg discuss the nature of hemorrhagic disease of the newborn in connection with two cases. Coagulation of blood is believed to be due to the union of fibrinogen with fibrin-ferment, which is made up of three constituents, kinase, calcium and prothrombin, all of which are essential to the process. It is further believed that an antiferment exists which may at times prevent coagulation. Studies of the blood in these cases showed that the failure of the blood to coagulate was due to absence of thrombokinase. Transfusion is considered to be the only efficient therapeutic measure, and even this may fail if the cause of the disease, usually bacterial infection, but sometimes syphilis alone, continues.

6. Alvarez describes disturbances of the thyroid as extremely common in northern Mexico, and as varied in their manifestations. Goiter is endemic. Abnormalities of thyroid function are encountered, varying from myxedema to exophthalmic goiter, with intermediate "*formes frustes*" and unclassified states that are gradually becoming recognized as connected with the thyroid. Asthenia with obesity, relieved by thyroid treatment, is described as a common occurrence. Rheumatoid pains are suspected to be due to hypothyroidism. Attacks resembling hysteria, with convulsions, substernal pain and numbness of extremities, compared by Alvarez to those occurring in Halsted's case after complete thyroidectomy, are a frequent complaint.

7. Marchildon reports two cases at autopsy, one showing acute spermatocystitis and the other acute prostatitis, both occurring in the course of typhoid fever and both with typhoid bacilli in the local lesions. Marchildon suggests that such infections may play a part in the continued presence of typhoid bacilli in the urine of typhoid "carriers."

10. Kaplan shows that the Wassermann reaction is not specific for syphilis and believes that neither the Wassermann nor the Noguchi reaction alone is sufficiently accurate for diagnosis, but that when both are positive there is reason strongly to suspect syphilis provided scarlet fever, leprosy, trypanosomiasis and scleroderma are excluded, and provided the serum does not contain bile. A negative reaction may be the result of antisyphilitic treatment, but is no indication for cessation of treatment.

12. Randall believes that the supposed heredity of aural disease cannot be accepted as more than a predisposition, yet this is enough to demand special attention to environment and habits, with early removal of adenoids or other nasal obstructions that cause mouth breathing. [F. W. P.]

AUGUST, 1910.

1. *THOMPSON, W. G. *Trichinosis: A Clinical Study of Fifty-two Sporadic Cases.*
2. *ALBERT, H. *An Epidemic (Fourteen Cases) of Trichinosis, Due to Eating Boiled Ham, with Special Reference to the Occurrence of Eosinophilia.*
3. *HARTWELL, J. A., AND CECIL, R. L. *Intestinal Diverticula: A Pathological and Clinical Study.*
4. *PHILLIPS, J. *Skin Rashes in Typhoid Fever.*
5. MARTIN, C. F., AND KLOTZ, O. *Extensive Sarcoma of the Heart Involving the Bundle of His.*
6. *SCHLOSS, O. M. *The Association of "Rheumatic Fever" and the Erythema Group of Skin Diseases, with a Report of Four Cases.*
7. *BARTON, W. M. *Acquired Hemolytic Ictero-Anemia; Widal's Syndrome.*
8. *SIMONDS, J. P. *Typhoid Bacilli Carriers and Their Relation to Public Health.*
9. *STERN, H. *Chronic Nephritides Due to Acute Systemic Infection.*
10. McPHEDRAN, A. *Pernicious Anemia, with Remission for Seventeen Years.*
11. *YOUNG, J. K. *Diagnostic Puncture in Tuberculous Abscesses.*
12. BROOKS, H. *Primary Tumor of the Velum, with Marked Compression of the Ventricle.*

1. From the fact that he has been able to collect fifty-two cases in his personal practice and from the hospital services of his colleagues during the past six years, Thompson maintains that trichinosis is much more common than is usually supposed, and frequently fails of recognition. Its symptoms and course may be summarized as follows: Onset acute with chills, muscular pains, vomiting, frontal headache, prostration and fever; incubation period, nine days to three weeks; diarrhea not constant, tympanitis frequent; erythema of face and neck frequent, herpes labialis and a macular rash on the abdomen occasionally seen; muscle tenderness usually general and severe, especially in arms, calves of legs, thighs and diaphragm; pain in the eyes frequent, often with corneal hemorrhages; edema of lids variable; edema of ankles and about other joints common; respiration often rapid and shallow, but without discomfort; urine sometimes dark, diazo-reaction frequent; white count usually moderately increased; *eosinophilia invariably present*, 30 to 80%. It resembles most closely typhoid fever, polymyositis, septicemia, aestivo-autumnal malaria, and occasionally rheumatism. The temperature rises acutely, but falls by lysis after from a few days to several weeks; there may be a relapse. Of the 52 cases, 2 died, one from the disease itself, the other from pneumonia. The muscle was examined in 34 cases; in 29 trichinæ were found, and in the remaining 5 an acute myositis.

2. Albert reports a small epidemic of trichinosis traced to the eating of boiled ham. According to reports from a number of packing houses, the temperature and duration of cooking of boiled ham is variable and may sometimes be insufficient; the amount of cooking necessary is not adequately determined. The eosinophilia is emphasized as of great diagnostic value.

3. Hartwell and Cecil call attention to the subject of intestinal diverticula, which, although they have long been recognized, have only recently been connected with acute inflammatory conditions. Diverticula are pouch-like outgrowths from the intestinal wall, varying in size from a buckshot to a hen's egg, often multiple, situated most frequently in the descending colon or sigmoid. They are of common occurrence, different observers having found them in from 15 to 30% of all cadavers. Their clinical importance lies in their liability to be the site of inflammatory changes in every way comparable to those which occur in the appendix. They may become inflamed without perforation, or may perforate, causing abscess or general peritonitis; the inflammation may be of a chronic mild type, which may lead to great thickening; carcinoma may develop.

4. Phillips describes the skin lesions other than rose-spots which occurred in a series of 1,230 cases of typhoid

fever. Herpes occurred in 12 cases; urticaria in 21; desquamation in 83; erythema, sometimes resembling scarlet fever, in 7; purpura in 6; a pemphigoid eruption in 4; also erysipelas in 2, bedsores in 12, furunculosis in 45, carbuncle in 2, onychia in 5, and other septic conditions of the skin. There was one instance of patellar striæ, a somewhat rare phenomenon, which was probably due to rapid growth during the disease.

6. Schloss reports four cases of acute articular rheumatism with which were associated purpura, urticaria, angioneurotic edema, erythema simplex, erythema nodosum, erythema exudativum and erythema multiforme.

7. Barton calls attention to the disease of acquired hemolytic ictero-anemia first described by Widal in 1907, and reports a case, the eighth that has been published. The disease is characterized by jaundice and anemia, with enlarged spleen, without clay-colored stools or bile in the urine. A leucocytosis is usually present, otherwise the smear resembles that of pernicious anemia, but on testing the behavior of washed red corpuscles in hypotonic salt solutions they are found to be abnormally fragile and susceptible to hemolysis.

8. Simonds publishes a careful summary of reported studies of typhoid bacilli carriers, but without original observations.

9. Stern considers the question of what importance previous acute infectious diseases may have in the production of chronic nephritis. Of 200 cases of chronic nephritis, 192 had at some period had one or more acute infectious diseases, accompanied in at least 121, and perhaps in 56 or 58 more, by acute renal involvement. He concludes that acute nephritis prepares the way more than is generally realized for chronic nephritis, either parenchymatous or interstitial or amyloid, even though a direct transition cannot be traced.

11. Young advocates aspiration by means of a hypodermic syringe for the diagnosis of suspected tuberculous abscesses, particularly in connection with diseases of joints. [F. W. P.]

THE ARCHIVES OF INTERNAL MEDICINE.

JULY, 1910.

1. *CRAIG, C. F. *Further Observations on Parameba Hominis, an Intestinal Parasite of Man.*
2. HARVEY, S. C. *The Quantitative Determination of the Chlorids in the Urine.*
3. *FABYAN, M. *The Bovine Type of Tuberculosis Associated with Three Cases of Tuberculosis in Man.*
4. FOSTER, N. B. *A Study of the Nitrogen and Sulphur Metabolism in Morbus Cæruleus.*
5. *LYON, I. P. *Adiposis and Lipomatosis Considered in Reference to their Constitutional Relations and Symptomatology.*

1. This article gives some further observations by Craig upon the subject of recurrent diarrhea due to parameba hominis. He has found the parasite in six Filipinos and three American soldiers, and has worked out its life cycle. He suggests that some of the cases of chronic diarrhea, especially in the Southern states, may be due to this protozoan.

3. Fabyan reports three cases in which tubercle bacilli of the bovine type were isolated from the lesions. All cases had been infected through the intestine. One showed tuberculous lymphadenitis (mesenteric); another, tuberculosis of the intestines and mesenteric lymph nodes, and of lungs, spleen, liver and peritoneum; the third, tuberculous mesenteric lymphadenitis and tuberculous meningitis.

5. Lyon, in his article on adiposis and lipomatosis, describes twenty cases, some of which are shown in interesting photographs. He groups the cases according to their clinical findings, and discusses each class at some length. The cause of these conditions, he says, is unknown, but he believes they are due most probably to the derangement of some internal secretion. [G. G. S.]

THE JOURNAL OF MEDICAL RESEARCH.

AUGUST, 1910.

1. BANZHOF, E. T., AND STEINHARDT, E. *Anti-anaphylactic Vaccination.*
2. BANZHOF AND STEINHARDT. *Vaughan's Split Products and Unbroken Proteins: A Comparative Study of their Effects.*
3. ANDERSON, J. F., AND FROST, W. H. *Studies upon Anaphylaxis, with Special Reference to the Antibodies Concerned.*
4. MCCAMPBELL, E. F. *Observations on Typhus Exanthematicus (Tabardillo) in Mexico.*
5. *WEIL, R. *Properties of Ascitic Fluids, Especially in Cases of Cancer.*
6. WHITE, B., AND AVERY, O. T. *Concerning the Bacteriemic Theory of Tuberculosis.*
7. FORBES, A. *The Origin and Development of Giant Cells in an Epidermoid Carcinoma of the Tongue.*
8. MONTGOMERY, C. M. *The Relation of Intestinal Absorption to Pulmonary Anthracosis.*
9. PAGE, C. G., FROTHINGHAM, L., AND PAIGE, J. B. *Sporothrix and Epizootic Lymphangitis.*
10. *GURD, F. B. *Gonorrheal Salpingitis: An Histological Study.*
11. GAGE, J. G. *Larvæ of Strongyloides Intestinalis in Human Lung.*

5. Weil reports the results of his examination of a number of ascitic fluids, among which was the fluid from the case of cancerous ascites with which Dr. Hodenpyl produced retrograde changes in the cancerous organs of some patients into whom he injected the fluid. Weil tested these fluids for their lytic power upon blood and tissues, for their precipitin and agglutinin reactions, and for their antitryptic activity. There was no indication which he could find of "the existence of any specific character such as would serve to differentiate with certainty fluids derived from cancerous individuals from those of another origin."

10. Gurd reports a study of twenty cases of salpingitis. From the fact that 30% were positively gonorrheal, 25% almost certainly so, and 20% more probably so, he concludes that the gorrorrheal origin of salpingitis is more frequent than we suppose. By scraping the wall of the lumen, gonococci can frequently be cultivated. In the histological picture, the plasma cell is greatly in preponderance. [G. G. S.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 31.

AUG. 4, 1910.

1. *SIEGERT, F. *Prophylaxis and Treatment of Measles.*
2. *HIRSCH, C. *Temporary Blindness from Concussion of the Brain.*
3. KRÖNE. *The Present Teaching in Regard to Viscosity of the Blood.*
4. HERTZ, R., AND STERLING, S. *Investigation of the Psychic Effects of Gastric Juice in a Patient after Gastrostomy.*
5. MEIROWSKY AND FRANKENSTEIN. *Amenorrhea and Tertiary Syphilis.*
6. KUHN, F. *Air Compressor in the Hospital.*

1. Siegert presents a good article on the subject of measles. He presents first the different ideas and his own in regard to what period of the disease is most contagious. The unanimity of opinion is that the danger lies either before the eruption or early during it. He then takes up the different points in making an early diagnosis and the different ideas in regard to treatment. He is opposed to hospital treatment if good home treatment is possible on account of the liability to contract other infections. The paper is a good review of the situation without adding much to the subject.

2. Hirsch reports a case of temporary blindness coming on two and a half hours after concussion due to being knocked down by an automobile, which cleared up entirely in three days. After recovery there was no remembrance of the injury or blindness, although before and following this period facts are remembered. He takes up a theoretical discussion of the possibilities in regard to the cause. [C. F., JR.]

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23. THIEMANN, H. *Intestinal Obstruction and Paralysis, and Peritonitis.* (Concluded.)

24. *MICHELSSON, F. *Spinal Anesthesia with Stovain-Billon.*
25. BLAD, A. *Operations and Indications for Gastro-Enterostomy.*
26. LEXER, E. *Plastic Operations on the Face.*
27. ROSENSTIRN, J. *Cancer Metastases in the Ovaries and in the Pouch of Douglas.*
28. *SOLIERI, S. *Omental Enterokleisis in Acute Ulcerative Processes of the Last Loop of Ileum.*
29. GIRARD, C. *Mastoptosis and Mastopexy.*
30. HADDA, S. *Torsion of the Great Omentum.*
31. NEHRKORN. *Trephining the Long Bones in the Presence of Induration and Severe Pain.*
32. KIRSCHNER, M. *Practical Results of Free Fascia Transplantation.*

24. Michelsson's article on spinal anesthesia is a critical review of 400 cases treated by this method at the clinic of Von Bergmann at Riga, between May, 1906, and February, 1909. He precedes this review by a discussion of the technic of and indications for spinal anesthesia. Stovain is his choice rather than tropacocain or novocain, and the preparation of stovain which he uses is that of Billon. This comes in sealed ampullæ, each containing 2 ccm. of a 4% (equal to 0.08 gm.) solution of stovain with a slight addition of common salt (0.11%) and boric acid epirennin (0.00013%). This solution is isotonic with spinal fluid. Stovain is only one half to one third as poisonous as cocaine, but has an affinity for motor nerves and is slightly irritating to the tissues. It remains for about seven hours in the spinal fluid.

Michelsson favors a preliminary dose of scopolamine and morphine; he then inserts his needle containing an obturator through the skin in the median line, between the spinous processes of the second and third lumbar vertebræ. After the needle has penetrated a distance of 1 cm., the obturator is withdrawn and the hollow needle pushed in until spinal fluid is reached. The amount of this withdrawn depends upon the force with which it is expelled. Michelsson withdraws from 1 to 3 ccm. before injecting 1.4 ccm. of the solution.

After the injection of the solution with a syringe, and the withdrawal of the needle, the patient lies horizontal, with head and shoulders slightly raised, for from five to ten minutes. Formerly the pelvis was raised, but it is to this maneuver that Michelsson ascribes most of their untoward results.

In the selection of cases for this method of anesthesia, the old, feeble and cachectic patients and those with the acute surgical emergencies, such as strangulated hernia, are considered most fitting. People with pulmonary or renal or cardiac disease run less risk by this method, and it gives good results with alcoholics and diabetics. Syphilis is a contra-indication. Young people take it rather badly, and Michelsson avoids it in extra-painful operations, in septic cases and in those with nervous disease.

The 400 cases in his series formed 10% of all the operations done in that clinic during that period; 261 were abdominal operations, 71 were upon the urogenital system or the rectum, 68 upon the legs. In 83.25% the anesthesia was complete for the region of operation; in 14.25% it was incomplete, but still satisfactory; in 2.5%, or 10 cases, it was insufficient, and general or local anesthesia had to be resorted to. Of these 10 failures, 5 were due to technical errors; the other 5 were unexplained. Of 9 deaths, 4 were attributed in part at least to the action of the stovain. Other complications were, collapse in 4.5%, vomiting in 6%, head and back pains in 13%, transient paralyses in 1.5%, cramps in .75%, and psychical disturbances in 1.25%. Curiously enough, 11.6% had lung complications, while in 250 laparotomies with ether, only 7.6% were so affected. Michelsson believes that although spinal anesthesia is a valuable aid to surgery, it will never, because of its after-effects, supplant ether narcosis. He concludes with the histories of those cases which were not absolutely successful.

28. Solieri advocates the operation of omental enterokleisis — surrounding the intestine with omentum — in those cases of typhoid and paratyphoid ulcerations of the ileum in which perforation is imminent. He reports one case so treated, and his recovery. [G. G. S.]

Obituary.

ROBERT AMORY, M.D.

THE death of Dr. Robert Amory recalls the debt which the physicians of to-day owe to those of the passing generation, to those skilful, bright, resourceful practitioners who at the close of the pre-antiseptic era laid the foundation of scientific medical progress, for he belonged to that class.

Dr. Amory came of a New England family, was taught at the school of Mr. Epes S. Dixwell in Boston, graduated from Harvard College in 1863 and from the Harvard Medical School in 1866. He spent a year in post-graduate work abroad. In Paris he studied toxicology and experimental therapeutics under Bergeron and Magnan; and in Dublin, midwifery at the Lying-In Hospital. Then he settled in Brookline, where he practised diligently for fifteen years. He was physician to the Boston Dispensary, a councillor of The Massachusetts Medical Society, lecturer at the Harvard Medical School on the physiological action of drugs, and from 1872 to 1875 professor of physiology in the Medical Department of Bowdoin College at Brunswick, Me. In 1869 he equipped and for several years maintained a private laboratory at 16 Lagrange Street, Boston; it was almost the only place where students and physicians could come for advanced courses in physiology, chemistry and anatomy and for research work.

As a writer he was prolific. His articles in the London *Practitioner*, the New York *Medical Journal* and the BOSTON MEDICAL AND SURGICAL JOURNAL dealt with the physiological and toxic actions of various drugs on man and on animals. He published two larger monographs, one on the action of bromide of potassium and bromide of ammonium, and one on the action of nitrous oxide on man and animals. He edited the chapters on Poisons in Wharton and Stille's "Medical Jurisprudence," which in two subsequent editions grew to a separate volume of large size. He translated into English and published Professor Kuss' "Lectures on Physiology." In 1866 he wrote a treatise on Electrolysis in Medicine, advocating its use for the removal of hairs, for the reduction and cure of certain forms of goiter and in a limited way for the treatment of uterine fibroids.

For three years he was president of the Norfolk County Medical Society and a founder of the Boston Society of Medical Sciences and of the Massachusetts Medico-Legal Society, of which he was the second president. He was also president of the National Decennial Convention in 1880 for the revision of the Pharmacopœa of the United States, and one of its Committee of Revision and Publication. Although largely interested in the therapeutic action of drugs, he was one of the first to advocate and practise the surgical drainage of empyema, and began early to perform tracheotomy for the relief of obstructed respiration in diphtheria.

Dr. Amory served in the Massachusetts Volun-

teer Militia as assistant surgeon of First Battalion of Light Artillery in 1875, surgeon of the First Battalion of Cavalry in 1876, medical director of the Second Brigade in 1877, and again as medical director on Brig.-Gen. Eben Sutton's staff from 1878 to 1881.

After 1880 he practised during the summer months at Bar Harbor, Me. In 1887 he retired from medicine to undertake a business career as general manager of the American Electrical Manufacturing Company, and later as president and general manager of the Brookline Gas Light Company.

Correspondence.

BRUGES, ANTWERP, THE BELGIANS, THE RHINE, HEIDELBERG.

[From Our Foreign Correspondent.]

HEIDELBERG, Aug. 15, 1910.

Mr. Editor: A week of rather strenuous travel and sight-seeing in Belgium and the Netherlands included little of special medical interest. At Bruges, far more memorable for the exquisite, eerie, unearthly beauty and sweetness of the chimes in its gray old belfry, we found, in the gallery of the *Hôtel de Ville*, a curious anatomical painting representing a dissector demonstrating to his class the "shirt-frill" of the mesentery. At the Hague was Rembrandt's much more famous and familiar "School of Anatomy," chiefly of interest not for its anatomic accuracy so much as for the faces of the students, which express as vividly as one still sees them to-day in the dissecting-room or at demonstration the attitudes of different minds towards the subject under study. At the gallery in Antwerp there were more "lessons in anatomy," by Rembrandt and others, of varying merit, all illustrating one aspect of that singular fondness for the gruesome which crops out here and there as a contradictory streak in the artistic temper of the medieval character. One of these in particular, representing a cadaver with the abdomen opened and emptied of viscera, the dome of the diaphragm arching above it, and the calvarium just removed exposing the brain *in situ*, was so realistic as to elicit audible shudders from many who passed before it.

The Belgians are an interesting people, not nearly as Gallic as one expects to find them, but with a considerable phlegmatic mitigation of temperament which probably represents, racially as well as etymologically, their Flemish descent. Brussels is little more than a miniature Paris, but in the other Belgian cities the national character of the people is well-marked, though it is hard to see why the inhabitants of Flanders should have preserved their racial traits so much better than their neighbors of Picardy. Perhaps the chief reason is that Flemish is still taught in the schools and maintained as a spoken language side by side with French; for its speech is the life of a nation. All the signs in the streets and many in the shops are printed in both languages, and we soon became fairly expert in reading Flemish with the help of the French "trot." From Flemish, as we thus learned it, was an easy transition to Dutch, that own cousin of Anglo-Saxon and half-brother of German. By the time we left Amsterdam we could even make the tram-conductors understand, in their native tongue, where we wanted to go, though the surprisingly prevalent knowledge of English among the people really made such efforts unnecessary. It may be an evidence of culture for an English-speaking person to be able to talk other languages, but after all it is probably better racial policy to make the other people learn English.

At Antwerp, by the way, we had the unexpected pleasure of meeting, quite casually on the street, a Boston physician, well-known to us, who had just arrived from Rotterdam. It is singular how natural such a meeting seems in a foreign city. You turn a corner and there is some one you saw last on Commonwealth Avenue or Boylston Street, and yet his being there gives you as little surprise as any of the benefactions of Providence that we accept as matter of course. It was good to shake the hand of a friend though, and hear the level, measured speech of a Bostonian again. He gave us some news from home and some counsel about our journey, then said good-bye and passed into the crowd. And when we meet him again in Boston it will seem just as natural and we shall be just as glad as in Antwerp. There is nothing like travel to teach not only the essential brotherhood of all nations, but the strength of the bonds that tie us to our own family and community.

After the Low Countries it is refreshing to get a glimpse once more of woods and mountains as one proceeds up the Rhine valley to the Fatherland. Germany is a country whose past is so full of song and legend, and whose present civilization is so rich in artistic monuments and modern activities, that wherever one goes there is excess of material for study and suggestion for reflection. At Köln we could only marvel in silence at the colossal Dom. Such stupendous works are really too great to be grasped by the ordinary mind. In the old church of St. Ursula we examined with much interest the dadoes and reliefs constructed with bones reputed to be from the skeletons of 11,000 pious virgins martyred by Diocletian near the site of the present building. It was particularly instructive to observe the admirable adaptation of the various bones, especially vertebræ, ribs and ossa innominata, to different types of pattern. Many of the effects produced were strikingly handsome and artistic, notably a herring design of fibulæ and radii, and a large rose of which every petal was a skull. The decorative possibilities of the human skeleton have never been fully worked out, and obviously should be no longer neglected.

From Köln up the Rhine is a journey full of romantic and picturesque interest, and it seems almost too good to be true when you find that all the scenes of the Rheinsaga are really there and that their beauty is even more magical than their names.

> "The castl'd crag of Drachenfels
> Frowns o'er the wide and winding Rhine"

as gloomily as when Siegfried slew the dragon there, or even in the later days of Lord Byron. Rolandseck still recalls the story of Roland and Roncesvalles; and Stolzenfels bristles upon its proud rock, though not half so imposingly as Sooneck, Falkenburg or Rheinstein a little further up the river. A magnificient thunderstorm swept past us as we went up the gorge of the Rhine, and spread its murky pall behind the Lorelei. There is small wonder at the legend which time has attached to this imposing cliff if one looks at the eddy that whirls treacherously by its base. Beyond "Fair Bingen," the valley opens out into the sunny Rheingau, surveyed from end to end by the superb national monument of Germania, set "high 'mid rock and wood," whose colossal figure seems to send a benediction of peace over fertile fields and vineyards towards the south.

After the Rhine, one might fear that all other rivers would fail to charm, but the valley of the Neckar has beauties that almost justify Scheffel's love for it as the most beautiful spot in the world. Heidelberg is of course a name to conjure with, poetically as well as academically, and the combination of attractions which it presents is fairly unequalled. There are towns that have a finer situation; castles that are more exquisitely romantic, notably Conway and Raglan and Tintagel; rivers that are lovelier; mountains and woods that are more grand and noble; but hardly a spot in any land where so many elements of beauty and association are so harmoniously united. The castle, a rich old ruin of red sandstone, is probably the center that holds all in cohesion, for it attracts your gaze first and last wherever you may be, whether from the valley below, or from the wooded height of the Molkenkur, or from the shady Philosophenweg across the river. Yet from the castle itself, the scene is most fascinating of all, proving doubtless the artistic judgment of its builders, and justifying the somewhat precocious but discriminating exclamation of a preternaturally solemn little German boy who climbed the *gesprengte Turm* with us and on surveying the view from the top said to his father in an awe-struck voice, "*Oh Papa, ist das nicht aber geistreich?*"

Three days are all too few to give to the appreciation of such beauties as those of Heidelberg, and at the close

of them it seems that we have but just begun to see something of their meaning. Of the University we saw nothing but the exterior, for it is now vacation. The hospitals are interesting and deserving of much more attention than we could give them. We visited the Frauenklinik in particular and were cordially received and shown about by the *Assistent*. Obstetrics thrives in Germany but differs little in the details of its practise from that in other countries. Hebosteotomy and extraperitoneal Cæsarian are the favorite operations here and have largely supplanted the use of forceps in dealing with even moderately contracted pelves, at least in this clinic. It was rather surprising to find that the professor does practically all his private practise at the hospital, where his patients come to consult him and are received in first and second class waiting-rooms, just like passengers at a railroad station, with corresponding fees. Is this an index of what will result from hospitalization of the people in our own country?

Despite the normal recrudescence of medical enthusiasm on finding ourselves again in a hospital, we have found Heidelberg chiefly memorable, however, for the glory of its natural beauty. Our brief stay here is ended all too soon, and the recollection of this sun-steeped, breeze-swept valley, crowned by its woods and by the noble castle, will remain one of the happiest of our journey. Oxford has been called "a place to make Americans unhappy," and the pang with which one contrasts it with our own universities is almost akin to sorrow. But to study at Heidelberg should make an American student dangerously happy, for, like the Lotophagi, he would never wish again to return home.

MEDICUS PEREGRINUS.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, AUG. 27, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,378	549	Waltham	7	4
Chicago	639	263	Pittsfield	9	1
Philadelphia	—	—	Brookline	4	—
St. Louis	—	—	Gloucester	8	2
Baltimore	—	—	North Adams	2	—
Cleveland	—	—	Northampton	4	1
Buffalo	—	—	Chicopee	—	—
Pittsburg	—	—	Medford	8	—
Cincinnati	—	—	Beverly	5	1
Milwaukee	—	—	Leominster	6	5
Washington	—	—	Hyde Park	7	4
Providence	—	—	Melrose	0	0
Boston	221	72	Newburyport	1	2
Worcester	34	19	Revere	6	3
Fall River	45	29	Westfield	6	1
Cambridge	24	8	Woburn	6	1
Lowell	40	23	Peabody	—	—
New Bedford	38	18	Marlboro	2	1
Lynn	28	13	Attleboro	2	—
Springfield	20	8	Adams	7	3
Lawrence	30	18	Clinton	4	1
Somerville	12	6	Gardner	5	1
Brockton	19	7	Milford	4	3
Holyoke	—	—	Watertown	3	1
Malden	11	3	Plymouth	—	—
Chelsea	5	—	Southbridge	9	6
Newton	14	3	Weymouth	—	—
Salem	—	—	Framingham	4	0
Haverhill	16	4	Wakefield	—	—
Fitchburg	—	—	Webster	3	1
Everett	7	2	Arlington	—	—
Quincy	11	7	Greenfield	4	2
Taunton	17	8	Concord	4	—

CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING SEPT. 3, 1910.

FITTS, H. B., medical inspector. Placed on the retired list from Aug. 23, 1910. Aug. 26.

GROVE, W. B., surgeon. Detached from the Naval Training Station, Newport, R. I., and ordered to duty at the Naval Medical School Hospital, Washington, D. C. Aug. 27.

LEVS, J. F., surgeon. Detached from temporary duty in the Bureau of Medicine and Surgery, Navy Department, and ordered to the Naval Training Station, Newport, R. I. Aug. 27.

CATHER, D. C., passed assistant surgeon. Detached from the Naval Academy and ordered to the "Iowa." Aug. 27.

PRYOR, J. C., surgeon. Detached from the Navy Yard, Pensacola, Fla., and ordered to the Bureau of Medicine and Surgery, Navy Department. Aug. 30.

JENKINS, H. E., assistant surgeon. Detached from the "Franklin" and ordered to the "Montana." Aug. 31.

HERMESCH, H. R., assistant surgeon. Detached from the "Montana" and ordered to temporary recruiting duty at Knoxville, Tenn. Aug. 31.

THOMAS, G. E., assistant surgeon. Detached from the "Dubuque" and ordered to temporary duty at the Naval Hospital, Marc Island, Cal. Sept. 1.

INTERNE, GOVERNMENT HOSPITAL FOR THE INSANE.

AN examination will be held Oct. 5, 1910, to fill a vacancy in the position of medical interne in the Government Hospital for the Insane at Washington, D. C.

EXAMINATION FOR PHYSICIANS, UNITED STATES CIVIL SERVICE COMMISSION.

THE United States Civil Service Commission announces that an examination will be held Sept. 14, in various cities throughout the country, for physicians to fill vacancies occurring in the various services. Applicants must be between their twentieth and fortieth year, and positions are open only to men. Full information may be obtained from the Manual of Examinations revised to July 1, 1910, Sect. 197. Applicants should at once apply for a copy of the Manual of Examinations and the proper application forms either to the United States Civil Service Commission, Washington, D. C., or to the secretary of the board of examiners as follows: Post Office, Boston, Mass.; Philadelphia, Pa.; Atlanta, Ga.; Cincinnati, O.; Chicago, Ill.; St. Paul, Minn.; Denver, Colo.; San Francisco, Cal.; Custom-House, New York, N. Y.; New Orleans, La.; Old Custom House, St. Louis, Mo. No application will be accepted unless properly executed and filed with the Commission at Washington.

SOCIETY NOTICE.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION. — The twentieth annual meeting of the American Electro-Therapeutic Association will be held at Saratoga Springs, N. Y., Sept. 13, 14 and 15. There will be an exhibition of electrical apparatus in connection with the meeting.

RECENT DEATHS.

DR. H. V. DAY, of Butler, N. J., died of cancer on Aug. 29, after an illness of eighteen months. He was a native of Morristown, N. J., and fifty-seven years old.

EDMONDS, LOUIS, M.D., M.M.S.S., of Roxbury, Mass., died Sept. 1, at the Boston City Hospital, after a brief illness, aged sixty-two years. Dr. Edmonds after a period of activity as a newspaper compositor began the study of medicine late in life and was graduated at the Harvard Medical School in 1893. He served thereafter in the Worcester City Hospital and became a member of The Massachusetts Medical Society and of the American Medical Association. After leaving the Worcester Hospital he practised for eleven years at Harwich, Mass., and later was physician at the leper colony on Penikese Island. He had great interest in leprosy and took part in the early discussions regarding the establishment of a leper colony in Buzzards Bay.

Original Articles.

THE PRESENT STATUS OF THE TREATMENT OF EXOPHTHALMIC GOITER.*

BY JAMES MARSH JACKSON, M.D.,
AND
THEODORE JEWETT EASTMAN, M.D., BOSTON.

In considering the subject of exophthalmic goiter we are immediately impressed by the tremendous rapidity with which our knowledge of certain aspects of it has advanced, for, unknown and unrecognized comparatively few years ago, its bibliography now numbers many hundreds of articles in all languages. While it must have existed long — perhaps for centuries — before it was first described in medical literature, it was only after the attention of physicians was called to it by Parry that it began to be noticed. Dock,[1] in his comprehensive article on the history of the disease, tells us in a few pages all that we know of its history. The earliest description that he found was by Flajani, probably before 1820. Parry, of Bath, England, gave in 1825 a fairly accurate and keen description of a case seen by him in 1786 of very marked exophthalmic goiter following confinement, and later he saw seven others. No other good descriptions of the disease were given until 1835, when Robert James Graves, a renowned physician of Dublin, described with great fullness three typical cases.

Following this, in 1848, came a very thorough article on four cases observed by Carl A. von Basedow, of Merseburg, a small town in Germany. With this article was a full bibliography, and an inquiry into the pathology of the disease. Graves did not attempt to give a name to the disease, but Basedow called it "goggle-eyed cachexia." The name "Basedow's disease" seems first to have been used by Hirsch in 1858, and "exophthalmic goiter" and "Graves' disease" were first applied to it in 1860 by the great Trousseau, who was a firm admirer of the Dublin physician.

A discussion on the disease in the Paris Academy of Medicine in 1860 created great interest in it, and many articles soon appeared, including those of Von Graefe and Marie and Moebius, and this interest has so grown that when Kocher made his great bibliography on the subject in 1902 he was able to find 1,423 titles.

There have been few diseases as to the origin of which more theories have been advanced than concerning exophthalmic goiter. Heineck[2] mentions seven theories which have been held, among them the cardiac, which assumes that the tachycardia is primary and the other symptoms are all secondary to it; the sympathetic, which assumes that all the symptoms are due to a disturbance of the sympathetic nervous system; the nervous, which has its basis in the fact that a neuropathic family history is found in some cases; the parathyroid and the thymus theories, which attribute the cause of the disease to disturbances in these glands, and, finally, the thyroid theory, the one which carries greatest weight at present and which is substantiated by clinical, experimental and pathological evidence.

Of the first four theories, that regarding the sympathetic nervous system is the only one which seems to have any evidence in its favor. Jonnesco[3] claims a considerable number of cures of the disease through severing the cervical sympathetic nerves leading to the thyroid gland, but there is practically no other advocate of this practice now. Changes have been found in the parathyroid glands in a number of cases, but injury of these glands has failed experimentally to produce the symptoms of Graves' disease. Falta, who with Eppinger and Rudinger has done the best work on the relation of the glands of internal secretion, explains the occasional occurence of lesions of the parathyroids by saying[4] that "on account of the close approximation of the parathyroids to the thyroid gland, functional disturbances of the parathyroid may occur as a consequence of rapid strumous enlargement or inflammation of the thyroid." As for the thymus theory, autopsy statistics have not shown any connection between persistent thymus and Graves' disease. The theory that the thyroid gland is alone responsible for the disease is the only one that has survived, and this is borne out by experimental and clinical evidence. It is found that the administration of thyroid extract will produce the symptoms of the disease,[5] and pathological examination of the thyroid gland in cases of it constantly shows changes, proving that there is a hypersecretion of the thyroid juice either from an increase of normal thyroid tissue, or simple hypersecretion by a normal sized thyroid.

The manner in which the symptoms of the disease are produced by this hypersecretion has been much discussed, but from all the evidence it seems most probable that the secretion acts on the sympathetic system, perhaps directly on the *chromaffin substance* which it contains, which is in itself a gland and, therefore, most likely to be acted upon by another gland, as is so frequently the case. It is not impossible that we are dealing with a vicious circle. It is acknowledged that the glands are controlled by the sympathetic nervous system: something — in many cases apparently a mental shock — excites this system which brings about an increased thyroid secretion; this in turn reacts on the sympathetic system for which it seems to have a special affinity. The thyroid is in this way still further stimulated and we have a vicious circle, the continued sympathetic stimulation showing its effect in the sweating, diarrhea, nervousness, rapid respiration, tachycardia, etc. Another link in the chain of evidence in favor of the sympathetic theory is shown by Falta,[6] who points out the fact that the cells of the chromaffin system and those of the medulla of the adrenal are similar; that the majority of the symptoms in exophthalmic goiter point to a hyperirritability of the sympathetic system, and so, too, adrenalin exerts its chief influence upon the endings of the sympathetic nerves.

It is perfectly possible for a gland to show great *hyperactivity* without actual enlargement just as

* Read at the annual meeting of The Massachusetts Medical Society, June 7, 1910.

do the salivary glands in a case of salivation. Furthermore, it is possible that some change in the *quality* of the secretion may produce the symptoms without any increase in the quantity.

The gland may be scarcely perceptible to the touch in a patient with very severe symptoms, and, on the other hand, the victim of a very mild attack of the disease may have a large goiter.[7] In this latter case the goiter is made up mostly of colloid,[8] but cystic or colloid degeneration may come on in plain goiter and may cause hyperthyroidism, probably by pressure on the thyroid tissue, just as in a polycystic kidney the pressure causes a nephritis. Again, a colloid goiter may suddenly become active and produce the worst type of Graves' disease, because nature suddenly tries to bring the degenerating gland to life again and creates a lot of new epithelium.[9]

Now a few words as to diagnosis. Palpitation and tachycardia are the commonest early symptoms; then, possibly, an increase in the size of the thyroid. Exophthalmos may be present relatively early and then may follow some or all of the symptoms which we find in the most marked cases. Nervousness, an anxious expression of the face, pallor, tremor, diarrhea, sweating, frequently a slight albuminuria and occasionally glycosuria through a sympathetic disturbance of the pancreas by the thyroid, as has been shown by Falta.[10] The signs (v. Graefe's, etc.) found in the eyes may or may not be present. In practically every case, however, we find some abnormality of the heart. In the earliest stages it is only rapidity of the beat, but before this has gone on very long we are sure to find some evidence of a myocardial affection, — weakness, irregularity in rate, rhythm or strength, and hypertrophy and dilatation. In fact, myocarditis of some degree is one of the most constant lesions of the disease.

In rare cases an abnormality of position of the thyroid may exist. We saw a short time ago a patient with extremely marked symptoms of Graves' disease, but were unable to find by palpation any traces of a thyroid. On percussion, however, there was dullness below both clavicles, and at operation (which was successfully accomplished) it was found that the case was one with a so-called "dipping thyroid," and that the lateral lobes were located in the position shown by percussion. Another case which came to our attention showed a very much enlarged left lobe in its normal situation, whereas the right lobe occupied the position of the apex of the right lung and was nearly the size of a cocoanut. In cases like these we are often mystified by the very marked dyspnea without any sign of an enlarged thyroid. This dyspnea may come on only in attacks following "catching cold" or getting overtired or at the time of menstruation on account of the swelling of the thyroid at those times producing pressure symptoms and is a great element of danger in that the pressure may give rise to emphysema and bronchitis and result in overloading of the heart with consequent cardiac failure, or the thyroid may swell suddenly and to a large size and suffocate the patient.

Kocher [11] has shown that there is a characteristic blood picture in the disease. In his analysis of 106 cases he shows that the red cells are somewhat increased and there is, as a rule, no anemia. The white cells are most affected. There is a marked diminution in their numbers, going as low in one case as 3,700 to the cubic millimeter. As a rule, the neutrophiles only are affected, being reduced often to as low as 35% instead of the normal 50% to 57%. The lymphocytes, on the other hand, showed sometimes an absolute but more often a relative increase, even to 57% instead of the normal 25%. Werelius [12] says that this picture is characteristic of exophthalmic goiter and is most marked at the height of the disease, and it has been shown in many cases that the blood returns to its normal conditions following a successful operation. This blood picture agrees with the long-recognized fact that starvation, cachexias and nutritive disturbances increase the lymphocytes in the circulating blood. Furthermore, in exophthalmic goiter we have, besides the profound change in nutrition, a marked chemotoxic action on the lymph system by the excessive thyroid secretion thrown into the circulation. The more severe the hyperthyroidism and its constitutional changes, the greater the lymphocytosis, and Kocher [13] contends that this condition is a contraindication to immediate operation if such can possibly be avoided. The utmost endeavor, he says, should be made to treat these cases medically and restore their nutritive balance until the fall in lymphocytes shows that the patient's resistance has been so built up as to make the operative risk at least a reasonable one.

As has been already suggested, we may find hyperfunction and degeneration in the same thyroid gland. Thus we may have together the causes of exophthalmic goiter and of myxedema, and it is a fact that we find cases presenting clinically symptoms of both diseases. These are patients in whom the major part of the gland has been destroyed by degeneration and who would be myxedematous were it not for the fact that the preceding hyperthyroidism has produced a myocarditis which accounts for the tachycardia, while the exophthalmos and nervous symptoms persist. It may thus be seen that many cases — in fact, it is stated as many as 50% — are destined to recover from Graves' disease if they can be tided over the acute stage.

How may we best accomplish this? Two methods of treatment are open to us: surgical, by which we remove the cause of the disease, and medical, by which we endeavor to palliate the symptoms and keep the patient going, — and in this connection we want to emphasize the great importance of the medical man and the surgeon studying the cases together, for there is no disease in which each can work more to the advantage of the other than in this one.

Let us consider first the medical treatment, and this means to a great extent the treatment of the tachycardia, for when we allay that we also diminish the other nervous symptoms; and, further, the heart is the organ most needing protection.

In fact, the medical treatment of exophthalmic goiter may be expressed as the treatment of myocarditis: in the early cases we treat it by prophylaxis, try to prevent its occurrence; in the later cases we try to remove its cause, and in very late cases we try to palliate the existing condition and save what heart muscle is left.

The etiology of this myocarditis has been disputed. It is by some regarded as a result of overwork through pressure on the vagus, by others as a result of direct toxic action on the myocardium by the thyroid secretions, and by Romberg and others as a result of nervous stimulation.

In some cases the direct cause of an overworked and later dilated heart may be the emphysema and bronchitis brought about by compression of the trachea or bronchi by a large thyroid, but in the greater number of cases it seems to me that the cardiac condition is brought about by a primary stimulation to greater rapidity by the thyroid secretion, with a resulting malnutrition of the heart muscle on account of the shortened diastole.

In the treatment of this condition we resort to these measures: *to rest the heart and to diminish the thyroid activity*. Here the most important factor is rest, — absolute rest, — not only physical but mental rest as well. Since the patient is usually in a very highly nervous condition we must first insist upon her remaining in bed, in the quietest room in the house, or in some place away from home, especially in cases where there is any exciting or worrying factor in the household, or, indeed, anything to modify the most perfect conditions for mental quiet; in short, the so-called "Weir Mitchell rest cure" should be rigidly enforced in its strictest form. To care for the patient, we must find a nurse whose effect on her will be soothing. The diet must be nourishing and easily digested, tea and coffee forbidden or greatly limited, and alcohol and tobacco absolutely forbidden. The tachycardia and to some extent the nervous symptoms can often be markedly diminished by an ice bag over the precordia, and occasionally constant cold applications over the thyroid are also of value by retarding the action of the gland and thus diminishing the output of secretion. Cold sponges, cold wet packs and in some cases prolonged cool baths are found to exert a marked soothing effect. At times the bromides in doses of 10–30 gr. three times daily may be successful in diminishing the tachycardia and nervous symptoms, but opium should be avoided whenever possible.

The drugs usually used in cardiac cases we find of little avail. Digitalis, our common reliance in slowing the heart beat, has little effect since it does not reach the cause of the tachycardia, and in exophthalmic goiter it easily causes gastric upsets. Strophanthus and spartein sulphate are also of little use, but in some of the more advanced cases with cardiac weakness small doses of strychnia are sometimes valuable. We have found in a large series of cases that the drug which gives the best results has been the neutral hydrobromide of quinine, the use of which was first suggested by Dr. Forchheimer, of Cincinnati. It is important that a strictly neutral salt be used, as the acid salt which is frequently dispensed does not give as good results, and we have had the best success with that made by Parke, Davis & Co. It is given in capsules containing 5 gr. each, and to the limit of the patient's tolerance, which is rarely more than three or four capsules a day. Toxicity is shown by the appearance of tinnitus, and no further ill effects are experienced if the medicine is temporarily stopped when this appears. The administration of this medicine must be continued for a long time and it is well to tell the patients in the beginning that they will probably have to take it for months or even for two years or so. If this is not done, the patients are apt to become discouraged if they see no marked results after a few weeks. Very frequently the patients notice after a week or two of the treatment a diminution of the palpitation, the sweating, the tremor and other nervous symptoms, and in many cases the thyroid diminishes in size. The exophthalmos seems to be the last of the signs to disappear, and this may not be until the expiration of two or three years, while rarely the exophthalmos and tremor may persist more or less even after all subjective symptoms have disappeared. When this last occurs, the dose of the drug should be cut down even to two or three capsules a week, the patient being cautioned, however, to resume immediately the former dose at the first appearance of any of the old symptoms.

Our cases have often proved to us the close connection between the thyroid gland and the genital organs. For instance, we have noticed that if the patient becomes pregnant the symptoms are often held in abeyance during the pregnancy, returning, however, after confinement. Again, relapses may occur at the menopause, and, in fact, one of us has just seen a case that has been entirely well for seven years but has recently had a relapse coincident with the climacteric. When relapses occur, as is not uncommon, an active resumption of the treatment quiets them quickly. We are not certain how the quinine acts, though it seems most probable that it acts on the sympathetic system and thus puts an end to its stimulation of the thyroid and the vicious circle which has already been mentioned. We can easily assure ourselves of its specific action by discontinuing its administration in any case and noting the prompt return of symptoms.

In tabulating the results of this treatment on our patients at the Massachusetts General Hospital two years ago with Dr. Mead, it was found that of 56 cases under observation for from three to nine years whom we were able to examine and talk with, 76% had had no signs or symptoms for two years, while 13% had been benefited and only 6 cases (11%) could be considered failures. These cases which we regard as cured are able to perform their ordinary daily work. It is, of course, the early cases that do best under this treatment, and in the very advanced cases with organic changes in the heart we can hardly expect a cure, but we do often see a radical change for the better.[14]

With thyroidectin, the dried and powdered

blood of thyroidectomized goats, we have not obtained satisfactory results. Moebius [15] reports several cases in which the symptoms have been diminished by this treatment, but he has not published any cures through its use. Some of our early cases were treated by subcutaneous injections of the serum of thyroidectomized goats, and in a few cases we got good results, especially on the exophthalmos and on the goiter. The serum is, however, very expensive, and some patients object to the frequent injections; and, further, it is not a treatment that can be carried out by the patient at home. The milk of thyroidectomized goats in its original or the powdered form, and "Rhodagen," a preparation made by drying the proteids precipitated from the milk by alcohol, have been used to some extent abroad, but they are hard to get, are expensive, for the goats soon become myxedematous, and, furthermore, no marked benefit has ever been reported from their use.

A few years ago Rogers and Beebe,[16] of New York, brought to our notice a serum treatment. Believing that the symptoms of the disease are caused by hyperactivity of the thyroid, they prepare a serum which is to neutralize, as does an antitoxin, the toxic action of the proteid in the thyroid secretion, and also by its specific toxic action on the secreting cells of the gland to diminish or stop the manufacture of these injurious proteids.

To prepare this serum the proteids are extracted from fresh human thyroid and injected into animals. After several doses have been given, the blood of these animals, which has now become loaded with antibodies, is withdrawn and the serum injected into the patient.

In certain types of cases [17] — those in the transitional stage, where the formerly hyperactive thyroid is undergoing colloid degeneration and where we find a curious mixture of the symptoms of Graves' disease and myxedema — Rogers and Beebe use what they term the "combined treatment." In this they use the serum we have just described to combat the conditions of hyperthyroidism, and at the same time give an extract of sheep's thyroid to neutralize the hypothyroidal or myxedematous conditions caused by the degeneration of part of the gland. One would naturally think that the serum would neutralize the extract of the sheep's thyroid, but this, the authors claim, is not the case. Rogers' latest published results [18] are not as good as his earlier ones, for in 480 cases of all grades he claims only 15% of cures, removal of the subjective symptoms in 10%, and 50% improved to such a degree that they disappeared after one or two months' treatment because of the relief of symptoms. These cases, then, are lost, and we do not know whether they are better or worse. Seventeen per cent were unimproved and 8% died from the natural course of the disease.

They lay great stress on the importance of properly selecting the cases suitable for the different treatments and on the amount and frequency of dosage, and say that it is impossible to make hard and fast rules, but each patient must be carefully studied and treated accordingly. Exophthalmos and goiter are the last signs to disappear, and while the latter persists the patient must avoid mental or physical over-exertion for fear of a return of the symptoms.

The principal objection raised to this form of treatment has been the possibility of injury to the rest of the organism by a cytotoxic serum strong enough to act upon any one of the tissues, as this serum is supposed to act upon the thyroid epithelium.

Electricity in several forms has been used by a good many, but there is very little evidence that any form of it is of value except the x-ray. Cook,[19] Beck,[20] Freund,[21] Price,[22] Holland,[23] Garré,[24] and others report excellent results from its use, and all report a very great drop in pulse-rate after two or three treatments, in several cases the pulse dropping to normal after a few exposures and with this a great improvement in the subjective symptoms. It is thought that the x-ray causes the secreting tissue to shrink, and perhaps to some extent kills it, and in this way the secretion of the toxins is checked. As an adjunct in certain cases this treatment is certainly of value.

Let us now consider the other alternative, surgery, and first let us emphasize the importance of the surgeon's being an expert at thyroid operative technic, for the liability of injury to the parathyroid or to the recurrent laryngeal nerve and of hemorrhages in the hands of the inexpert are too great to be overlooked. What are the indications for operation? The opinion of some surgeons is still that *diagnosis is the indication for operation*,[25] but that opinion is one which should be considerably modified in view of the success of medical treatment in a good percentage of cases. Certain types of cases require prompt operative treatment. Such cases are those in which the goiter is a mechanical danger, as, for instance, when it compresses the trachea or esophagus, or both. Here you get interference with swallowing or with breathing, and frequently cough and occasionally a dangerous bronchitis. The diagnosis is easy in the ordinary case when the enlarged thyroid can be palpated, but in cases with "dipping thyroid" the diagnosis is sometimes very blind. The greatest danger lies, not in the continued bearable pressure, but in the liability to sudden enlargement of the goiter, which not infrequently occurs, and which may quickly suffocate the patient. This point has been very strongly impressed upon us, for we have seen three cases die in this way while awaiting operation. Furthermore, this danger is so great that immediate operation is indicated in any case in which a dipping thyroid is found, even though the symptoms of exophthalmic goiter be very slight, as may happen.

Operation is also indicated when exophthalmos, by preventing closure of the lids, endangers the eyesight through corneal ulceration, or when after three months of good medical treatment there is no marked improvement in tachycardia or in the patient's general health, or there is an increase in the intoxication by thyroid secretion, even though

no enlargement of the thyroid can be demonstrated.[26] Cases with beginning cardiac involvement, — i. e., myocardial weakness, — as shown by a pulse of 130–160, or one that suddenly fluctuates in tension and rate, should be operated upon at once in order to save the heart,[27] while in cases that have gone beyond this point, and have arrived at the stage where the myocardium is badly diseased and the aggravating symptoms of exophthalmic goiter are still present, operation must be considered a last resort, not expecting a cure, but merely as an effort to prolong life by taking strain off the heart. If there is anemia with swelling of the feet, Mayo [28] puts the patient on rest and belladonna for some days, and in the severer types uses in addition the x-ray for two to six weeks. Riedel [29] emphasizes the importance of avoiding operation if possible, if there is any bronchitis from compression, since it increases to so great a degree the liability to bronchopneumonia, but in these cases it is usually better to risk the consequences of an operation than to risk a sudden swelling of the thyroid and a resulting death by suffocation.

Then there is another side of the question that must be considered,— the circumstances surrounding the patient. For instance, if our patient is a business man, dependent on himself and unable to give up the long time necessary for medical treatment and he is unable to go on in his present condition, immediate operation offers the best solution of the problem.

We shall not go deeply into the methods and technic of surgical treatment. Of the precedures [30] which remove the thyroid tissue, excision, as done by Kocher, and resection, as done by Mikulicz, are most frequently done, while Porta and Socin's method of enucleation without disturbing the posterior portion of the capsule offers the least liability of injury to the parathyroids with the resulting tetany. This however, is a very uncommon accident at the hands of experts. Horsley's procedure of division of the isthmus on the assumption that it would be followed by atrophy of the lobes has not been successful, and excision of the cervical sympathetic ganglia, as proposed by Edwards and later used by Jaboulay (1896) and Jonnesco, has been proved experimentally by Schiff to have no effect on the thyroid. Curtis,[31] however, reported in 1903 that Jonnesco had done 17 bilateral operations of this sort with 60% of perfect cures and no deaths. Ligation of the thyroid arteries — Wolfler's operation — is of value. In some cases this alone has produced cures, but it is most valuable as a preliminary to the radical operation in severe cases.[32] There is the danger of including the recurrent laryngeal nerve in tying the inferior thyroid artery, with resulting laryngeal paralysis and inhalation pneumonia, so great care should be taken that this does not occur. Ligation of the superior artery and vein, as is now done especially by the Mayos, is safe, but in many cases is not sufficient. In their latest paper [33] they report 2% of deaths within a few days after operation. For some unexplained reason acute thyroid poisoning may follow either of these last two methods of operation as well as those in which the thyroid tissue is cut and otherwise subjected to trauma.

Crile [34] lays special emphasis upon the importance of mental quietude preceding the operation. He so handles the patient by rest and sedatives that she is not worried and excited by the approach of the operation, nor is she conscious of taking the anesthetic, and, indeed, he claims that the patient in some cases does not realize that the operation has been done. This method he terms "stealing the gland," and certainly his results are remarkably good.

Quiet *following* the operation seems to me to be equally important, for frequently the patient is fuller of thyroid toxin at this time than at any other.

Capelle [35] has called attention to the importance of ascertaining when possible the presence of a persistent thymus, for in unexplained cases of death following operation the thymus was found in many cases to be of the size commonly found in the newborn. This gland, lying just behind the upper part of the sternum, is very difficult to make out by percussion, particularly as it lies surrounded by a mass of fat which not infrequently leads to a wrong diagnosis. The x-ray helps us very little if any here, and if we find dullness on percussion over this region we are between two risks, — that of operating in the presence of the apparently present thymus, and that of depriving the patient of the benefit of an operation when the mass is a false thymus consisting merely of fat.

It is well known that persistent thymus predisposes to death under ether, and in many cases collected by Capelle death occurred ten to twenty hours after successful operation, with gradually increasing weakness of the heart without apparent cause. In other cases there was sudden death during the operation. Capelle does not believe that hyperthyroidism has anything to do with the sudden deaths, but considers the thymus responsible. In 60 such cases following operation for Graves' disease, 79% showed a large thymus, and of the cases of Graves' disease which died of intercurrent diseases, 44% had large thymus. Of those who died of exophthalmic goiter alone, 82%, and of those who died during operation, 95% had large thymus. Its presence, then, if it can be made out surely, contra-indicates operation.

Another contra-indication to operation is an acute exacerbation of the symptoms. If this occurs we must treat with rest, baths and sedatives until the symptoms subside. Furthermore, the condition of the heart must be carefully considered and the effect of exercise or excitement studied. In other words, if there is dilatation, marked hypertrophy or myocarditis, operation should be avoided. This means that operation, if done, must be done before any advanced symptoms of cardiac involvement appear; and it is very poor judgment to advise operation in any desperate case.

Following operation, we expect a very marked diminution in the subjective symptoms in a large percentage of cases. The exophthalmos and tachycardia, however, may persist or even increase

after the operation, and a total disappearance of exophthalmos can be expected only in those cases in which operation is done early. A case is occasionally seen in which the exophthalmos has increased after operation, though the pulse may be normal. We have recently seen a case in a girl in whom the operation removed all symptoms; she feels and apparently is perfectly well, her pulse is 80, and she is living her ordinary life, but with a steadily increasing exophthalmos, which may in time endanger her eyesight.

The theoretical course of goiter is to go on to degeneration, which means myxedema in the end. If this is true, it may be said that by removing a large portion of the gland we are merely hastening the advent of myxedema, and yet in the cases in which operation has been done years ago, myxedema has not yet appeared. This may be owing to the fact that other glands, perhaps the chromaffin system (that is, the cells we find in the medullary portion of the adrenals and scattered through the sympathetic system, particularly in the ganglia), takes up some of the functions of the degenerated thyroid.

Now to sum up in a few words: In practically every case it is our duty to treat the patient medically, as I have already outlined, for three months. If at the end of that time no improvement has taken place, preferably ligate the vessels. This may effect a cure. If it does not, and the patient later comes to the operation of partial thyroidectomy, — which is as yet the most satisfactory of the radical operations, — the ligation will make the operation easier and less dangerous. If the goiter is very large, it is well to remove only the larger lobe and then treat the remaining lobe with the x-ray and medical procedures.

Cases that show beginning cardiac failure should be operated upon as soon as possible after putting the patient in fair condition by medical treatment. Many cases, however, come to the doctor only after the myocardial changes have begun. Patients in this condition must be treated as cases of advanced myocarditis, for all treatment beneficial to this condition is also beneficial to the exophthalmic goiter. The treatment which I have mentioned — the strictest rest, with ice bags over the heart and thyroid, a carefully regulated diet, the hydrobromide of quinine, and, if necessary, the cautious use of strychnia and bromides — must be carried out. We must not expect an absolute cure in the cases where the myocarditis is advanced, though symptomatic recovery does sometimes occur, and we can hope only to lessen the symptoms and make life better worth living for the patient and the patient's family. The earlier cases we may be able to cure, and if not we may, by careful medical treatment, improve their condition to such an extent that they can be operated upon with much less danger than before treatment.

Gentlemen, — The last word in the treatment of exophthalmic goiter has not yet been said and we are still a good deal in the dark regarding it, but I hope that I have made clear to you the indications for treatment which have met with the greatest success so far.

DISCUSSION.

DR. C. FROTHINGHAM, JR., of Boston: As Dr. Jackson's complete paper seems to cover the whole subject, I will simply try to emphasize a few of the points which seem to me to be of special interest. Although it is pretty generally admitted that the disease is due to a hypersecretion of the thyroid gland, the cause of this increased secretion is not clear. From a morphological point of view some pathologists say that there is an increase of glandular epithelium shown by infoldings. Other pathologists, however, deny that this condition is specific for Graves' disease. The chemists find some variation in the chemical properties of the gland in certain cases which might call forth an increased secretion, but no definite condition common to all these cases. Recently Dr. John Rogers, of New York, has worked out an elaborate theory for this hypersecretion dependent upon the interrelation between the chromaffin system, the pancreas and the thyroid. This theory up to the present time lacks confirmation by experimental evidence. In addition to the increase of secretion is the possibility of the increased secretion being abnormal. On this point there is considerable difference of opinion. Thus it is evident that there is a big field open for more work directed towards clearing up the true nature of this disease.

There is one point in regard to diagnosis which should be emphasized, and that is the question of whether the individual case is one of hyper- or hypo-secretion. For after the hypersecretion has ceased and there is even a dimunition of secretion, the symptoms of exophthalmos and tachycardia may persist. In these cases the exophthalmos has become permanent, due to structural changes, and the tachycardia is the result of myocardial degeneration. To operate in such cases in order to diminish the secretion would, of course, be useless. Careful history taking and physical examination ought to clear up the point.

Whether or not to advise surgery in the treatment of this disease is difficult to decide. This is due to the fact that the present statistics are unsatisfactory. They are unsatisfactory for two reasons: the same authors rarely compare good medical treatment with the same treatment plus operation, and authors will not confine their reports to only those cases that have been observed many years. That surgical intervention will give more prompt temporary relief seems pretty well established. The uncertainty exists in the end results. Therefore the circumstances of the patients make a considerable difference in the line of treatment to be advised. For proper medical treatment the patient should have absolute rest. This of course is impossible for patients in our big general hospitals and for the poorer classes in their homes. Therefore, unless future statistics show that the end results of surgical treatment are a failure, some form of surgical treatment should be recommended for those who cannot afford proper medical treatment earlier than for those who can.

DR. C. A. PORTER, of Boston: I have just read a paper upon the surgical treatment of exophthalmic goiter, in which I endeavored to make a plea for surgery in selected cases in which adequate medical treatment for a number of months did not prove successful. I tried to bring out clearly that in operating upon cases of Graves' disease, the object of the operation is different from surgery in cases of fibroids of the uterus or diseases of the appendix. In the latter, surgery may properly be said to cure, that is, to remove the cause, but in exophthalmic goiter all the surgeon can attempt to do is to modify the function of a gland which for

various reasons is functionating excessively or abnormally. It must, therefore, be understood that the results will be good or bad, depending upon the wise selection of cases and the operation done; whether it be ligation of the vessels or partial thyroidectomy. I feel quite sure that too many cures have been claimed both to medicine and surgery without waiting an adequate time to see what the end results will be. The general practitioner must remember that there is a mortality from 8 to 10% under medical treatment. This mortality, I believe, could be very distinctly reduced, probably halved, if surgery had been resorted to at an earlier period. We must never forget that this disease, once advanced to a certain stage with accompanying degenerations of the heart, nervous system and vessels, is absolutely incurable, though under medicine or surgery the patient's condition may be somewhat improved. Whoever has seen a case of acute hyperthyroidism successfully operated upon cannot doubt that the diminution of secretion of the gland has struck at the root of the evil. I feel that in Graves' disease we have one of the best opportunities for co-operation between the physician and surgeon, and the use of experience and judgment in the selection of a time when medical treatment should cease and surgery begin.

Dr. J. C. Munro, of Boston: I have just been congratulating them upstairs on the brotherly love that is dawning between the surgeon and the medical practitioner.

I endorse everything that Dr. Porter said.

Dr. Eben C. Norton, of Norwood: I would simply add that I have used serum in three cases of exophthalmic goiter, in one case beneficially and in two cases negatively.

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THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITER.*

BY CHARLES A. PORTER, M.D., BOSTON.

When I agreed to read a paper upon the surgical treatment of exophthalmic goiter before this section, I had no idea that such excellent résumés of the whole subject were so soon to appear in our Medical Journal, written by Dr. Channing Frothingham, Jr., and Dr. J. G. Mumford. The subject, however, is one of growing importance and no harm will be done by bringing it up again, perhaps from a slightly different point of view.

While in this community the disease is commonly regarded as a medical affection, to be treated along the lines which Dr. Jackson will discuss fully in another section, the advances made by surgery in the past ten years have established without question the superior advantage of operation in properly selected cases. In spite of the newer treatment by sera and other therapeutic measures, a definite proportion of these cases go on to a rapidly fatal issue, or to myocardial and vascular changes which after a longer or shorter time are followed by death. Acute Graves' disease passes unrecognized even now, and a mortality of 5% to 10% in hyperacute cases 15% to 20%, should teach us that exophthalmic goiter may be far different from the disabling, chronic but perhaps ultimately curable disease which many think it.

The excellent results of Kocher, Charles Mayo, Crile, Klemm, etc., show an operative mortality which varies from 3.5% (Kocher) to 9% in a series of 888 cases gathered from various clinics by Krecke in 1909. Statistics as to the results in the way of cures are numerous and somewhat variable. Heineck claims as end results 63.7% cures in 207 cases. Mumford's analysis of 741 cases, chosen somewhat at random from different surgeons' statistics, gives an immediate mortality of 4.03%; late mortality, .66%; unimproved, .38%; improved, 22.27%; cured, 70.3%. Though these figures are interesting and any argument in favor of operative treatment as against medical treatment halts lamely when not backed up by figures, I must confess to an entire agreement with Dr. George Grile, who states his opinion as follows:

"A study of my series of 72 operations for Graves' disease, presenting as they do numerous and complex symptoms, and involving many organs, as well as the most fundamental vital processes, impresses me with the great, almost insurmountable, difficulty, I may add, the impossibility, of compiling any statistical table that accurately represents the net clinical results."

The disease itself is fatal in perhaps 10% of the cases. Most surgeons select their material for operation, and many cases of temporary hyperthyroidism must be classed in the statistics as cases of Graves' disease. What the physician wishes to know is the particular risk which an individual case runs from operation, and what are the chances of cure as compared with medical treatment. This I claim must depend upon the sound judgment and skill of the surgeon, and the stage of the disease, and cannot be estimated from statistics in per cents. In the same way in regard to cures, when once certain degenerations have developed, a cure by medical or surgical means becomes an impossibility; some cases with very acute symptoms rapidly improve with or without operation; other patients, apparently well after

* Read at the annual meeting of The Massachusetts Medical Society, June 7, 1910.

a couple of years, whether operated upon or not, have a recurrence of the disease. Many consider themselves, indeed appear, well, and might be called cured, yet careful examination after unusual mental or physical stress shows undoubted evidence that the disease was slumbering and not cured. In estimating the probable chances of a favorable outcome, the result is peculiarly dependent upon the possibility of the patient living an after-life free from care.

In spite of all the work that has been done upon the pathological histology of the thyroid gland, there is much to be learned about the abnormal physiology in Graves' disease. Gradually the older theories that exophthalmic goiter was due to intestinal toxemia or a sympathetic neurosis are giving way to the probability that the thyroid, for unknown reasons, functionates excessively, or that certain products which are there destroyed in normal individuals escape and cause a general toxemia. Kocher speaks of the disease as a thyrotoxicosis; Mayo, as hyperthyroidism. Whatever be the real explanation, the results of experimental work and operation have shown conclusively that the abnormal thyroid has to do with the symptoms in question, either primarily or secondarily, and that modification of its circulation or partial removal influence favorably the course of the disease. According to some pathologists, notably Louis Wilson, of Rochester, there is a certain parallelism between the symptomatology and pathology; others have not confirmed this view. Hyperplasia of some part of the gland is, however, rarely absent when symptoms are present, though the lightning response to psychic stimuli bears evidence that the toxemia is due to a chemical poison rapidly formed and excreted in excess.

The aim of medical treatment, absolute rest, ice bags, bromides, bromide of quinine, digitalis, etc., is to keep the patient alive until the abnormal stimulus has ceased to act; the poisons are eliminated or neutralized by antibodies, and then so to regulate the life of the individual that storms will not return. With rodagen, thyrodectine, etc., and the serum treatment of Rogers and Beebe, the object is to neutralize the toxins, and, in cases of hypothyroidism when combined with Graves' disease, to give both thyroid juice and antitoxic serum in proper proportions. The x-rays are advocated by those who believe that the gland can be atrophied and the efferent lymph channels narrowed or obliterated. Certain forms of electricity, according to reports, have proved beneficial, but it is probable that their action is in part due to suggestion combined with other hygienic measures. If a tumor is present which stimulates adjacent thyroid tissue, the surgeon by operation removes the exciting cause of the symptoms. By ligature of vessels, he brings about diminished blood supply and lessened activity. If veins and lymphatics are obliterated by ligature or post-operative scar tissue, the channels of absorption are interfered with. Finally, by partial thyroidectomy he directly attacks the source of supply.

In my opinion, too little distinction has been made between the purposes sought by operation for fibroids or appendicitis and that sought in operation for Graves' disease. In the first instances, the surgeon may really cure the disease by radical removal; in the latter, all that is actually attempted is *to modify the functions of an overactive gland*. After all the ligature operations and even partial thyroidectomy, enough thyroid tissue is left behind, which, if it hypertrophies or the patient is subjected to the same influences which brought about the original disease, may again become overactive and cause a recurrence of symptoms. If this conception of Graves' disease be a correct one, the physician or surgeon must be careful in promising permanent cures, and he need not be surprised, if examination is made with sufficient care, to find that many cures should be more properly ranked as permanent improvements. If the patient survives partial thyroidectomy, it is obvious that there will be less risk of recurrence than if the patient is treated medically, for there is less thyroid tissue by which toxins may be produced. On the other hand, as a proportion of these cases, through involution, go on to thyroid sclerosis or colloid degeneration, the danger of the development of post-operative myxedema must be considered if too much thyroid tissue is removed by surgery. In 1908 Klemm reported the results of operations upon 32 cases, most of them having been followed for several years. There were no deaths. Twenty-seven were heard from: 92% recoveries, 4% improvements, 4% failures. He advises operation as soon as the diagnosis is made. In spite of these good results, few surgeons agree with such a radical point of view, for it is now the belief that a preliminary course of medical treatment should be carried out for a varying period before operation should be considered. When symptoms of hyperthyroidism occur engrafted upon a chronic goiter, operation is usually indicated for several reasons: because of the danger of malignancy, estimated at 7% to 10% when goiters after thirty-five suddenly enlarge; secondly, because medical measures are usually unsatisfactory when the thyroid tissue is stimulated by an abnormal growth; and, finally, because the results of such operations are extremely good and relatively free from danger. To this class belong many patients operated upon in the great clinics and classified as secondary hyperthyroidism. These show temporary symptoms with periods of comparative health, and, particularly if operated upon in the interval, the mortality is very low. I have myself operated in over twenty cases without a death. The dangers are those of any serious operation requiring skill: hemorrhage, sepsis, injury to the recurrent laryngeals, possibly tetany if much of both lobes have to be removed —with injury to the parathyroids. The real question as to medical or surgical treatment arises in true cases of hyperplastic goiter without marked enlargement, but presenting all grades of hyperthyroidism or thyroid toxemia. In these cases, the operative and post-operative mortality is considerable and very difficult to determine from the statistics at hand, for no proper distinction is made between these two

classes of cases, and the relatively small mortality of the former when classed with the latter diminishes unduly the mortality of true exophthalmic goiter. I have operated upon only eight real cases of exophthalmic goiter with one death one hour after operation. Here the surgeon is confronted with the risks of hyperthyroidism developing usually soon after or within forty-eight hours of the operation for which careful technic does not appear to be a preventive. Such an experienced surgeon as Charles Mayo reports 2% of deaths following simple ligature of vessels. In most of my cases, convalescence has been rather stormy, — for a few days fever, varying between 101° and 103°, rapid, bounding pulse, dyspnea, etc., — but in none of them, with the exception of the fatal case, did the condition cause any anxiety. Of the seven cases surviving the operation, six have been markedly improved; none have been cured. In the seventh, marked exophthalmos with conjunctivitis and rapid pulse led to immediate operation to prevent corneal ulceration. Owing to the carelessness of the etherizer, the eyes at first covered by vaseline and protective tissue were exposed for an hour to ether vapor and a most severe inflammation developed. The operation, hemithyroidectomy, was satisfactory, the patient leaving the table in good condition. There were well-marked symptoms of toxemia for two days after the operation, which were followed by such a severe ocular infection that the patient had to be transferred to the Eye and Ear Infirmary. Pain was extreme, the patient became delirious, and at the end of three weeks death seemed imminent. Upon withdrawal of the atropin, however, the low, muttering delirium with rapid pulse disappeared, the eyes slowly cleared up, and the patient is now convalescent in spite of complications which were peculiarly unfortunate after an operation for Graves' disease.

Another case, a chauffeur of thirty, had suffered for a year from typical symptoms, which during the past two months, in spite of good medical treatment, were rapidly getting worse. I saw him with Dr. Proctor, of Sandwich, Sept. 8, 1909. At this time he was very nervous; tremor; bounding pulse of 140 which shook the chair in which he sat. Under absolute rest in bed and bromide of quinine for three weeks he improved somewhat; the severe attacks of palpitation ceased; the pulse varied between 98 and 110, but he did not gain in weight. On Oct. 2, 1909, the right half of the gland was removed and the superior thyroid vessels tied on the left. For several days there was fever and tachycardia, but the patient expressed himself as feeling distinctly better, less nervous and no palpitation. Thirty-five days after operation, the patient had gained 15 lb., was still improving, but the pulse varied between 94 and 104. The left lobe has undergone some compensatory hypertrophy. March 9, 1910, five months after operation, patient within 4 lb. of his regular weight; pulse averages between 80 and 90; in my office, 116. When quiet, feels perfectly well, but, under excitement or after walking fast, heart begins to beat rapidly. Patient has been under bromide of quinine since operation. Further operation was advised, and on March 19, 1910, the upper half of the left lobe was removed. More severe reaction after removal of half of this lobe than previous removal of half the gland. Discharged on the thirteenth day. Two weeks later pulse was 74 in the morning and 88 in evening; has entirely lost his nervous feelings, but has not yet recovered his strength. In this case, owing to inadequate removal of tissue at the first operation, a second one was necessary.

Case III. Man of twenty-eight; six months ago, after business stress, extreme nervousness, insomnia and loss of weight. Treated for nervous prostration and sent to the woods. Two months later goiter developed with tachycardia and loss of 50 lb. Patient had collapse on way to office. Examination showed typical and excessive thyroid toxemia; pulse was 165 to 170; marked tremor of fingers; some exophthalmos; patient could not sit still a second; profuse perspiration; cardiac enlargement; very vascular goiter with loud bruit. After three weeks of absolute rest in bed with ice bags, bromide of quinine, etc., the general restlessness improved, the pulse fell to 110, but loss of weight continued. On Aug. 24, 1909, I removed the right half of the gland under ether. After operation, the pulse rose to 150 and temperature to 102.5°, but on the sixth day the temperature was normal and the pulse had fallen to 100. Patient was infinitely less nervous and could rest calmly quiet in bed; his weight fell to 115. Yesterday, nine months after operation, he reported again. He has been at work as business manager for three months; considers himself well, but gets tired at night. He has a ravenous appetite and has gained 45 lb. There is no exophthalmos; pulse is 72 and regular; apex normal. Is this patient cured? Certainly not yet, for the tremor remains; he is still 20 lb. under his normal weight and has not recovered his full strength. He has refused to give up work and has neglected medical treatment for six months. While nine months of good medical treatment might have brought about equal improvement, he failed under the most favorable surroundings to gain weight until operation was performed. The contrast between his condition yesterday and ten months ago is most striking.

Case IV. Surgeon, Von Mikulicz. Woman of twenty-one; entered the Massachusetts General Hospital in April, 1902. Two and a half years previous became nervous and excitable, palpitation, profuse sweating, and right eye was prominent. Two years ago goiter developed with dyspnea on exertion. At entrance pulse was 156; cardiac enlargement; fine tremor of hands; marked pigmentation of skin. Under neutral bromide of quinine and rest in bed, patient improved and was discharged in six weeks feeling much better. A year later, in May, 1903, in spite of continuous treatment with bromide of quinine, patient re-entered hospital in about the same condition as at first: profuse sweating, insomnia, extreme nervousness, but pulse was only 124. Operation by Professor Von Mikulicz. Upper

part of left lobe removed; superior and inferior arteries tied on the right. Stormy convalescence with very high pulse and temperature. Two weeks later, however, patient feels much better; eyes less prominent, pulse regular, rate 120. Three years later recurrence of symptoms; half of right lobe removed; again much improved by operation, but at the present time, in spite of more or less continuous medical treatment, the left lobe has hypertrophied and the patient still presents some symptoms of the disease.

Turning for a moment to the medical statistics, we find reports in 1908 by Jackson and Mead of 85 cases treated with Forcheimer's neutral bromide of quinine. Of these 85 cases, 29 reported by letter; 56 were personally examined. Of the 29 cases, 20 regarded themselves as well, 7 were unimproved and 2 were dead. Of the 56 examined, 42 showed no obvious signs of the disease after two years, 7 were improved, 6 unimproved. Sixty-nine per cent of the 29 cases considered themselves well; 75% of the 56 cases appeared well at the time of examination. Under 2% died. These are most excellent results, but it must be remembered that these patients were almost all ambulatory cases.

In December, 1909, Rogers and Beebe reported the results of their specific serum treatment in 480 cases of all stages of Graves' disease: 15% cured; 10% no subjective symptoms; 50% improved, that is, after a few months of treatment, patients disappeared; 17% unimproved; 8% dead. These results are by no means as favorable as Jackson's treatment with bromide of quinine, but the mortality suggests a severer grade of the disease, and some patients with early acute toxemia showed marked improvement, which had not taken place under the usual treatment.

How shall the physician decide which cases shall be treated medically and which subjected to operation? In this borderland disease, close cooperation between the physician and surgeon is necessary to accomplish the best results. Medical treatment should always be tried first, its duration to depend upon the degree of improvement and upon the circumstances of the patient as regards ability to rest. In the poorer classes, operation, in spite of its dangers, should be done earlier, as it offers hope of quicker improvement. When tumors are present in the gland, operation should be done early in a quiescent period. Relapsing cases should probably be operated upon; if each succeeding relapse leaves the patient at a lower level, surgery is indicated before chronic myocardial and vascular degenerations make the case incurable. Severe chronic exophthalmos is an indication for operation. In very acute Graves' disease, after the usual treatment, Rogers' serum, if obtainable, should be used. If no improvement takes place shortly, a minor operation under cocaine with ligature of arteries or veins should be done in the majority of cases. If the patient survives the operation, some of the most brilliant surgical results follow in these cases. In estimating the risk of operation, it must be remembered that in these hyperacute cases conservative treatment gives its greatest mortality.

In spite of Kocher's extensive experience and low mortality, 3.5%, most of the operations being done under cocaine anesthesia, the majority of surgeons have come to prefer general anesthesia with ether.

Crile is convinced that the psychic factor, the dread of operation, is in a great measure responsible for post-operative hyperthyroidism. This may explain the deaths following minor operations, such as ligature of the vessels. Whether it is necessary to keep the patient in ignorance of the operation for several days, and then after narcotics to operate practically without the patient's knowledge, is open to question. No such measures are taken at the Mayo clinic, where the mortality is as low as 4%.

I regard one to three weeks of absolute rest in bed, with appropriate treatment, as the most important preliminary to operation in these cases, and, so far as possible, the psychic element must be considered. In planning the amount to be done at operation, the surgeon must remember that he is attempting to modify the function of an overactive gland; that several operations may be necessary; that it is far safer to do too little than too much. Simple ligature of the vessels, arteries, veins or both, is often all that is necessary in some of the milder cases and is all that the hyperacute cases will usually bear. Ligature of one or both superior thyroids is quicker and easier than the inferior thyroids. The ligature, always of silk, must be placed close to the capsule of the gland in order to avoid the blood supply of the parathyroid bodies. If the patient improves after this preliminary operation, partial thyroidectomy may be undertaken with increased safety at a later period.

In discussing the technic of operation I shall mention only a few points. The reversed Trendelenburg position markedly diminishes venous bleeding. The transverse low necklace incision gives adequate exposure and leaves a minimum scar. The anterior muscles should be divided at a different level and carefully sutured at the end of the operation. The gland should be handled with extreme gentleness; one is surprised at the thinness of its proper capsule, which should be brushed back by dry sponging, carrying with it the parathyroid glands, which are rarely seen. In primary Graves' disease the gland is extremely vascular. Great care must be taken to avoid hemorrhage, and hemostasis must be absolute. More reaction usually follows removal of half of one lobe than half of the gland, due probably to the crushed thyroid tissue left behind. It has seemed to me to be of advantage, after hemithyroidectomy, to tie the superior vessels on the other side. The wound should always be drained by a stab below the original incision, which should be entirely closed. The scar is slight and inconspicuous. After operation, salt solution should be freely given by the different methods in an attempt to diminish post-operative hyperthyroidism. Hoarseness often persists for some time; occasionally it is perma-

nent, but is then usually due to an injury of the recurrent laryngeal nerve. If only one side is paralyzed, a relatively good voice is usually acquired.

In spite of the relatively small mortality, as gathered from the larger statistics of Kocher, Mayo and others, I cannot but consider the operation for acute Graves' disease a dangerous one, only to be undertaken by a skillful surgeon. It is of great importance that proper medical treatment be continued for a long time after operation; in fact, it seems to me that the benefits of surgery are often lost from the belief of the patient, partly fostered by the attitude of the surgeon, that operation alone will cure Graves' disease.

Finally, in conclusion, it seems to me that it is of utmost importance that the physician recognize that surgery, in properly selected cases, offers more and quicker improvement than medical treatment. To be successful, earlier operation must become the rule before incurable degenerations have developed. When reasonable medical treatment has been carried out, the surgeon should be consulted. While from the very nature of the disease *permanent cures* may not be common, *permanent improvements* follow timely and appropriate operation in the large majority of cases after medical treatment has proved unavailing.

DISCUSSION.

Dr. J. M. Jackson, of Boston: I have to speak just for a few minutes on some indications for operation in exophthalmic goiter, a little more fully perhaps than Dr. Porter reported to you. In following perhaps 250 cases of exophthalmic goiter, I feel that one of the most important indications is the loss in the condition of the myocardium. All these cases, if allowed to go on sufficiently long, sooner or later must develop a certain amount, more or less, of myocarditis. Now if we are going to cure these patients we must get at them before that condition of the myocardium comes on. That is why I feel that we ought to call in the surgeon earlier than we have hitherto. Although I recognize perfectly well that from 25 to 50% of cases get well without treatment, or with very simple treatment, at the same time I think we give our patients the best chance if we take them before it develops into weakness of the heart wall itself. Moreover, if we find when a patient comes to us that she has already a myocarditis, she should be operated on at once. I mean by that, if she shows any irregularity of pulse either of rate or rhythm, or if we find any enlargement or dilatation of the heart, — those cases should be done at once. Of course, I do not feel that we can cure all those cases; because once a myocarditis is established, the chances are that it cannot be checked, but operation does prolong life and helps the general condition. So that I do not feel the complication of heart trouble to be an argument against operation.

There is a class of cases I have been interested in of late: Several times I have seen these patients and could not account for the symptoms — dyspnea and bronchitis with wheezing and discomfort in breathing. Examination of the throat showed no signs whatever of enlargement of the thyroid, and yet with the x-ray and by percussion I have found a thyroid running well down into the chest, and at operation have seen a thyroid as large as my fist which was being dug out from below the clavicle. These must occasion a good many of the cases of sudden death. I have seen three cases already where the patients died suddenly — there was an enlargement of the thyroid which had not been recognized.

Then one more point in connection with the thymus. The persistent thymus gland is supposed to be a complication of operation, but although I have seen several cases in which the thymus gland was present, and have advised against operation, I am inclined now to feel I would do better to advise operation in those cases, because it is impossible for us to say whether the case is one of persistent thymus or whether it is a normal thymus and a bunch of fat; and I feel very strongly they had better take their chances of sudden death and have the operation than to go on and have the same advanced symptoms of exophthalmic goiter. I feel that the combined effort of surgical and medical men is nowhere so important as in these cases of exophthalmic goiter. It is not a medical disease nor a surgical disease, but a combined disease. I think the sooner we get together on it and work this out, the better statistics we shall have. I do not feel that our statistics thus far amount to anything. We say, "a patient is cured." We ought to say, "cured to date," because we do not know when any one may relapse. I have seen a case for fifteen years absolutely free from symptoms which has to-day developed an acute exophthalmic goiter. So we shall have to change our nomenclature, and if we say "cured," will say "cured to date."

Dr. J. C. Munro, of Boston: It pleases me to hear Dr. Jackson advise that surgical and medical men get together on these cases. We must get together. There are a certain number of cases easily cured by medical treatment, and also a certain proportion easily cured by surgery, and some the surgical and medical men have got to work out together. Personally I still feel afraid of exophthalmic goiter; our cases have been advanced cases — I seem to feel we have not had enough experience yet or worked enough with medical men to know which cases will stand operation and which will not.

Dr. F. B. Lund, of Boston: I would like to emphasize one or two points in Dr. Porter's paper. One is the fact that from the multifarious character of the disease, and the various degenerations and connections it has made, statistics are very hard to establish. I have had a certain small experience in operating and my cases have all been light ones, and I don't think there is much danger of their getting to the surgeon without a good deal of medical treatment. It requires much judgment to tell just how much thyroid to take out, or in which cases one ought not to take out any thyroid but ligate the vessels; and I have had admirable results in ligating the vessels. I think Dr. Porter is modest about reporting his case as cured. I think if a case gets so much better as that he reported, I should say he was perfectly well. Of course, you cannot make a man younger by any operation.

I think these patients have been neglected, misunderstood; it is a class of patients with which we are going to accomplish a great deal.

DISTORTION OF THE FACE AND SKULL DUE TO CONTINUED FIXED POSTURE IN EARLY INFANCY.

BY JOEL E. GOLDTHWAIT, M.D., BOSTON.

The following communication is made for the purpose of calling attention to the fact that the head in the first year or two of life is so soft and yielding that it can be molded almost at will and that, because of this, many of the deformities or peculiarities in the shape of the head which lead

to varying degrees of disfigurement later in life can easily be avoided if this fact is appreciated at this early period.

It has, of course, long been known that the shape of the head could to a certain extent be molded so as to conform to certain types, and for centuries certain tribes of Indians have been

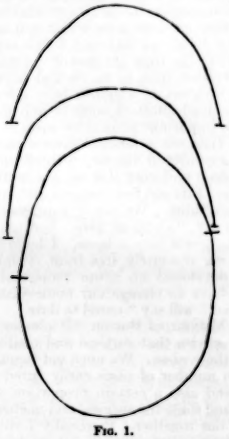


FIG. 1.

known by such peculiarities, which were the direct result of bandaging or compression of the head during infancy. That simply posture in bed, however, with nothing else to cause pressure other than the weight of the head, could cause peculiarities in the shape of the cranium had not been appreciated by the writer until the first case

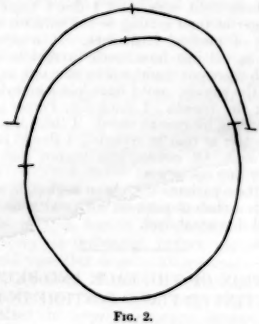


FIG. 2.

here reported was called to his attention. At that time he was unable to find any literature upon the subject, and the anxiety which he at first felt because of the magnitude of the deformity was shown later to have been wholly unnecessary. In this case also the distortion of the face as well as the vault of the cranium was strikingly noticeable, and by measurements both features were easily demonstrable. The rapidity with which the deformity was corrected by simply changing the position of the child as she lay in bed, with no mechanical appliance or other measure, surprised him and has been followed so commonly since by similar relief that brief mention of the subject seemed to him justifiable. Previous to this case he had supposed that while distortion of the sides or top of the cranium might occur, that the base of the skull was so firmly put together that only



FIG. 3.

considerable force could to any appreciable extent change its shape.

The case that first called the subject to the writer's attention was a child of four months, who was seen in consultation with Dr. J. B. Swift because of a peculiar facial distortion. The child was generally healthy and showed no evidence of rickets or disturbance of nutrition. As the result of the belief held by the nurse that to lie upon the left side would result in disease of the heart, the child had been kept almost continuously upon the right side, but aside from this there had been

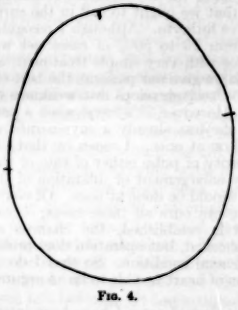


FIG. 4.

nothing peculiar in the care that the child had received. The tracings of the head taken at that time are shown in Fig. 1 and were made by passing a flexible lead around the head, over the frontal eminence of the frontal bone and just above the ears to the occiput. The anterior part of the ear, or the point just above the external auditory meatus, was marked and is the point on the sides indicated in the tracings. No attempt was made

to record the distortion of the cranial vault, but the degree of twist of the basal part of the skull is shown clearly. The later tracings, the first taken two months and the other three months after the first, show how completely the correction of the distortion had been from doing nothing other than to have the child kept continuously upon the other side. After that the position was naturally changed regularly.

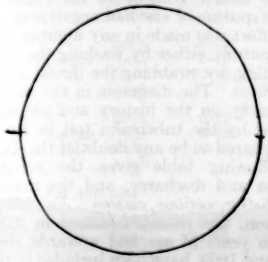


Fig. 5.

Since this first case was seen, many others have been seen by the writer, and as the result of this experience it is evident that the position in which the child is kept during these early months of life determines to a large extent the shape of the head.

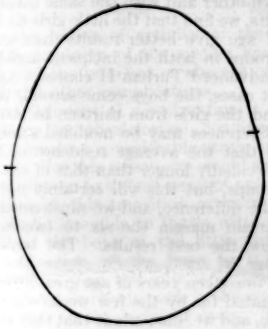


Fig. 6.

As is shown by the following tracings, the round head, the flat head and the twisted head can be made almost at will, and once the condition is appreciated it is possible to tell almost to a certainty from the tracing alone the position in which the child has been kept when lying down.

That these conditions exist, and exist quite commonly, there can be no question from the results of observations made upon quite a large number of individuals, and that the condition is not seen more often in adult life is probably largely due to the fact that as soon as the child is old enough to be able to move about and change its position, voluntarily the distortion corrects itself. That this is not always the case is at once apparent in studying the tracings of the head made by the hatters, where a surprising variety of types will be found, and it is also shown by some of the tracings here presented of persons older than infants. The type of these distortions is so similar to those seen in early life where the condition is wholly due to posture that it seems probable that many of these peculiar-shaped heads are of this origin and are not congenital, as has often been supposed.

The following cases are used to illustrate the points here mentioned:

Case I. A girl baby, a patient of Dr. J. B. Swift, four months old. Had been a healthy baby with no signs of rickets or malnutrition. Had been kept continuously upon the right side, so that the weight of the head was received upon the right side a little back of the ear. The shape of the head when first seen was as is shown in the inner tracing of Fig. 1. The child was turned upon the other side, and about two months later the condition was as is shown in the middle tracing, while in another month the head was normal, as is shown in the outer tracing.

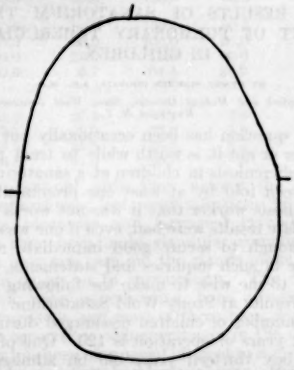


Fig. 7.

In this case, with the distortion of the base of the skull there was a natural distortion of the face, the whole right side, the frontal eminence, the malar bone and the superior maxilla being so much more anterior than the left side as to give a strange and most unnatural expression. With the improvement in the cranial distortion, as shown by the tracing, the facial distortion also disappeared. The child has remained well now for some years without showing peculiarities of anything other than good health.

Case II. A boy child of five months who had been kept continuously upon the right side for several weeks previous to the examination because of a painful left arm following vaccination. The child was generally well and showed no signs of rachitis. With simple change of position the shape was corrected so that in six months the distortion which in the beginning was as is shown by the inner tracing of Fig. 2 became as shown by the outer tracing.

The other observations made by the writer are similar to these. The following illustrations are presented to still further emphasize the types:

Fig. 3 is of a girl child of five months who had lain continuously upon the left side, the distortion being the reverse of that shown in the previous illustrations.

Fig. 4 is of a boy of fifteen months who had always lain upon the left side of the face and shows a similar condition to that of Figs. 1 and 2, except that the right posterior side of the head is more rounded.

Fig. 5 is from a boy of two years who had during the first year of life been kept almost continuously upon the back.

Fig. 6 is of a boy of seven, and Fig. 7 is of a woman of thirty-three years, the tracings being presented to show how similar these peculiarities which are seen in the older children and adults are to those seen in infancy, and suggest naturally a similar cause.

Clinical Department.

SOME RESULTS OF SANATORIUM TREATMENT OF PULMONARY TUBERCULOSIS IN CHILDREN.

BY HENRY SKINNER GOODALL, A.B., M.D.,

Superintendent and Medical Director, Stony Wold Sanatorium, Lake Kushaqua, N. Y.

THE question has been occasionally put to me whether or not it is worth while to treat pulmonary tuberculosis in children at a sanatorium. I have been told by at least one prominent antituberculosis worker that it was not worth while, as the late results were bad, even if one was fortunate enough to secure good immediate results. Because of such inquiries and statements, it has seemed to me wise to make the following report of our results at Stony Wold Sanatorium.

The number of children discharged during our first six years of operation is 120. One of them was a boy thirteen years old on admission, a moderately advanced Turban II case, who was discharged with disease arrested. One case was non-tubercular, one remained with us only two days, one was a laryngeal case, with only very slight demonstrable pulmonary disease, and five had some enlargement of the lymphatic glands without suppuration and without positive signs of involvement of the lungs. One of the glandular cases was discharged apparently perfectly well, and the others were much improved. The laryngeal case had considerable ulceration of the epiglottis, but was discharged in good condition with the ulcerations healed. He has, however, since died.

The remaining 111 children comprise 33 boys between the ages of six and twelve inclusive; 35 girls between the ages of six and twelve inclusive; and 43 girls between the ages of thirteen and sixteen inclusive.

The classification of the National Association for the Study and Prevention of Tuberculosis was followed, the terms used being interpreted according to the definitions approved by the American Sanatorium Association. The presence of râles of any kind was considered incompatible with apparent cure, except in case of transient fine dry crackles at the base of the axilla, and those râles also were considered incompatible with apparent cure if the region where they were heard had shown evidence of pulmonary disease during residence.

It will be noticed that the presence or absence of tubercle bacilli in the sputum has been omitted from the table. Almost all the children either raised no sputum or else had negative sputum. No special effort was made in any number of cases to obtain sputum, either by washing the stomach in the morning, by swabbing the throat after cough, or otherwise. The diagnosis in the children was based chiefly on the history and physical signs, supported by the tuberculin test in cases where there appeared to be any doubt of the diagnosis.

The following table gives the condition on admission and discharge, and the average residence of the various classes. For purposes of comparison, the results obtained in 235 adults, seventeen years of age and upwards, discharged in 1908 and 1909, have been included in the table.

It will be observed that the number of patients in all classes of children, except the incipient and moderately advanced Turban II, is much too small to give averages of value. We will, therefore, limit our comparisons to these two classes, which embrace the great majority of the children. Comparing the classes in the different age-groups with each other and with the same classes among the adults, we find that the little girls six to twelve years of age give better results than any of the other groups in both the incipient and the moderately advanced Turban II classes. Among the incipient cases, the boys come second, the adults third and the girls from thirteen to sixteen last. These differences may be modified somewhat by the fact that the average residence of the little girls is decidedly longer than that of either of the other groups, but this will certainly not account for all the difference, and we must conclude that by a certain margin the six to twelve-year-old girls show the best results. The boys show a percentage of good results above the girls of thirteen to sixteen years of age greater than could be accounted for by the few weeks' difference in residence, and we must admit that they come next to the little girls. The girls from thirteen to sixteen give poorer results than either of the other age-groups of children, and worse than those obtained among the adults, and this in spite of the fact that the average residence of the thirteen to sixteen-year-old girls is much greater than that of the adults.

Among the moderately advanced Turban II cases, making due allowance for differing average of residence, the little girls six to twelve years old again give the best results, the girls from thirteen to sixteen years come next, the boys from six to twelve years third, and the adults last. Taking all classes together, the order is little girls, little boys, girls thirteen to sixteen years old and adults.

The reasons for these differences may be sought for in the presence or absence of the menstrual

		Age in Years.	Number of Cases.	Average Residence in Weeks.	Per Cent Apparently Cured.	Per Cent Arrested.	Per Cent Improved.	Per Cent Unimproved.
Incipient.								
	Boys,	6–12	20	47.5	70.0	30.0	00.0	00.0
Turban	Girls,	6–12	20	51.6	85.0	5.0	10.0	00.0
I	Girls,	13–16	21	41.3	61.9	23.8	10.0	4.3
	Adults,		49	27.1	65.3	20.4	14.3	00.0
Moderately Advanced.								
	Boys,	6–12	4	55.7	50.0	25.0	25.0	00.0
Turban	Girls,	6–12	4	46.9	00.0	75.0	25.0	00.0
I	Girls,	13–16	2	40.8	50.0	50.0	00.0	00.0
	Adults,		18	28.9	38.9	38.9	16.7	5.5
	Boys,	6–12	8	57.5	12.5	50.0	25.0	12.5
Turban	Girls,	6–12	9	51.3	33.3	33.3	22.2	11.1
II	Girls,	13–16	13	33.7	23.0	30.8	38.5	7.7
	Adults,		98	42.5	8.2	44.9	36.7	10.2
	Boys,	6–12	1	31.7	00.0	100.0	00.0	00.0
Turban	Girls,	6–12	1	81.5	00.0	00.0	100.0	00.0
III	Girls,	13–16	2	40.7	00.0	00.0	50.0	50.0
	Adults,		24	28.8	00.0	45.8	41.7	12.5
Far Advanced								
	Boys,	6–12	0	00.0	00.0	00.0	00.0	00.0
Turban	Girls,	6–12	0	00.0	00.0	00.0	00.0	00.0
II	Girls,	13–16	1	27.7	00.0	00.0	00.0	100.0
	Adults,		1	31.0	00.0	00.0	100.0	00.0
	Boys,	6–12	0	00.0	00.0	00.0	00.0	00.0
Turban	Girls,	6–12	1	60.7	00.0	00.0	100.0	00.0
III	Girls,	13–16	4	59.0	00.0	25.0	75.0	00.0
	Adults,		45	24.8	00.0	6.7	64.4	28.9
Totals of All Classes.								
	Boys,	6–12	33	49.0	51.5	36.4	9.1	3.0
	Girls,	6–12	35	49.3	57.1	20.0	20.0	3.0
	Girls,	13–16	43	40.7	39.5	25.6	25.6	9.3
	Adults,		235	33.1	20.3	31.5	36.7	11.5

function, the habits of activity of the various groups, the condition of the system apart from the lungs and the presence or absence of gastro-intestinal and other complications.

The establishment of menstruation is a period of unbalance in physiological conditions, and frequently involves considerable strain upon the vital forces. For this reason, we would expect the girls from thirteen to sixteen years of age, who are passing through this transition or have recently done so, to be less able to battle with a serious disease than the boys or the little girls. The natural inclination of the boys to take more violent exercise than the girls is a handicap to them and shows its effects more in the moderately advanced than in the incipient cases. We have very little trouble in keeping the girls of all ages reasonably quiet, but the boys will be boys whenever they can get out of sight of the doctors and nurses, much to their detriment.

The functional condition of the various organs, aside from the lungs, has been much better, on the average, among the little girls and the boys than among either of the other groups, and better among the thirteen to sixteen-year-old girls than among the adults. There are fewer and less severe gastro-intestinal disorders, fewer cases of appendicitis, of tubo-ovarian disease, dysmenorrhea, etc., of renal disturbance and of neurasthenia. There is usually no worry over family or financial matters to hold the little ones back. There have been less tubercular complications among the little girls and boys and among the thirteen to sixteen-year-old girls than among the adults; less hemorrhages, less mixed infections, less pneumonias, pleuresies and laryngeal involvements. There have been more glandular complications, but in only one case did the glands make serious trouble or go on to suppuration. The cases of children with complicating bone disease have been very few, and most of them have done well.

The occurrence of hemorrhages in the different groups has been of especial interest to me. Among the 33 boys, only 2 had hemorrhages either before or during residence. Among the 35 little girls six to twelve years old, only 5 had hemorrhages before or during residence, and 3 of these 5 girls began to menstruate within a short time (two or three months) after the hemorrhage. Of 43 girls thirteen to sixteen years old, 15 had hemorrhages before or during residence, and all of these but 3 had established menstruation before the hemorrhage or did establish it soon after. Two of these three were old enough and sufficiently developed so that they would undoubtedly have been menstruating but for the severity of the pulmonary disease.

The later results can be stated very briefly. So far as we have been able to trace the three age-groups of children, all who were discharged as apparently cured or arrested are at present as well as, or better than, they were on discharge. Making a liberal allowance for relapses, etc., among those not traced, we may still feel sure that the final results are as good as, or better than, those among our adult patients. Many of those

who have been traced and found to be still apparently well have established menstruation since discharge, and some have married and borne children.

The number of cases reported above is admitted to be rather small for the establishment of positive conclusions. The comparative results among the different classes on discharge have, however, been the same from year to year, and substantially the same as the aggregate results for all the years.

I believe, therefore, that we may safely conclude from our experience at Stony Wold Sanatorium, first, that the immediate results of sanatorium treatment of children afflicted with pulmonary tuberculosis are as good as, or better than, those obtained among adult women under the same conditions; and, second, that the final results will prove to be at least as good as among our adult patients.

Children are accordingly entitled to the same opportunity to enjoy the benefits of sanatorium treatment as are the adults, and greater provision should be made at once throughout our country to afford them such treatment.

CONGENITAL STENOSIS OF THE PYLORUS. THE REPORT OF THREE SUCCESSFUL CASES FOLLOWING GASTROJEJUNOSTOMY. REMARKS.

BY CHARLES L. SCUDDER, M.D., BOSTON,

Surgeon to the Massachusetts General Hospital; Lecturer on Surgery at Harvard Medical School.

I WISH to report here three hitherto unrecorded cases of pyloric stenosis in infants:

CASE VI in author's series. R. J. M. The patient was a boy baby five weeks old, under the care of Dr. Elam, of Gardner, Mass., and Dr. John L. Morse, of Boston. The date of birth was Dec. 14, 1908. The baby weighed 6 lb. He nursed and seemed perfectly well for three weeks.

When three weeks old the baby began to spit up a little milk. Vomiting about an hour after each feeding then became frequent. The weight of the baby at this time was 7 lb. 12 oz. During the ten days before operation he lost ½ lb. The bowels were constipated. The movements were dark green, with an occasional curd. The character of the vomiting was explosive. The material vomited consisted of the food taken by the baby. At no time did the vomitus contain bile.

Upon examination the baby looked a little peaked, but seemed to be in good condition. A pyloric tumor was easily felt. Upon introducing into the stomach about 2½ oz. of water there was very marked visible peristalsis. On Jan. 22, 1909, a posterior gastro-enterostomy was done. The pyloric tumor was palpated and found to be the size of the end of the thumb, the tissue about it translucent-like and glistening.

The baby recovered well from the operation, gaining from ¾ to 1 lb. in weight each week. He was troubled for a considerable time after the operation with a little spitting up of milk, but this gradually ceased. The baby is now perfectly well and strong. May 18, 1910, he weighed 21 lb. at the age of one year and five months.

CASE VII in author's series. D. C. N. H., Jr. A patient of Drs. Morse, Swain and Dunn, of Boston. A boy baby eleven weeks and four days old. The child was born June 3, 1909, after a normal confinement. The weight at birth was 9 lb. The baby nursed and seemed to be perfectly well during the first six weeks of its life, reaching a weight of 10 lb. 10 oz.

At this time there was a sudden onset of vomiting. There was no fever and the movements were normal. A whole feeding or several feedings would be retained and then vomiting would begin again. Artificial feeding was immediately instituted, but the child lost in weight and strength and there was no abatement of the vomiting. The movements were normal except for an occasional small, watery and dark-green dejection. The child was always willing to take food. The vomiting was explosive. The material vomited was usually the whole of a feeding. The vomitus at times contained specks of bile. The weight had decreased to 8 lb. 12 oz.

Upon examination the tongue was found to be clean and the mouth healthy. The abdomen was sunken and there was visible gastric peristalsis. A pyloric tumor was distinctly palpable. The stools were meconium-like.

Aug. 25, 1909, a posterior gastro-enterostomy was done. Recovery from the operation was without incident. The child gained steadily in weight and has remained perfectly well. He is now one year old and weighs over 20 lb.

CASE VIII in author's series. W. F. H., Jr. The patient was a boy baby four weeks and four days old, under the care of Dr. Straw, of Manchester, N. H., and Dr. John L. Morse, of Boston. The child was born March 20, 1910, and weighed 7½ lb. The baby nursed and seemed perfectly normal for the first sixteen days of its life.

On April 5, 1910, the baby began to vomit. For the next two weeks he was fed a mixture of whey and modified milk every two hours. He had occasional cyanotic attacks.

Upon examination classical symptoms of pyloric obstruction were present. The stomach was dilated, the bowel collapsed. The movements were meconium-like. A pyloric tumor was readily palpated. There was a marked thinness of the body, and the general condition was poor.

April 22, 1910, a posterior gastro-enterostomy was done. The child recovered from the anesthetic satisfactorily and took within the first hour 1½ dr. of milk and retained it. The first days following the operation there was difficulty in keeping the baby alive. He was so feeble that for one twenty-four hours life seemed to be fast fading away. Warm water bottles, no bathing, moderate stimulation, judicious feeding, salt solution and castor oil together placed the baby on a living basis. When two months old he had gained almost his birth weight, looked well, was strong and improving rapidly. He is gaining an average of an ounce each day. To-day, July 9, 1910, the baby is three months old, weighs 9 lb. 13 oz. and is in perfect health.

REMARKS.

These three cases reported by me for the first time are, respectively, the sixth, seventh and eighth consecutive successful cases of congenital stenosis of the pylorus following gastrojejunostomy. In the BOSTON MEDICAL AND SURGICAL JOURNAL of March 4, 1909, I reported a fifth successful case.

These three latter cases illustrate certain important facts concerning pyloric stenosis in infancy. All these cases were boys. They were apparently well babies when born. They were all

breast-fed babies. Case VI was well for the first three weeks of his life. Case VII was well for the first six weeks of his life. Case VIII was well for the first two weeks and two days of his life. The first sign that anything was wrong with these babies was the appearance of vomiting. Associated with the continual and periodical vomiting there was a loss in weight. The baby ceased to gain its normal increment in body weight. Experiments in each case in feeding the baby were carefully made. The several changes in food were only of temporary benefit. In all three cases a pyloric tumor could be felt.

The unexpected persistence of vomiting in a boy baby within three weeks of birth, in a boy baby who has been nursed by his mother, a continuous loss of weight despite careful feeding, the presence of a palpable pyloric tumor, visible gastric peristalsis, — these are important signs pointing to an obstruction at the pyloric orifice of the stomach.

These signs and symptoms should immediately arouse the suspicion that treatment of the obstruction by diet and mechanical measures are inefficient. The moment that the diagnosis of pyloric obstruction in infancy is made, surgical treatment should be instituted.

It is the aim of the surgeon to avoid operating for a diagnosis. I believe, however, that in certain of the very doubtful cases of pyloric stenosis in infancy it may be wise to do an exploratory operation when the delay in operating would sacrifice the child. It is better to occasionally do a comparatively safe exploratory operation when the child is in excellent condition and find no lesion at the pylorus requiring surgical treatment than to postpone the operation and allow the child to die from unrelieved obstruction because of delay. For there comes a time in the life of these little babies when operative interference, even under the best conditions, is not borne well, and if the child is allowed to go along upon medical treatment, and is continually losing ground, even though the diagnosis is not certain, there will come a time when even the surgeon can do nothing to save the child. Operation, I believe, should be done when the diagnosis of pyloric stenosis is made, and in doubtful cases when skilled medical treatment of perhaps two weeks' time has been tried and found unavailing.

It must be borne in mind that two objects are sought by operation: (1) The overcoming of obstruction to meet the emergency of starvation, and (2) the restoration by operation of the gastro-intestinal canal so that it will serve the individual during the remainder of his life.

The medical practitioner who ordinarily comes into contact with these cases at the very beginning of the symptoms must, I believe most emphatically, recognize the fact that delay in operating upon these little babies with true tumor stenosis is largely the reason for the present surgical mortality. The operative treatment when the baby is first taken ill is attended by comparatively slight risk. The risk of operating is less than the risk of unskilled medical experimenting with foods and drugs. Skilled feeding may be wise in doubtful cases for two weeks, but for no longer.

Early operation upon little babies who have a stenosis at the pylorus is the best and safest treatment.

A CASE OF HEMORRHAGE OF THE NEWBORN TREATED BY DIRECT TRANSFUSION: RECOVERY.

BY F. S. NEWELL, M.D., BOSTON.

This case is reported because it is of sufficient rarity to warrant the report of all cases, whether the outcome is favorable or unfavorable, in order to add to the scanty literature on the subject. No attempt will be made in this report to draw elaborate conclusions as to the future usefulness of the treatment or to collect reported cases from the literature, but the case is reported simply as one of interest.

The patient was an apparently healthy female child, twenty-four hours old; was the second child of healthy parents, and weighed at birth 7 lb. 6 oz.

Examination showed it to be normal in every respect, and it seemed perfectly well up to twenty-four hours after birth, when it vomited a small amount of bright blood, perhaps a half ounce in all. No further bleeding occurred until three hours later, and it seemed as if this might be the single hemorrhage which had stopped spontaneously. At 8.30 P.M. April 9 a second hemorrhage occurred and the baby vomited about 2 oz. of bright blood. Dr. John L. Morse was asked to see the baby in consultation, and preparation was made for a transfusion, if he should agree with the treatment. Before he saw the patient at 9.30 P.M. two other hemorrhages of moderate amount had occurred and the baby had one large movement of meconium mixed with blood.

Examination showed the baby to be somewhat pale, but in apparently good condition, the pulse ranging between 130 and 135. It seemed probable that the hemorrhages would not stop spontaneously and that whatever was going to be done had better be done while the baby was in as good condition as possible. The advisability of trying to stop the hemorrhages by the subcutaneous injection of rabbit serum was discussed, but it was decided that direct transfusion offered the greatest hope. This operation was, therefore, decided on and was performed by Dr. J. C. Hubbard, the baby's father acting as donor. The operation presented considerable difficulty owing to the small size of the veins of the patient. The left popliteal vein was first exposed, but it was found to be too small to permit union with the father's radial artery. The internal saphenous vein was then dissected out and with considerable difficulty union was secured, the Elsberg canula being employed. The connection between the vessels was allowed to persist for twenty-five minutes, and the wounds closed with interrupted sutures and dressed with sterile dressing. During the transfusion the baby had three large movements containing old and bright blood, but from this time on no further bleeding occurred.

The operation was difficult and it was two hours before the connection of the vessels was obtained. The baby was in a much improved condition at the end of the transfusion, the color being better and the pulse of better character. The following day the temperature was 103 and the pulse 120, the baby seemed weak and listless, but otherwise in satisfactory condition

The temperature gradually dropped to normal on the third day after the operation, and the baby showed steady signs of improvement. By Dr. Morse's advice it was put on whey and given small amounts at frequent intervals, gradually increasing in amount and strength until at the end of three weeks a full-strength milk-whey mixture was being used. The baby did not regain its birth weight until two and a half weeks after the transfusion, and apparently did not start to gain for a week from the time of operation, but from that time on its gain was steady and rapid. It was discharged from the hospital five weeks after delivery, weighing 9 lb. The wounds were extremely difficult to keep clean, particularly the one in the groin, and union was delayed, although no suppuration took place. There was at no time any milk in the mother's breasts, and, therefore, the feeding was entirely artificial.

The case illustrates two points: First, the extreme difficulty of performing a transfusion on a newborn baby on account of its small-sized vessels, and, second, the prompt checking of the hemorrhage as soon as the effect of the donor's blood became noticeable. The good result was due in no small part to the extreme faithfulness and care of the nurse who had charge of the baby, as it was extremely difficult to keep the wounds from being constantly contaminated by urine and feces.

In conjunction with the cases previously reported, it seems evident that the early cases of hemorrhage of the newborn can be successfully treated by the transfusion method. On the other hand, the results have been unfavorable in the late cases of hemorrhage, i. e., those occurring after the first week. This points to a difference in the etiology of the two conditions and suggests that in the late cases some septic process may be at the bottom of the trouble, and in which case transfusion cannot be expected to be successful. Judging from the difficulty of the operation, I believe that transfusion in infants should always be performed by an expert, if possible, and certainly should not be attempted by the general practitioner, except as a last resort, even if he is surgically inclined, since the margin of safety is so small that the increased exhaustion caused by a bungling transfusion may take away what chance the baby has.

OVARIAN CYSTS WITH TWISTED PEDICLES.

BY F. W. JOHNSON, M.D.,
Gynecologist-in-Chief, Carney Hospital.

I HAVE had four cases of this kind during the winter. One was in a woman sixty years of age. A small cyst of the right ovary became twisted three times on its axis. Although this did not completely shut off the blood supply to the tumor, yet it did so to such an extent that the tumor had become adherent to the omentum, a small coil of intestine and the parietal peritoneum. Constant pain, which was in the right side on a level with the umbilicus in the region of the tumor, necessitated her seeking relief.

The second case was in a woman forty-three years of age. In addition to the ovarian cyst she had a large fibroid. The ovarian cyst from the right side was as large as a good-sized grape fruit and was so twisted on its pedicle that it received its nourishment from omentum, intestines, liver and parietal peritoneum. At first the tumor was supposed to be from the liver, but after it was separated from its adhesions it was found to be a cystoma of the right ovary. The hemorrhage was profuse and was stopped only by covering the oozing surfaces with towels wrung out in boiling water.

The third case was in a woman forty-five years of age. The tumor evidently became twisted two years ago when she had an attack of peritonitis, followed by a long illness, during which there were repeated chills and elevation of temperature. When I saw her there was no fever, but there was emaciation and constant pain in the left lower quadrant of the abdomen. I expected to find an ovarian cyst which had become tubercular or malignant. On opening the abdomen, a cyst from the left side, as large as a child's head, with twisted pedicle, was found adherent to parietal peritoneum and intestines. After a great deal of difficulty the cyst was removed without rupture. It contained nothing except pus.

The fourth case was seen in consultation with Dr. Thomas B. McQuaid, of Everett. She was three months pregnant and had had severe pain and soreness just to the left and a little below the umbilicus for four days. On the morning of the fourth day the pain was so severe that she fainted. Her temperature was 100, her pulse 120 and there was evidently a localized peritonitis in the left lower quadrant of the abdomen. On examination the pregnant uterus could easily be made out. To the left of it was an indistinct movable mass. A diagnosis was made of an ovarian cyst with twisted pedicle. On opening the abdominal cavity considerable turbid fluid was found. The cyst, which was the size, shape and almost as dark in color as an egg plant, was adherent to the parietal peritoneum and omentum by recent adhesions. The tumor had become completely twisted off at the junction of pedicle and tumor. There was and had been no bleeding. The stump near the tumor looked as if it might have been crushed off by an instrument. The only communication between the tumor and the left ovary was a shred of tissue the size of a cod line. The operation was followed by recovery without producing an abortion.

Medical Progress.

REPORT OF PROGRESS IN OTOLOGY.

BY HARRIS PEYTON MOSHER, M.D., BOSTON.

(Continued from No. 10, p. 407.)

NYSTAGMUS.

NYSTAGMUS is the name applied to any oscillating movement of the eyeballs. It is almost always reflex and involuntary. There are two classes of nystagmus, undulating and rhythmical nystagmus. Rhythmical nystagmus is the kind which is mostly associated with ear diseases.

Rhythmical nystagmus consists of two movements, a rapid and a slow movement. The rapid movement or component may be in any direction, though usually it is either to the right or to the left. The slow movement occurs in the opposite direction. The direction of the quick component is used to name the form of the nystagmus. Nystagmus, therefore, is designated as nystagmus to the right if the quick movement is to the right. Further, nystagmus is called horizontal if the plane of the movement lies in or is parallel with a second plane passing hori-

zontally through the pupils of both eyes. Vertical nystagmus occurs in a direction at right angles to the horizontal plane. There is also oblique nystagmus. This occurs in a plane to the right or to the left of the vertical axis of the body. Finally, there is rotary nystagmus. In this the eye tends to revolve in the axis of a line drawn straight backward through the pupil as a spool can be made to turn on a lead pencil.

Ewald's experiments on pigeons established the following facts: (*a*) Excitation of a single canal can produce nystagmus only in a plane corresponding to the plane of the canal. (*b*) By reverse movements of the endolymph in any single canal there is produced a reversal of the direction of the induced nystagmus. (*c*) The strongest nystagmus which can be produced by the irritation of a single canal is always in the direction of the ear experimented upon.

Remembering that the direction of the vestibular nystagmus takes its name from the direction of the quick eye movement, and that the gradual head and eye movements produced by Ewald in his experiments upon animals correspond to the slow component of vestibular nystagmus, Ewald's results interpreted for man would read as follows: Nystagmus induced by endolymph displacement in any particular canal is in a plane parallel with the plane of that canal, and in the direction opposite to that of the endolymph displacement.

THE CHARACTER OF VESTIBULAR NYSTAGMUS.

Vestibular nystagmus has the following characteristics:

(1) It has a quick movement in one direction and a slow movement in the opposite direction.

(2) It is increased usually in rapidity and always in length of excursion when the eyes are turned voluntarily in the direction of the quick movement.

(3) It becomes weak or may disappear wholly when the eyes are turned in the direction of the slow nystagmic movement.

Vestibular nystagmus always has these characteristics, whether produced by experimental irritation or by disease.

Vestibular nystagmus may be horizontal, oblique, vertical or rotary.

The nystagmus of acute labyrinthine disease is almost always rotary.

Nystagmus may be produced by pressure, by galvanism, by injecting hot or cold water into the canal and by turning.

NYSTAGMUS FROM PRESSURE.

Nystagmus can be produced by compression or exhaustion of the air in the external canal, or even by pressure on the tragus in cases of labyrinthine suppuration. It can be produced by direct pressure on the stapes. The movements in many cases are small and in others wanting. There is no uniformity in the results obtained from pressure nystagmus, and the method has little value except in the examination of cases of suspected openings in the semicircular canals.

GALVANIC NYSTAGMUS.

If the anode or the positive pole of a galvanic battery, armed with a small electrode, is placed upon the right tragus, and the kathode, or the negative pole, armed with a large electrode, is held in the hand of the patient during the passage of twenty milliamperes of current, nystagmus can be easily produced. This will consist in a quick rolling movement of the eyes to the opposite or unstimulated side and a slow return to the right side, or the side of stimulation. The nystagmus, however, will be observed only with a glance to the extreme left (in the direction of the quick movement) and not when the glance is straight ahead or to the right. It will not be a pure rotary nystagmus, but mixed with this movement there will be a slight horizontal element.

If, now, the electrodes are transposed, the results will be reversed. By comparing the results (see below) obtained with the use of heat or cold, it is found that the anode or the positive pole has the same effect as syringing the ear with cold water, and the kathode or the negative pole has the same effect as syringing with hot water.

If the patient is placed in the Romberg position, that is, standing with the eyes closed and the feet together, and the galvanic reaction is produced, the patient with nystagmus to the left falls to the right; with nystagmus to the right, the patient falls to the left. In other words, the fall is in the direction of the slow component of the nystagmus. Turning the head about a vertical axis either to the right or to the left will cause a fall forward or backward according as the slow component of the nystagmus is to the right or to the left. (Chamberlain.)

THE CALORIC REACTIONS.

(1) If the ear of a normal person is irrigated with water at the body temperature, no objective or subjective phenomena result.

(2) If the ear of a normal person is irrigated with water below the body temperature, the following signs of vestibular irritation are shown: (*a*) There is rotary nystagmus towards the ear not syringed. (*b*) The patient experiences vertigo. (*c*) The patient exhibits marked disturbances of equilibrium.

(3) If the ear of a patient is irrigated with water which is above the temperature of the blood, the same phenomena are produced, but with this difference. (*a*) The quick nystagmus movement is towards the ear irrigated.

BARANAY'S THEORY AS TO THE CAUSE OF THE CALORIC REACTIONS.

The whole labyrinth can be regarded as a vessel filled with fluid of the temperature of the blood. If cold or hot water is brought in contact with one side of this vessel, the specific gravity of the contained fluid which is nearest the exposed wall will be increased or diminished and the fluid at this point will rise or sink according

to the physical laws governing fluids of different specific gravity.

The parts of the semicircular canal system nearest the surface of the middle ear are: (1) The anterior part of the horizontal canal, (2) the external or ampullar third or the anterior vertical canal which points downward. Syringing the ear, therefore, with cold water would influence the temperature first at these points, With the head in the upright position, however. endolymph movement in the horizontal canal would be prevented by its horizontal position. On the other hand, sudden cooling of the ampullar end of the anterior vertical canal would, by condensation of the endolymph at this point, give rise to an endolymph movement downward towards its ampulla. That this experiment in normal persons is invariably followed by rotary nystagmus toward the opposite side is in exact accord with Ewald's experiments. The use of hot water, which, by reducing the specific gravity, would cause an endolymph movement in the opposite direction, invariably gives rise to a rotary nystagmus towards the ear irrigated. This is also in accord with the experiments of Ewald.

The value of these experiments lies in the fact that, when the vestibular apparatus has been destroyed either surgically or by disease, no reaction follows the application of either heat or cold. The caloric tests further are invaluable for determining the degree of impairment of the vestibular function.

THE ROTATION OR TURNING EXPERIMENT.

When a normal person is seated with his head erect and is turned upon a revolving chair and turned fairly rapidly for ten revolutions in either direction, say, for example, to the left, a horizontal nystagmus is set up with the quick eye movement in the direction in which the person is turned, i. e., to the left. When the turning is stopped suddenly, the quick eye movement changes to the right. The average duration of the nystagmus which follows this experiment is from forty to forty-five seconds.

THE EXPLANATION OF THE NYSTAGMUS CAUSED BY TURNING IN ACCORDANCE WITH EWALD'S EXPERIMENTS.

In order for turning in the horizontal direction to affect the fluid in any particular semicircular canal, that canal must lie in the horizontal plane. With the head erect the two horizontal canals lie in the horizontal plane. If the head is bent sharply forward or backward, the two superior vertical canals become for the time being horizontal. By turning the head, therefore, any of the three pairs of canals can be made to lie in the horizontal plane and can be tested separately. Suppose the head to be held upright and the individual to be turned in a vertical axis, and let the turning be to the right. The fluid in the horizontal semicircular canals, by reason of its inertia, at first lags behind, i. e., it suffers an initial displacement in the opposite direction. This initial endolymph displacement in the right horizontal canal is toward its ampulla, which in the left horizontal canal is toward the small end of the canal. According to the experiments of Ewald, these are the exact endolymph movements which in these canals cause nystagmus to the right. When, however, the rotations are suddenly stopped, there occurs again, by reason of its inertia, an endolymph displacement in the opposite direction, with the result that the direction of the nystagmus is reversed, i. e., rotation to the right is followed by nystagmus to the left.

RULES FOR DETERMINING THE FORMS OF NYSTAGMUS WHICH SHALL FOLLOW ROTATION.

Suppose the subject experimented upon to be sitting erect upon a revolving chair and to be revolved. His body revolves in a vertical axis. Imagine a horizontal plane passed through the eyes, at right angles to the plane in which the subject is being turned. This horizontal plane passed through the eyes will vary in position with the position of the head. The position of this horizontal plane always indicates the form of the nystagmus.

The nystagmus is always opposite to the direction of the turning. If the head is erect, the nystagmus is horizontal; if the head is bent toward the shoulder at an angle of 45°, the nystagmus is oblique and upward. If the head is bent fully toward the shoulder to form an angle with the vertical of 90°, the nystagmus is vertical. If the head is bent directly forward so that the face looks downward and the turning is to the right, the nystagmus will be rotary and to the left. If the head is bent backward so that the eyes look upward and the turning is again to the right, there is rotary nystagmus to the left. The concavity of the nystagmic curve is upward, i. e., opposite to the position of the head. In the preceding case the concavity of the nystagmic curve looked downward.

VERTIGO AND DISTURBANCES OF EQUILIBRIUM.

Baranay's studies have led him to formulate the following laws governing spontaneous vertigo and nystagmus:

(1) Vestibular nystagmus is always influenced by the position of the head.

(2) A person exhibiting vestibular nystagmus tends to rotate within the plane of the nystagmus and in the direction opposite to that of the quick nystagmic movement.

This tendency to rotation is about an axis passing through the patient's head. If a person is seated with head erect and is turned ten times to the right and the rotation is suddenly stopped he exhibits a marked nystagmus to the left. He also experiences vertigo. If the patient stands, the nystagmus being in the horizontal plane, the reaction movement will be, not falling, but a gradual turning in the horizontal plane to the right. If the patient bends the head forward or downward at an angle of 90°, the plane of the nystagmus becomes vertical. The

nystagmus is to the left and the head tends to turn to the right shoulder. If the head is bent directly backward at an angle of 90° and the turning is to the right, the nystagmus is to the left and the patient tends to fall to the right.

In the caloric tests, or in the nystagmus following acute labyrinthitis, the nystagmus is rotary and the plane vertical rather than horizontal. The patient falls in the direction opposite the quick movement. In the suppurative labyrinthitis the nystagmus is almost always toward the sound ear, so that the patient falls in the direction of the diseased ear. It must not be forgotten, however, that in certain forms of circumscribed irritative labyrinthitis the nystagmus is in the direction of the diseased ear, so that the patient tends to fall in the direction of the sound ear.

Baranay holds that disturbance of equilibrium is characteristic only of the acute stage of labyrinthine disease and that it regularly disappears as the lesion advances either toward resolution or toward destruction of the vestibular structures. This view is supported by the fact that vestibular ataxia as a subjective symptom rapidly disappears after surgical destruction of the labyrinth. Baranay, therefore, attaches little importance to disturbed equilibrium as a diagnostic sign in the latent or the chronic stage of suppurative labyrinthitis. He believes that in the chronic stage of suppurative labyrinthitis, the vestibule, in the great majority of cases, is no longer responsive to the usual stimuli; in other words, that its function is abolished and it is illogical to expect a disturbance of equilibrium from an organ which is no longer susceptible to stimulation.

Von Stein, apparently, believes that at no stage of suppurative labyrinthitis are disturbances of equilibrium absent, and that while these disturbances may not interfere with the patient's ability to walk or stand normally, they may be clearly demonstrated by requiring him to perform certain acts in which he is not practiced by daily custom, i. e., jumping or hopping with the eyes closed.

It is now generally conceded that vestibular ataxia is a symptom induced by vestibular irritation acting upon the diseased labyrinth or by ablation of its function through disturbed balance of the unopposed healthy organ. Further, the ataxia disappears as a subjective symptom after the diseased labyrinth has been destroyed surgically or its function completely annulled. If, therefore, the tests of Von Stein elicit a true vestibular ataxia in the chronic stage of labyrinthine suppuration, the ataxia is due, not to irritation of the diseased labyrinth and non-functioning labyrinth, but to excitation of the sound labyrinth which is no longer balanced by an unopposed healthy organ. (Kerrison.)

NYSTAGMUS IN HYSTERIA.

In dealing with hysterical patients who have an intercurrent aural disease, many contradictions of the regular tests may appear. Many neurasthenic patients under certain conditions exhibit uncontrollable eye movements which are not of vestibular origin and in no way resemble vestibular nystagmus. It is obvious that vertigo and apparent disturbance of equilibrium may in neurasthenic patients depend wholly on functional disorders of the general nervous system.

VERTIGO.

Vertigo which is not accompanied by nystagmus even when the eyes are turned strongly in the direction away from the suspected labyrinthine lesion, and which is not influenced by the position of the eyes, has little value as pointing to labyrinthine disease. Disturbances of equilibrium which are not influenced by the position of the head can hardly be assumed to be of vestibular origin.

What use can these tests be put to clinically? In a normal individual, as each labyrinth sends an equal stimulus to the eyes, no movement results, the eyes being in equilibrium. If, however, one labyrinth is irritated, this labyrinth sends a greater stimulus to the eyes, upsets the normal equilibrium and pulls the eyes toward its own side. If the irritation of the labyrinth caused by disease continues to a suppurative involvement of the labyrinth, and its destruction, the attacked labyrinth loses all power of function. In this case the well labyrinth alone sends impulse to the eyes. The living labyrinth in this case controls the situation and pulls the eyes in its direction. The turning test and the caloric test give the physician power to stimulate the other labyrinth at will. The reactions of the normal labyrinth to these tests have been accurately proven. If, in a case of suspected disease of the labyrinth, these tests are applied and the normal reactions are not given, the inference is drawn that the labyrinth is diseased. The easier of the two tests to apply is the caloric test. If a labyrinth is partially destroyed, the responses to the caloric test are weak compared with those given by the normal labyrinth. If, however, the labyrinth is completely destroyed, the diseased labyrinth gives no response whatever to the caloric tests. In this way the caloric tests can be used as a measure of the intactness of any given labyrinth. The turning tests should confirm the caloric tests.

VESTIBULAR SYMPTOMS IN ACUTE SUPPURATIVE LABYRINTHITIS.

Kerrison groups the symptoms of vestibular irritation in an imaginary case as follows: Suppose that a patient has an acute otitis media on the right, and that the infection has spread to the inner ear or labyrinth. Shortly after the invasion of the labyrinth the patient has distressing vertigo which forces him to go to bed. The eyes show a marked rotary nystagmus to the left or the sound side. The nystagmus is present in whatever position the eyes may be placed, but it is increased when the eyes are turned to the sound side, that is, in the direction

of the quick nystagmic movement, and is diminished when the eyes are turned in the opposite direction. The vertigo is rotary. If the patient is supported in a vertical position, objects seem to rotate in a vertical plane, usually from the right, the diseased side, to the left, the sound side. If the patient lies on his back, the plane of seeming rotation is changed from the vertical to the horizontal. If able to stand, he stands unsteadily and tends to fall toward the right or the diseased side. At the onset, the patient usually has nausea and vomiting. All these symptoms are lessened in severity while the patient lies in bed. The patient, therefore, prefers to be in bed, and lies on the diseased side, with the face towards the pillow and the eyes turned in the opposite direction. This position is assumed because it gives the greatest comfort.

COURSE OF THE DISEASE.

All of the above symptoms subside, as a rule, fairly rapidly and in a somewhat regular order. That is, the vertigo and the ataxia regularly disappear before the nystagmus. By the end of the first week the vertigo may have disappeared, but the nystagmus is still present. Sudden head movements may bring back all the symptoms. From the end of the second to the end of the fourth weeks, not only the vertigo and the ataxia, but the nystagmus, have completely disappeared and the patient is able to move or walk without disturbance.

During the course of the acute circumscribed inflammation of the labyrinth just described, if the left ear was normal, the persistance of function in the diseased labyrinth can be easily demonstrated. Warm water injected into the canal increases the nystagmus, and cold diminishes it, or may even cause it to disappear. Suppose, however, the disease goes on to total destruction of the right labyrinth, or suppose that the labyrinth has been destroyed by operation. With the labyrinth destroyed by either method, neither heat or cold produce any effect.

NYSTAGMUS IN CEREBELLAR DISEASE.

Disease of the cerebellum, as well as disease of the vestibule, can cause nystagmus. As disease of the cerebellum is often caused by disease of the labyrinth, the two factors occasionally act on the eyes at the same time. Cerebellar abscess is most often associated with labyrinthine suppuration of a diffuse or general character, not with circumscribed labyrinthine disease.

Nystagmus in cerebellar abscess may be toward the sound side or the diseased side. More often it is toward the diseased side. Cerebellar abscess is usually found in connection with labyrinthine suppuration, so that both factors, the labyrinth and the cerebellum, play a part in producing the nystagmus. The following possibilities must be differentiated:

(1) With nystagmus toward the diseased side there may be (*a*) a circumscribed labyrinthine suppuration; (*b*) a cerebellar abscess.

With a circumscribed suppuration, the labyrinth would still be excitable and would react to heat or cold. There would also be signs of a labyrinthine fistula, that is, aspiration and compression of the air in the external auditory canal would cause movements of the eyes. If, however, the reaction to heat and cold was lost there might still be reaction to pressure or to galvanic stimulation. In this case the diagnosis could not be made from the nystagmus. In such a case, with nystagmus to the diseased side and reaction to pressure and to galvanism, but not to heat or cold, the labyrinth operation is indicated after the radical. After the removal of the labyrinth, if the nystagmus which was formerly directed toward the diseased side should then be directed to the sound side, the diagnosis of labyrinthine suppuration without involvement of the cerebellum could be made. If, however, after operation on the labyrinth, the nystagmus was still directed toward the diseased side, and does not change to the sound side, the nystagmus must come from some intracranial origin, for a sound vestibule, if the opposite vestibule is destroyed, causes nystagmus to its own side.

(2) Suppose there is a nystagmus to the diseased side and the vestibule is shown by tests not to be functioning.

In this case the nystagmus must be intra cranial, and this intracranial stimulation must be greater than the stimulation from the opposite and intact vestibule. The nystagmus to the diseased side could point only to an abscess in the cerebellum. In such a case, due attention would, of course, be paid to the pulse, the temperature and the other general signs of cerebellar involvement.

There exists a third possible combination of nystagmus in cases of suspected cerebellar abscess.

(3) The nystagmus is directed, not toward the diseased side, but toward the sound side, and the labyrinth is not excitable.

In this case the nystagmus could come either from the vestibule or from the cerebellum, and diagnosis from the nystagmus could not be made. In this case the cerebellar suppuration has proceeded so far that all function of the cerebellum is lost. In such a case, if only the labyrinth is diseased, after operation the nystagmus is extreme and directed to the sound side. It, however, gradually disappears. Should there be a cerebellar abscess, however, associated with the labyrinthine suppuration, the nystagmus after operation does not decrease; it increases instead and it is reversed and directed toward the diseased side. From these signs the intracranial origin of the nystagmus, that is, cerebellar involvement, can be diagnosed for a certainty.

(*To be continued.*)

AN epidemic of measles is reported in Pretoria. Up to the present, the inhabitants of three hundred houses have been infected, and in all about one thousand cases have been reported. The schools are being closely watched, but the health officials believe that the epidemic is sufficiently under control to obviate the necessity of closing them. — *Jour. Am. Med. Asso.*

Reports of Societies.

THE AMERICAN DERMATOLOGICAL ASSOCIATION.

THIRTY-FOURTH ANNUAL MEETING, HELD AT THE ARLINGTON HOTEL, WASHINGTON, D. C., MAY 3, 4 AND 5, 1910.

FIRST DAY, TUESDAY, MAY 3.

THE President, DR. WILLIAM ALLEN PUSEY, of Chicago, in the chair.

PRESIDENT'S ADDRESS — THE THERAPEUTIC USE OF REFRIGERATION, PARTICULARLY WITH SOLID CARBON DIOXIDE.

DR. PUSEY said the method of using solidified carbon dioxide for therapeutic purposes had been before the profession for three years. It had, he believed, had a wide trial, and it now had a very respectable literature, so that one could form an approximate estimation of its field of usefulness and its limitations. He, therefore, availed himself of this opportunity to undertake to review the method and its results in the light of the experience of others as well as himself. Solid carbon dioxide was suggested as a substitute for liquid air as an available substance of excessively low temperature which could be used to meet the same therapeutic indications as were met by liquid air. The principle underlying the therapeutic use of solid carbon dioxide, as of liquid air, was the production of a relatively deep, sharply defined inflammatory reaction in living tissue by sudden intense freezing. The first advantage of the method was that the reaction could be regulated so that one could accurately produce all degrees of effect upon tissues, from an evanescent inflammatory reaction to a reaction so intense that it resulted in complete destruction of the involved tissues. The depth of freezing from solid carbon dioxide was controlled by the degree of pressure made in the application and the duration of the application of the snow, and the freezing which resulted therefrom was the most important factor in the effect upon tissues. The therapeutic indications for the use of refrigeration were found in the following conditions: First, those in which production of a stimulating reaction was beneficial. Here only conditions covering relatively small areas would come into consideration because of the impracticability of using the applications over very large surfaces. Second, those in which it was desired to destroy certain tissues in the skin by the production of an interstitial sclerosis. Third, those in which it was desired to produce immediate destruction of masses of diseased tissue in the skin. It was the second one of these indications which gave this method its chief claim to therapeutic usefulness, for it furnished a practical means of destroying the connective tissue stroma around them, and thus furnished a method of destroying certain tissues selectively and replacing them by an interstitial scar tissue formation which showed little or no scarring on the surfaces. The various dermatoses in which, upon the basis of these indications, the method might have a field of usefulness, occurred, of course, to all, and in many of them it had been tried.

Foerster, Heidingsfeld, Winfield and others had gotten excellent results by this method in the treatment of senile keratoses. The same was true in the treatment of superficial epitheliomata. Personally, Dr. Pusey said, he did not believe that carbon dioxide was the method of choice in epithelioma, excepting for very small and superficial lesions. In larger or deeper seated lesions he preferred the x-rays. In conclusion, he expressed the belief that refrigeration with liquid air or solid carbon dioxide was a method of treatment that was an advance of value in the treatment of a considerable group of lesions of the skin, some of which had been intractable to other methods at our command; and, second, that the introduction of the solid carbon dioxide had made the method practically available.

EXTRAMAMMARY PAGET'S DISEASE, WITH REPORT OF A CASE OCCURRING ON THE FOREARM, ASSOCIATED WITH A NAEVO-CARCINOMA.

DR. M. B. HARTZELL, of Philadelphia, read this paper, which he illustrated with microphotographs, and which included the report of a case, with its clinical and histological features. He compared this with other cases which resembled it more or less, and discussed the relationship of the dermatitis to Paget's disease and carcinoma. He said it seemed to him that the cases which he had ventured to call extramammary Paget's disease afforded special opportunity for determining the real nature of this extremely interesting malady — for deciding whether the disease was one *sui generis*, as maintained by Unna and others, or whether it was carcinoma from the beginning, as was asserted by a number of recent writers. The careful study of these cases ought also to enable us to determine whether the cutaneous disease was a primary one, followed only after a considerable interval by carcinoma, as had long been believed, or whether, as Jacobaeus, Hirschel and others asserted, the skin symptoms were only a secondary manifestation of a deeper lying carcinoma which had already existed for some time. The correct decision of this question was of the utmost practical importance, for upon it depended the plan of treatment to be adopted. If the former view was the correct one, then there was a reasonable prospect that early and prolonged treatment by the x-ray or by radium might effect a radical cure; but if the latter, then every day's delay in thoroughly removing by surgical measures the entire disease was valuable time lost, and impaired by so much the patient's chances of recovery.

DR. MARTIN F. ENGMAN, of St. Louis, said there was no more fertile field, nor one that offered better prospects in the study of cancer, than did this subject of malignant papillary dermatitis.

DR. JAMES M. WINFIELD, of Brooklyn, said that two or three years ago he saw a woman with a peculiar, raw-looking patch over the region of the scapula, just where the tip of the corset steel irritated the skin. She stated that she had first noticed it about eight years ago, when she consulted a dermatologist, and he told her that it was a seborrheal eczema. It failed to heal, however, and when Dr. Winfield saw her the lesion was typical of Paget's disease of the nipple. It was excised, and at the same time a large, congenital pigmented mole over the breast was also removed. Pathologically, the patch over the scapula gave the typical picture of Paget's disease, and the mole showed the same histological features.

DR. HARTZELL, in closing the discussion, said that not long ago he had been inclined to agree with Unna that Paget's disease was a disease *sui generis*, but he was now pretty well convinced that it was carcinoma from the beginning — a carcinomatous dermatitis. It was essential, he thought, to enlarge our view as to what carcinoma was. There were changes in the epithelium which preceded for a considerable time the proliferation of the epidermis, and these changes we must regard as carcinomatous, just as we regarded as carcinomatous the overgrowth of the epithelial cells themselves.

SYRINGOCYSTOMA.

DR. OLIVER S. ORMSBY, of Chicago, read this paper, in which he recorded the findings revealed in the study of a case in which the clinical diagnosis of syringocystoma was made. He said that in the mass of literature on this subject there appeared to be pretty distinct groups of cases which presented a sufficient number of common details, both clinical and pathological, to explain why all had been classed together by most writers. In Group 1 to which the cases of multiple benign epithelioma belonged, the disease appeared to be hereditary. The lesions began early in life, and often several members of one family were affected. Here, the lesions predominated on the face and head, and were variously described as nodules of different sizes, whitish, yellowish-red, translucent, etc., in some instances going on to softening and to evolution — true epitheliomata. Brooke, Fordyce, Hartzell and others had traced the origin of these epithelial growths to the rete and the sheaths of the hair follicles. To identify the second group, various terms had been used, according to the conception of the writer as to the point of origin of the affection. Among these terms were eruptive hydradenoma, adenoid epithelioma of the sweat glands, syringocystoma, lymphangioma, etc. In the majority of these cases the lesions occurred most often on the trunk. Heredity played no part in this affection. The lesions varied in color, size and shape, but they were nodules and perhaps much softer in consistency than those described in the first group. In the latter, the sweat glands, ducts, the lymph and blood vessels had been thought to be the points of origin of the growths. Dr. Ormsby then gave in detail the history of a case in which the clinical diagnosis of syringocystoma was based upon a due consideration of all the points, both clinical and histological. Clinically, it was more extensive than other recorded cases, and spontaneous disappearance of lesions occurred, which had not been recorded previously. It was entirely unlike any case of multiple benign cystic epithelioma. Histologically, the sections showed the most marked pathological process at all times in the region of the sweat ducts. Some sections apparently demonstrated the fact that the cells were the proliferation product of the cells of these ducts. A connection between the hair follicle or the epidermis and the cell masses could not be demonstrated. Whether the sweat glands themselves added to the growth was not proven, although it seemed probable. Finally, from the fact that the lesions developed over so great an area, practically symmetrical, and showed such marked effects on the involvement of the sweat apparatus, the problem of local irritation from some error of metabolism or otherwise must be ruled out, but so far that work in this respect had been neglected.

DR. JAMES NEVINS HYDE, of Chicago, said the case described in Dr. Ormsby's paper was on the whole one of the most extraordinary he had ever seen, and when he first saw it, it did not impress him as a case of syringocystoma. He could corroborate what had been said as to the disappearance of some of the lesions.

DR. J. A. FORDYCE, of New York, said that Dr. Ormsby's paper cleared up the confusion that had existed in his mind, and doubtless in the minds of others, regarding the identity or non-identity of syringocystoma and multiple benign epithelioma. This confusion was due to the close clinical similarity of the two types, and to the fact that the first observers of the affection confused the nomenclature. There was, however, a clear distinction between the two. One had its origin in the sweat glands; the other in the basal layer of the epidermis or the hair follicles.

DR. CHARLES J. WHITE, of Boston, said he did not think that multiple benign cystic epithelioma was a very rare disease. He had had three or four examples under his own observation, and had become convinced that the lesions could have their origin from various sources, the hair follicles, epidermis, sweat glands or ducts, etc. In syringocystoma he had examined many sections, and he regarded the sweat apparatus as the point of origin of the lesions.

DR. WILLIAM A. PUSEY, of Chicago, said he had examined Dr. Ormsby's serial sections, and there was a sharply circumscribed cell infiltration in distinct relationship to the sweat glands. This looked very much as though it were due to some irritant excreted by the sweat glands, which was producing an inflammatory process around the glands and proliferation of the epithelioma of the glands.

FURTHER OBSERVATIONS ON THE TECHNIC OF AN EFFICIENT PROCEDURE FOR THE REMOVAL AND CURE OF SUPERFICIAL MALIGNANT GROWTHS.

DR. SAMUEL SHERWELL, of Brooklyn: His method of dealing with superficial malignant growths consisted, first, in curettage, which should be thorough, deep and efficient. Immediately following this there should be an equally thorough application of an escharotic, preferably, in the writer's opinion, a 60% solution of the acid nitrate of mercury (Squibb), which should be allowed to remain, with various reapplications at the time of operation, for varying lengths of time, according to the delicacy or density of the tissues involved. From five to twenty minutes would be about the limits. The final step in the operation was the at least superficial neutralization of the caustic agent by some alkaline medium, and of these, sodium bicarbonate seemed to be the best. A few grains of this, powdered on and pressed into the wound, immediately formed a plain scab or crust which should be allowed to remain *in situ*, untouched and dry, until it fell or rather was pushed off by and with the process of healthy repair beneath, leaving a healthy scar, and usually a relatively insignificant or not very noticeable one. Dr. Sherwell said his experience with this method, which had never changed, had been coincident and identical, or almost so, with that of his dermatological life and practice, a period of nearly forty years. During that time he had operated on many hundreds of these cases of malignant growths in this manner. Recurrences or relapses had been comparatively few; he could not give the exact figures, but it was probably less than 10%, and usually a second operation would diminish even that. The author claimed, for his special technic, rapidity of results, decided freedom from recurrences, relative absence of cosmetic deformity, and, when the procedure was thoroughly carried out, little or no pain, either during or after the operation, and no necessity for repeated dressings when the indications were properly cared for. In connection with his paper, Dr. Sherwell exhibited a number of photographs, showing the lesions before and after treatment.

DR. J. A. FORDYCE, of New York, said he could personally testify to the efficiency of the acid nitrate of mercury, as advised by Dr. Sherwell, in the treatment of superficial epitheliomata. The speaker said he had used it in a number of cases with excellent results.

DR. HENRY W. STELWAGON, of Philadelphia, said that for the past four or five years he had preferably treated superficial epitheliomata by thorough curettage, followed by the application of some caustic, and among the latter, he thought the acid nitrate of mercury solution was one of the best, as the wound, if small, required no subsequent dressing; a crust was formed under which healing went on, leaving a practically healthy scar at the end of three or four weeks.

Dr. Edward B. Bronson, of New York, said it was especially in cases where the orbit was involved that the most remarkable results had been obtained by Dr. Sherwell.

Dr. Sherwell, in closing, said he had resorted to this method for thirty-five years, and his faith in the remedy had become stronger as time went on. Curiously enough, the most unfavorable cases, in his experience, had been those in which the lesion was situated about the center of the cheek; whether that was due to the peculiar circulation of these parts, or to the adhesions of the skin to the deeper tissues, he did not know; in fact, it was difficult to frame a reason.

CANCER IN TAR WORKERS.

Dr. Jay Frank Schamberg, of Philadelphia, in this paper, stated that cancer of the skin exhibiting special characteristics had been encountered in chimney-sweeps, and in tar and paraffin-workers. He reported in detail a case of multiple cancer of the skin in a tar-worker who developed several scores of epitheliomatous lesions in various stages of development upon the hands and forearms, and a large epithelioma upon the scrotum. That something resident in coal tar, crude paraffin and soot was capable, after the lapse of years, of stimulating the growth of epithelial cells, and of leading to cancer in certain subjects, seemed indisputable. Ludwig and others had suspected carbolic acid, which he likewise found in tobacco residue, but there did not seem to be much support for such an assumption. Inasmuch as radium had proven to be capable of stimulating epithelial proliferation, and cancer could be produced by the x-rays, the thought occurred to Dr. Schamberg to determine whether coal tar emitted any rays. To test this, he placed a copper cent, a flat key and a small brass numeral upon a photographic plate in a pasteboard negative box lined with black paper. Upon the under surface of the lid he attached a piece of cardboard smeared with coal tar, so that the tar faced downwards. This box was inclosed in a black japanned tin cash box, and the latter was shut in a dark closet for twenty-four hours. When the plate was developed, a distinct shadowgraph of the three objects was seen upon the negative. This work was done so recently that there had not been time to carry out further investigations. If coal tar was proven to be radio-active, it would seem that this radio-activity might be responsible for the cancer in tar workers. Volkmann and other writers long ago noted that uncleanliness, i. e., negligence in removing tar or paraffin from the skin, was a factor in the production of the cancer. Tar might be lodged in the orifices of the skin, or in the furrows of the scrotum, and exert for years an influence upon the adjacent epithelial cells. Furthermore, only certain kinds of coal seemed to be provocative of the cutaneous changes. In Germany, the so-called brown or cannel coal from which paraffin was made was responsible. Chimney-sweep cancer appeared to result almost exclusively from the burning of "pit coal" used for fuel in England. It was possible that certain coal might contain radio-active substances and that in other coal such substances might be absent.

Dr. Grover W. Wende, of Buffalo, referred to a case of keratosis follicularis resulting in multiple epithelioma in which there was no evidence of external irritation. He believed that cases like those reported by Dr. Schamberg, and his own, offered something toward an explanation of the cause of the disease, and emphasized the importance of reporting them in full.

Dr. M. B. Hartzell, of Philadelphia, in connection with the statement made by Dr. Schamberg that he had found coal tar to be radio-active, said we should not lose sight of the fact that physicists had found that many substances were more or less radio-active. Every sort of substance, almost, had been found to affect a photographic plate.

Dr. J. A. Fordyce, of New York, said that observations regarding the etiology of cancer along the lines studied in Dr. Schamberg's paper were very interesting and seemed to negative somewhat the parasitic theory of the disease. They pointed rather to the abolition of one function of the cell, and the exaggeration of its reproductive function, as suggested by Oertel.

Dr. James Nevins Hyde, of Chicago, referring to cancer of the scrotum, said that the boy chimney sweep of the last century was brushed up and down the chimney, his scrotum coming in contact with the soot, which produced the cancer.

NODULAR TUBERCULOSIS OF THE HYPODERM.

Dr. Grover W. Wende, of Buffalo: This was the clinical report of a case in which deep-seated nodules constituted the only type of lesion. They were limited to the face and disappeared without apparent alteration of the skin, but produced upon disappearance of ankylosis of the temporo-maxillary articulation and deafness of the right ear. The duration of the eruption was six years. By microscopic study, tuberculin tests and guinea pig inoculations, the case was proven to be one of nodular tuberculosis of the hypoderm. It was a form of tuberculosis of the skin which showed no analogy with the generally recognized forms of cutaneous tuberculosis due to the invasion of the integument by the tubercle bacilli, like that of lupus vulgaris, tuberculosis verrucosa, tuberculosis disseminata and tuberculosis ulcerosa.

Dr. Howard Fox, of New York, mentioned a similar case that he had shown at a recent meeting of the New York Dermatological Society, in which a probable diagnosis of Darier's type of sarcoid was made.

Dr. A. Ravogli, of Cincinnati, said he would not be surprised to learn that the case reported by Dr. Wende began in the form of an erythema induratum from the skin, or from a tubercular ulcer fron the mucous membrane of the mouth, from which the tubercular process found its way to the joint.

Dr. J. A. Fordyce, of New York, said the case so well reported by Dr. Wende was an illustration of the value of careful clinical observation combined with histological investigation. With the aid of the latter we were broadening our clinical ideas in regard to tuberculosis of the skin.

Dr. William T. Corlett, of Cleveland, said that observation taught us that many clinical forms of superficial tuberculosis of the skin existed.

Dr. Wende, in closing, said he believed that in the case he had reported the disease primarily occurred locally in the skin. The case illustrated the importance of biopsy for microscopical examination as there was no suspicion of the real condition before it was made.

REPORT OF A CASE OF SPOROTRICHOSIS IN MAN.

Dr. James Nevins Hyde and Dr. J. D. Davis, of Chicago, presented a paper on sporortrichosis occurring in a patient who lived in North Dakota, and who had been in contact with horses that were supposed to have suffered from glanders. It was discovered that these horses were probably the victims of mycotic lymphangitis (pseudo-farcy), and the authors reported that the Bureau of Animal Industry in Washington recognized the identity between the organism obtained from animals in North Dakota similarly affected and those presenting similar symptoms two years ago which had been studied in Butler, Pa. Further, the Pennsylvania organism had been recognized as identical with the Chicago organism by Drs. Frothingham and Page, of

Harvard University; and, finally, the two authors recognized the identity between the organism obtained from the human patient in North Dakota and specimens of the Butler organism sent to Chicago. The paper concluded with a demonstration of the essential differences between the sporotrichum Schenckii and the saccharomyces farciminosus of Tokishige.

DR. CALVIN S. PAGE, of Boston, said the paper of Drs. Hyde and Davis was of interest not only from a veterinary point of view, but from the standpoint of human beings, as this disease had been mistaken for both syphilis and tuberculosis. The affection had been traced to a species of mold growing out-of-doors which infected the horses. It had also been found in the common rat, which was the most satisfactory animal for experimental inoculation. For culture purposes, potato was very satisfactory. The pus from one of these lesions should be freely smeared over the cut potato, and the culture would begin to grow in a few days at the ordinary room temperature.

DR. JOHN REICHEL, of Philadelphia, said that early in 1907 the attention of the state veterinarian of Pennsylvania, the late Dr. Leonard Pearson, was called to several cases of suspected glanders in and about Butler County, Pennsylvania. After a careful study of these cases, the clinical diagnosis of epizoötic lymphangitis was made by him, and the diagnosis was later confirmed in the laboratory and an organism was isolated which was recognized as the sacchromyces farciminous.

DR. H. W. STELWAGON, of Philadelphia, said that cases of sporotrichosis in man, perhaps limited to one or two cold abscess-like formations, were probably not as uncommon as had been hitherto believed, as cases heretofore looked upon as syphilitic gummata, because they cleared up under the use of potassium iodide, might possibly have been examples of this disease.

The discussion was continued by DR. WILLIAM A. PUSEY, of Chicago, and was then closed by DR. HYDE.

(To be continued.)

Book Reviews.

Congenital Dislocation of the Hip. By H. J. JACKSON CLARKE. London: Baillière, Tindale & Cox. New York: Paul B. Hoeber.

This is a clearly printed and well-illustrated monograph giving the writer's experience with cases of congenital dislocation of the hip treated according to the manipulative method advocated Professor Lorenz, and two by a method of open incision and stitching the capsule described by the writer in 1909.

The results in 30 cases are as follows: 30 cases (39 dislocations), 18 double, 21 simple; 18 double, 12 cured, 6 failures (2 of them being anteverted but stable); 21 simple, 17 cured. Of failures, 2 have been later treated by open incision; 1 is cured and the result in the other is still uncertain, the case being under treatment.

While these results are excellent, they are not unparalleled, and the book adds but little to the existing knowledge of the subject; it is, however, to be recommended as a clear and frank statement of a painstaking and sensible surgeon who has carefully noted his experiences with 40 cases.

Preventable Diseases. By WOODSHUTCHINSON, A.M., M.D. Boston and New York: Houghton, Mifflin Company. 1909.

The Conquest of Consumption. By WOODS HUTCHINSON, A.M., M.D. Boston and New York: Houghton, Mifflin Company. 1910.

These two volumes by Dr. Hutchinson deserve more than passing comment, for they not only present the sort of knowledge that every one ought to have about disease, but present it in a form and manner that are original and illuminating to physicians as well as to the general public.

In his introductory chapters on "The Body Politic" and "Our Legacy of Health," Dr. Hutchinson gives an admirable biologic description of the nature, origin and evolution of the human organism, in terms whose literary facility and vividness of illustration, allusion and analogy make his exposition at once attractive and convincing. In successive chapters he similarly treats of the common diseases to which flesh is heir, explaining the etiology, pathology, treatment and prophylaxis of each, always with variety and flexibility of style, always with a buoyant and contagious optimism. The story of tuberculosis is told in singularly dramatic and inspiring fashion, yet without ever becoming theatrical. Particularly encouraging is Dr. Hutchinson's attitude towards disease, "as a lever to raise to a higher plane the health, vigor and happiness of the entire community," a serviceable agent in the evolution and victorious irresistible progress of man, whom he picturesquely describes as "the toughest, most resourceful, most ferocious and dangerous animal that walks the face of the earth." Civilization to him is not a curse, but the best cure for its own evils as well as those of savagery. In short, he is an idealist in medicine, yet never a visionary, for his ideals are always sane and rational and wholesome, and he tells about them like a good physician talking hopefully to an intelligent patient. It is true that occasionally his facility of phrase leads him into such questionable sensationalism as calling a shrewd country practitioner a "keen-eyed old sleuth-hound of the fever trails"; and in the chapter on surgical sepsis, he betrays his medical bias by portraying an aseptic technic that would be an intolerable scourge and torture to the flesh of surgeon and patient alike. But such verbal and technical errors may well be pardoned for the sake of the never-failing vividness and variety of diction and composition which stimulate attention and carry conviction to the end.

"The Conquest of Consumption" is an expansion of the chapters on tuberculosis in "Preventable Diseases," written in the same temper, with the addition of much new and effective material.

In these two books, then, Dr. Hutchinson has done a valuable work, and has shown himself at once a man of science and a man of letters. The vitality, vigor and versatility of his epigrammatic style make it an excellent vehicle for his sound and original ideas. His books should be widely read by physicians as well as by the laity, for they tell the truth and tell it in new and compelling form.

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THE QUESTION OF PASTEURIZED MILK.

THE New York Milk Committee of the Association for Improving the Condition of the Poor, having expressed its great regret at the announced discontinuance of the Straus depots, and since then having received many requests for definite information as to the attitude of the committee in regard to pasteurized milk, has issued, through its secretary, Wilbur C. Phillips, a public statement on the matter. In this the questions put are grouped into three classes:

1. Why, if the committee does not know if pasteurized milk is as nutritious as raw milk, does it advocate its being dispensed in the Straus depots? Answer: The attitude of the committee on this matter is one of neutrality. It believes that facts are as yet lacking to demonstrate conclusively that there is any great difference in the nutritional value of milk, raw or pasteurized, postponing an opinion on this point until it has been definitely determined by thorough scientific experiment. But, while the committee recognizes that it is as yet an open question, it also recognizes, with many sanitarians and public health authorities, that, quite apart from any chemical change which may or may not be effected by subjecting milk to heat, the killing of pathogenic germs by the process known as pasteurization is a protection against infection and contagion. The committee, therefore, approves of the pasteurization of all milk which has not been produced under sanitary conditions and which cannot be supplied to the consumer with sufficent low bacterial content to offer safety from milk-borne infection. It believes that the ideal milk for infants, as well as adults, is a certified or guaranteed milk drawn from cows free from tuberculosis and kept under conditions which satisfy every sanitary requirement and which offer complete protection against infection and contagion. It believes in encouraging by all possible means the production and consumption of a clean raw milk, which does not need the protection afforded by pasteurization, but it also recognizes the difficulties in securing milk of this character immediately; and it therefore approves of the pasteurization of all other milk.

2. Why does not the committee wait before advocating the use of pasteurized milk until it completes its investigation on the comparative nutritive value of raw and pasteurized milk? As a neutral party, the committee can respect the opinion of those who believe that pasteurization does not affect the nutritional value quite as much as that of those who hold that it does. This is simply a question of nutrition — in New York City a question principally of the growth of children. But in New York the main problem appears to be, not, How we shall secure the best growth for our children, but, How can we best keep them alive so that they can grow at all? In this life-and-death matter the main thing, then, is not, How is the milk treated, but, Is the milk clean and safe?

3. Why, if the committee commends the work of the Straus depots, which dispense pasteurized milk, does it not use pasteurized instead of raw milk in its own depots? The milk which the New York Milk Committee uses comes from cows free from tuberculosis, kept under conditions which satisfy every sanitary requirement; hence it is felt that the protection of pasteurization is not required. On those occasions when it has been necessary to use a milk of inferior quality, pasteurization has been resorted to.

In conclusion, Mr. Phillips goes on to say that because of the disquieting controversy which has arisen regarding the relative nutritional value of raw and pasteurized milk, it is highly important that this point should be settled. This the committee believes can be done only by a scientific investigation in the laboratory and upon infants themselves, and such an investigation, to determine the matter, is now to be undertaken by the committee. This, he thinks, ought not to consume more than six or eight months, and ought not to cost more than $3,000 — at the most $5,000. In carrying on this work the committee has been offered exceptional facilities. Dr. H. S. Sherman, professor of nutrition, Columbia Uni-

versity, has placed at the disposal the fine equipment of that institution for some of the nutritional studies. Dr. Godfrey R. Pisek, professor of children's diseases at the Post-Graduate Medical School, and physician in charge of the committee's infant depots, will supervise the infant studies, with the assistance of leading physicians who have volunteered their help. The laboratories of Dr. Charles E. North, chairman of the committee's section on sanitation, bacteriology and public health, have been offered for the chemical and bacteriological work. Dr. Milton J. Rosenau, professor of preventive medicine and hygiene in Harvard Medical School, has promised his hearty co-operation in the investigation. Dr. Rosenau, in behalf of the Boston Committee on Milk and Baby Hygiene, is shortly to begin a three years' study of milk in its various aspects, and it has been agreed between him and the New York Milk Committee that the work along this special line carried on in Boston is to be utilized to supplement that of the New York committee, thus assuring, in a co-operative way, the final solution of this perplexing question.

ASIATIC CHOLERA.

FROM India, which has for ages been the home of cholera, this disease has been invading Europe and the West by two main routes. The first of these is by way of Mecca, which may be considered a subsidiary station. The fatalistic Mohammedan makes his pilgrimage to the Prophet's shrine from the East, and carries with him thence the cholera; his fellow-worshipers from Africa and Europe proceed eastward, and on returning to their homes distribute it throughout Mediterranean regions. The second route is by way of the Caucasus, the Don, the Dneiper and other rivers coursing northward into Russia, and finally to St. Petersburg and the Baltic. It is the second of these two routes which now concerns, though not gravely, the western world.

From mediaeval Russia the present epidemic of cholera has reached Berlin and has spread to Austria and Italy. Our coast quarantine authorities are well known to be cautious, experienced and altogether able to cope with any possible attack. Nobody among our people really need fear a cholera epidemic, especially since the incubation period is from one to five days, wherefore in any possible case among passengers from Europe the invasion must have developed before reaching our ports. To this consideration, however, one exception must be recognized: That is, the possibility of infection by "cholera carriers," who, like typhoid carriers, may not themselves have had the disease, though potential transmitters of it to others.

We have characterized Russia as medieval in her attitude toward such infections as cholera; and surely it is just so to stigmatize a condition of things by which all the rest of civilization has through many years consistently been jeopardized, especially in view of the elementary simplicity of cholera prophylaxis. In these premises *Nature* offers some significant observations.

A great change has indeed taken place in most civilized countries in both the public and also the political and professional attitude toward great epidemic outbreaks. Until the appearance of the great school of sanitary reformers represented by Chadwick and Simon, panic and despair were the predominant emotions aroused in the presence of plague, cholera and the like. With a knowledge of what could be achieved by the adoption of efficient sanitary measures these influences, so paralyzing to the mind of the community, have gradually been rendered less effective, especially as the call to preventive and curative work could be made to divert men's minds from brooding and anticipation of evil. It came to be realized how much could be done to ameliorate the sufferings of communities attacked by these diseases, and how successful were measures preventive of transference not only from community to community, but from individual to individual. Much such endeavor, producing such good results, was done even before Pasteur, Koch and Lister.

Such social phenomena were especially marked with relation to cholera. One may at this time see reproduced in various parts of Europe the peculiar phases of the history of the evolution of our methods of dealing with cholera epidemics at different periods. In Russia, and some parts of Italy, where fatalism and apathy prevail, and where sanitary science has not demonstrated its usefulness, cholera still arouses such panic as is naturally followed by the lethargy of despair. In other parts of Europe efforts (oftentimes very inadequate) are making to combat the spread of the disease; whilst in Northern Europe (including such places as Amsterdam and London) the announcement that cholera is imminent simply means a call to renewed sanitary efforts directed by intelligent experience and skill. One of the greatest safeguards of the Americas from Asiatic cholera is Germany's inexorable paternalism in the prophylaxis of disease.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.—For the week ending at noon, Sept. 13, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 21, scarlatina 16, typhoid fever 25, measles 5, smallpox 0, tuberculosis 58.

The death-rate of the reported deaths for the week ending Sept. 13, 1910, was 16.33.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Sept. 10, 1910, was 196, against 196 the corresponding week of last year, making the death-rate for the week 15.24. Of this number 99 were males and 97 were females; 190 were white and 6 colored; 134 were born in the United States, 56 in foreign countries and 6 unknown; 35 were of American parentage, 135 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 28 cases and 3 deaths; scarlatina, 22 cases and 1 death; typhoid fever, 21 cases and 4 deaths; measles, 5 cases and 1 death; tuberculosis, 46 cases and 16 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 14, whooping cough 2, heart disease 16, bronchitis 2. There were 14 deaths from violent causes. The number of children who died under one year was 68; the number under five years, 80. The number of persons who died over sixty years of age was 49. The deaths in public institutions were 87. Anterior poliomyelitis, 2 cases. Cerebrospinal meningitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 1 case and 1 death. Diphtheria, 1 case and 1 death. Scarlet fever, 1 death.

Deducting deaths of non-residents, the total is 171 and the death-rate is then 13.30.

Bequests. — Through the will of the late Miss Caroline M. Martin, of Dover, N. H., public bequests to the amount of $192,000 are made. Among the beneficiaries are a number of hospitals and allied institutions, the more important of which are as follows: Memorial Hospital for Women and Children at Concord, N. H., $5,000; Massachusetts General Hospital, $5,000; Grenfell Hospital, Battle Harbor, Labrador, $2,000.

A Significant Legal Decision. — The Massachusetts Supreme Court has recently handed down a decision of much medical importance. The suit in question was between a property owner and members of the Board of Health of Everett, Mass., the claim being that a mortgagee of real estate is entitled to recover damages from those who have leased the mortgaged premises and used them for a smallpox hospital without the knowledge of the mortgagee as to the use to which the premises were to be put. The ruling of the higher court was that the use of a building as a smallpox hospital entitles a mortgagee to recover the diminution in the value of the property caused by such use.

NEW YORK.

Cost of the Health Department. — The estimate for the cost of running the Health Department for the next year prepared by Commissioner Lederle amounts to $4,076,578, an increase of more than $1,300,000 over the allowance for the department in 1910. The principal increases asked for are the following: Hospitals, $486,056; child hygiene, $320,545; contagious diseases, $113,150; research laboratories, $101,759; milk inspection, $60,510; general sanitary inspection, $57,210.

Use of Antitoxin in Diphtheria. — In the last *Monthly Bulletin* of the State Health Department the attention of the physicians of the state is directed to the advisability of a more prompt and general use of antitoxin in the treatment of diphtheria. The mortality from diphtheria treated by state antitoxin for the last two years was practically 10%, while before the period of antitoxin the mortality in cases of diphtheria was at least 45%. In 1909 there were 2,036 deaths from the disease in the state of New York, which could not have come from less than 20,360 cases, or fully 235 cases of diphtheria for every 100,000 of the population. The following comparative figures as to mortality are then given:

	1902.	1903.	1904.	1905.
State of New York,	37.7	39.02	38.04	28.04
City of New York,	53.0	56.0	57.0	38.0
City of Paris,	20.0	15.0	9.0	6.0

Since 1905, it is stated, there has been no appreciable change in these relative proportions.

	1908.	1909.
State of New York,	28.9	27.05
City of New York,	37.1	38.0

The use of antitoxin being universally acknowledged as incomparably the most prominent factor in reducing the death-rate from diphtheria, it would appear that if the mortality from the

disease in New York state and city exceeds that in Paris, the fault is most likely to be found in the extent or method in which diphtheria antitoxin is employed. Careful investigation of the quality of antitoxin would indicate that Paris has no advantage in this respect over that of the antitoxin supplied by the New York State Health Department. It would seem, then, that the cause of the excessive mortality in the state, at least over that of Paris, is for the most part to be attributed to a failure to utilize antitoxin in the treatment of this disease to anything like the extent which prevails in Paris.

Current Literature.

The Archives of Internal Medicine.

August, 1910.

1. Stokes, W. R., and Hachtel, F. W. *The Control of Typhoid Fever in City and Country, with a Description of a Modified Hesse's Medium for the Detection of the Typhoid Bacillus in Excreta and Fluid Foods.*
2. *Lemann, I. I. *A Study of the Type of Infantilism in Hookworm Disease.*
3. Harbitz, F. *Trophoneurotic Changes in Bones and Joints in Leprosy.*
4. Class, F. M. *Serum Therapy in Purpura Hemorrhagica with Report of a Case.*
5. *Karsner, H. T. *A Study of Cases of Hodgkin's Disease and Other Allied Conditions.*
6. Gittings, J. C. *Auscultatory Blood-Pressure Determinations.*
7. *Kaliski, D. J. *Specificity of the Noguchi Modification of the Wassermann Reaction.*
8. Pearce, R. M., and Eisenbrey, A. B. *A Study of Experimental Conditions of Low Blood Pressure of Non-Traumatic Origin.*

2. Lemann's paper on infantilism in hookworm disease consists of the report of one case, with an attempt to classify it. The case, that of a young man of twenty-two, presented the skeletal development of a boy of eleven years, with general, symmetrical retardation of growth, but without mental impairment.

5. Karsner reports four cases of Hodgkin's disease, laying stress chiefly on the pathological findings, and several cases of tuberculous lymphadenitis. He finds a somewhat confusing similarity in the appearance of the lymph nodes from these two classes of cases, but differentiates them by the type of nucleus found in the giant cells in each. In the tuberculous glands, these nuclei possessed relatively solid masses of chromatin, whereas in Hodgkin's disease the chromatin was scanty. He feels justified in saying that Hodgkin's disease is a well-defined pathological entity which produces or is accompanied by a high grade of anemia.

7. After considerable experience with the Wassermann and Noguchi reactions for the detection of syphilis, Kaliski believes that the latter is fully as sensitive in the early stages of syphilis, and more so in the late stages and in metasyphilitic affections. [G. G. S.]

Annals of Surgery.

August, 1910.

1. *Bloodgood, J. C. *Benign Bone Cysts, Ostitis Fibrosa, Giant-Cell Sarcoma and Bone Aneurysm of the Long Pipe Bones.*
2. *McCurdy, S. L. *Neoplasms and Other Tumors Involving the Maxillary Bones.*
3. Hammond, R. *Fracture of the Head and Neck of the Radius.*
4. Warbasse, J. P. *Backward Dislocation of the Upper End of the Ulna.*
5. *Janeway, H. H. *Autoplastic Transplantation of Bone.*
6. *Stokes, A. C. *Spontaneous Forward Dislocation of Wrist-Joint.*
7. Barringer, B. S. *The Cystoscopic Examination in Renal Tuberculosis.*
8. Taylor, W. J. *Cystic Disease of the Breast.*

1. Bloodgood presents in a copiously illustrated article an analysis of 89 cases of benign bone cysts and ostitis fibrosa collected from the literature and including his own collection, 18 personally studied cases of giant-cell sarcoma and 3 personally studied cases of bone aneurysm. He divides bone cysts into two groups: those which have a definite relation to ostitis fibrosa and those in the medullary cavity due to other conditions. The first group includes 69 cases as follows: Single cysts with bony shell but no connective tissue lining, 16; cysts with definite connective tissue lining, 22; single small cyst or cysts in a solid mass of ostitis fibrosa, 6; bone shell filled with solid mass of ostitis fibrosa without cysts, 7; multilocular cysts, 6; and a miscellaneous set, 12, including infected cyst, x-ray studies only, autopsy specimens, healed cysts and cysts in infantile scurvy. The periosteum is normal and there is little or no new bone formation unless there has been pathologic fracture or the cysts are of huge size and long duration. Cartilage may be present but "never in sufficient quantity to justify the conclusion that the cyst is due to the liquefaction of a primary or original solid area of cartilage." The fluid contents of the cyst are never distinctly hemorrhagic. Giant cells may be present in organized blood clot or more often near the lamellæ of the bone shell, but never (except one or two cases) in sufficient numbers to characterise the picture as giant-cell sarcoma. The second group, cysts due to conditions other than ostitis fibrosa, includes 20 cases as follows: Cysts in cartilage tumors or enchondromas, 4; pure myxomas with or without cysts, 5; cysts in giant-cell sarcoma, 4; cysts in arthritis deformans or ostitis deformans, 4; cysts due to subperiosteal hematoma with bony wall from ossifying periostitis, 2; and callus cysts, 1. The age of onset of benign cysts and ostitis fibrosa is with the rarest exception before twenty, and in the majority of cases before fifteen. Bloodgood notes in his experience medullary lesions in individuals under ten are either benign bone cysts with ostitis fibrosa or not very malignant giant-cell sarcoma, whereas between the ages of ten and twenty every variety of malignant medullary tumor has been met. Of the symptoms of onset, fracture predominates, pain is rarely prominent and swelling as a rule is usually late. Trauma seems to be the only prominent etiological factor and, although it cannot be proven, there is some justification in considering the possibility. Bloodgood holds that the disease is inflammatory, the medullary tissue being replaced by a new formation of connective tissue with or without cyst formation. The term "chronic osteomyelitis fibrosa cystica" or "solida" is, therefore, more appropriate than ostitis fibrosa. Curretting was performed in 38 cases; 33 have remained permanently well, 2 died from hemorrhage; 1 on account of hemorrhage was treated by amputation (Cotton), in 1 the cyst reformed and the leg amputated (Koerte), and in 1 a second curetting was done in two weeks (Kehr). Bloodgood strongly advocates curetting in every case, bearing in mind the danger of hemorrhage in very large cysts. Cysts are located most commonly in the humerus, femur and tibia, about in the order named. Cases have been reported with true bone cysts in the ulna, fibula, metatarsals and os calcis. Cysts in the phalanges have all proven to be pure myxomas. Twenty-seven cases of multiple cysts have been reported as follows: In Von Recklinghausen's disease, 12; in Paget's disease, 5; in osteomalacia, 6; in enchondroma, 2; in sarcoma, 1; and in mercurial poisoning, 1.

Of 13 personally studied cases of medullary giant-cell sarcoma, all are well and over 50% were situated in the lower end of the radius. Bloodgood feels inclined to curette at least as a first attempt before resorting even to resection. Repeated curetting does not seem to promote metastases, and now and then cures after two or more trials. Furthermore he believes that, if recurrence is to take place, it will do so in a few months. It is "imperative

to explore every medullary tumor seen in the x-ray or exhibiting itself clinically with swelling or pathologic fracture, before resorting to amputation." The duration of the tumors has been from five weeks to nine years, pain has not been prominent, expansion has been slow, abrupt and circumscribed. Although giant-cell sarcoma may break through its bony shell and infiltrate the soft parts, resection instead of amputation is at times justifiable. The appearance of the fresh tissue is somewhat that of currant jelly. Mixed with the red areas may be white areas, and areas mottled white and red. The consistency somewhat resembles "*Schmierkaes.*"

The term "bone aneurysm" is used to describe a hematoma in a very malignant medullary spindle- and round-cell sarcoma. Bloodgood has studied 3 cases, and he believes the condition in its early stage can be recognized by the hemorrhagic contents (never present in bone cysts and very rare in giant-cell sarcoma). The latter can be recognized by its characteristic tissue and small size of the cyst. Pulsation or bruit probably excludes benign bone cyst or ostitis fibrosa, but not giant-cell sarcoma. Partial or almost complete absence of bone shell is suggestive of the more malignant medullary tumor with central hematoma, but does not absolutely exclude medullary giant-cell sarcoma.

2. McCurdy considers papilloma, polypus, hypertrophy, epulis, chloroma, exostosis, osteoma, bone cysts, sarcoma and epithelioma. He then considers cysts and tumefactions from teeth, including impaction, delayed eruption, cysts from roots of developed teeth and cysts and tumors in connection with teeth during their development. The article is well illustrated with photographs, diagrams and case histories.

5. Janeway presents a case of resection of the ulna (5½ in.) for chondrosarcoma in which the defect was repaired by a piece of bone chiseled from the crest of the tibia of the same individual. Silver wire was used for fixation, and the periosteum of the transplant and that of the ends of the ulna were sutured. X-rays demonstrate increase in thickness of the transplant, callus formation at its upper end and direct union at its lower end. Janeway reviews the literature on osteoplastic operations, utilization of foreign bodies (celluloid, aluminum and gold plates, ivory), heteroplastic transplantation with and without preservation of vascular connections, and employment of decalcified bone chips and the iodoform plug. The author closes with a résumé of cases of autoplastic transplantation.

6. Stokes presents two cases of Madelung's deformity and analyzes 58 cases assembled from the literature. Both his cases were young girls (fourteen and fifteen), and in each both wrists were involved. The etiology of this silver-fork deformity is disputed; some hold trauma and occupation responsible; others, a primary one degeneration. The epiphyseal ends of the bones are irregular, excurvated and not completely developed. The end of the bone is smaller than normal and club shaped. The cartilages between the carpal bones and the epiphyseal cartilage are imperfect. Inasmuch as all symptoms disappear after about the age of twenty-five, palliative measures are indicated up to that age, when osteotomy may be performed. [T. W. H.]

Deutsche Medizinische Wochenschrift. No. 32.

Aug. 11, 1910.

1. Cramer. *Symptomatology and Treatment of Anxiety.*
2. *Wechselmann. *Observations on 503 Cases Treated with Dioxy-Diamido-Arseno-Benzol.*
3. Coler. *Operated Glioma of the Third Left Frontal Convolution.*
4. *Stieda, L. *Is a Sudden Turning of the Hair of the Head Gray Possible?*
5. Patella, V. *The Endothelial Origin of Monuclear Cells in the Blood.*
6. Hoffmann, E. *Cause and Treatment of Scoliosis.*
7. Langemak, O. *Steam Sterilization in Practice.*
8. Strauss, A. *Measurement of the Roentgen Rays.*
9. Boldyreff. *A Simple and Accurate Spirometer.*
10. v. Hase. *Portable Stretcher with Double Feathering.*

2. Wechselmann has now increased his number of observations up to 503 cases of syphilis and parasyphilitic affections in which he has employed Ehrlich's new arsenic compound. He still considers it a remarkably effective remedy, not only as regards objective symptoms, but also for subjective symptoms. He has seen it work well where other treatment, such as mercurial injections, etc., have failed. Up to the present he has seen no ill-effects from its use in any cases.

4. Stieda takes up the reports of cases in which the hair was supposed to turn gray suddenly. He does not believe that the actual hair already grown changes color suddenly, and does not think the reported cases stand careful scrutiny. The sudden appearance of gray hair is due to the growth of new hairs without pigment. [C. F., Jr.]

Berliner Klinische Wochenschrift. No. 31.

Aug. 1, 1910.

1. Foerster, O. *The Operative Treatment of Spastic Paralysis by Means of Resection of the Posterior Roots of the Spinal Cord.*
2. Wohlgemuth, J. *A New Method of Testing the Activity of the Kidneys.*
3. *Schindler, C. *The Action of Gonococcus Vaccine on the Course of the Gonorrheal Processes.*
4. Tomaszewski, E. *The Experimental Results of the Reinfection of Syphilis in Rabbits.*
5. *Schreiber, E., and Hoppe, J. *The Intravenous Injection of the New Ehrlich-Hata Antisyphilitic Preparation.*
6. Gasis, D. *Further Experience Concerning My Method of Staining Tubercle Bacilli.*
7. Beitzke, H. *A Source of Error in the Antiformin Method of Staining Tubercle Bacilli.*
8. Livierato, S. *The Presence of Hemolytic Substances in the Gastric Contents and the Assumed Specific Importance of these in the Diagnosis of Carcinoma of the Stomach.*
9. Agazzi, B. *The Value of Isolysins in the Diagnosis of Malignant Tumors.*
10. Schultz, W. *Blood Transfusion in Man in the Light of Biological Experiments.* (Conclusion.)

3. The author feels convinced that the vaccines have a distinct value in the treatment of epididymitis, tumors of the adnexa and arthritis due to gonorrhea.

5. These authors have found that by injecting "Preparation 606" directly into a vein they can do away with the severe pain, mentioned by most of the writers in the reports of their cases, which follows the intramuscular injection. The authors describe their technic. [J. L. H.]

Deutsches Archiv für Klinische Medizin.

Aug. 10, 1910.

1. *Jager, T. *The Importance of the Keith-Flack Bundles in the Heart Rhythm.*
2. Leube, M. *Results of Specific Treatment in a Case of Recurrent Tetanus.*
3. Ritter. *The Influence of Salt Solution on Blood Pressure and its Measurement during the Carlsbad Cure.*
4. Geigel, R. *The Recognition by Ear of Short-Time Vibrations.*
5. *Finkelnburg, R. *The Concentration Power of the Kidneys in Diabetes Insipidus Following Organic Brain Lesions.*
6. *Joachim, G. *The Blood Changes after Poisoning with Arsenic.*
7. Penzoldt, F. *The Course of the Disease in Cases of Pulmonary Tuberculosis Treated Nineteen Years Before with Tuberculin.*
8. Treutlein, A. *The Presence of Pulmonary Tuberculosis in Bolivia and the Influence of that Climate on Old Phthisis.*
9. Gross, O. *The Study of Atypical Pneumonia.*
10. *Bittorf, A. *Essay on the Pathology of the Suprarenals.*
11. Castex. *The Study of the Origin of Hydrochloric Acid Deficiency.*
12. Hoffmann, A. *The Study of the Morgagni-Adams-Stokes Symptom-Complex and its Differentiation by Means of the Electro-Cardiogram.*

13. *MORAWITZ, P., AND ITAMI, S. *Clinical Investigation on the Regeneration of Blood by Means of the Method of Oxygen Consumption.*
14. SIEBECK, R. *The Influence of Mechanical Breathing on Diseased Conditions of the Respiratory and Circulatory Apparatuses.*

1. Jager reports as the results of his experiments upon cats and dogs that the muscle bundle of Keith and Flack has no influence upon the relation between the contractions of auricles and ventricles. The Keith-Flack bundle lies at the junction of the superior vena cava and the auricle.

5. Finkelnburg, reporting on some cases of polyuria, considers that there are cases of true diabetes insipidus with brain lesions in which the concentration power of the kidneys is not destroyed. Nor does any diminution of power for concentration occur in polydipsia.

6. Joachim gives a very careful description of the morphological blood changes occurring in arsenic poisoning. One of the peculiarities is the extent to which the red blood count may be reduced without causing a fatal prognosis. It frequently went under 1,000,000 and as low as 710,000.

10. Bittorf has apparently written before on the adrenal gland, and in this article emphasizes by new cases certain points on the relation between Addison's disease and amyloid degeneration of the adrenals, thrombosis of the adrenal vein and hypernephroma. He also takes up a general discussion on the relation of adrenals to all pigmentation of the skin.

13. The regenerative power of the blood has usually been noted by the morphological characteristics. These authors have found a method of determining the regenerative power based on the fact that new red blood corpuscles absorb oxygen. The blood and oxygen under sterile conditions are mixed and put in an incubator. The old blood hardly changes the oxygen content, while regenerating blood changes it considerably. [C. F., JR.]

ARCHIV FÜR KLINISCHE CHIRURGIE.

BAND 92. HEFT 4.

33. *KÖNIG. *The Importance of the Operative Treatment of Cancer.*
34. ADLER. *The Transpleural Operation for Subphrenic Abscess of Pancreatic Origin.*
35. NORDMANN, O. *Experimental Studies of the Thymus Gland, with Observations upon the Intratracheal Insufflation Method of Meltzer.*
36. *FREUND, W. A. *Surgical Mobilization of the Thorax when Fixed in Stenosis or Expansion.*
37. VON DEN VELDEN, R. *Investigation of the Cases Operated upon for Fixed Dilatation of the Thorax.*
38. v. HANSEMANN, VON D. *The Anatomical Foundation for Freund's Operation upon the Thorax.*
39. MOHR, VON L. *Indications for Operative Treatment of Fixed Dilatation of the Thorax and of Stenosis of the Upper Thoracic Aperture.*
40. STUDENY, A. *A Discussion of Bone Cyst.*
41. BRUNNER, C. *A Glance at the Present Technic of the Practical Treatment of Wounds.*
42. LERICHE, R. *Clinical Studies on Carcinoma of the Pancreas.*
43. *PROPPING. *The Importance of Intra-abdominal Pressure in the Treatment of Peritonitis.*
44. CLAIRMONT, P. *The Treatment of Air Inhalation.*
45. KRON, N. *Peritonitis Consequent to Perforative Appendicitis.*
46. SAUERBRUCH, F. *Local Anemia and Hyperemia through Artificial Interference with the Blood Distribution.*
47. KLOSE, H. *Thymus Extirpation and its Results.*
48. KRYMOW. *Actinomycosis of the Tongue.*
49. KOCHER, T. "*Iodbasidow.*"
50. FINK, F. *Old Traumatic Luxation of the Feet at the Talo-crural Joint.*
51. SPISCHARNY, I. K. *A New Method for Total Extirpation of the Tongue.*

33. König, after a brief preamble in which he expresses his belief that the only cure for cancer is the knife, gives his idea of the proper treatment of cancer — not sarcoma — of the upper jaw. Because the last stages of this disease are so horrible, he advocates a truly radical operation, no matter what the cost. He has, in such operations, enucleated the eyeball and removed portions of the orbit until he came upon the dura mater itself. As there is very little glandular metastasis in cancer of this situation, there is some prospect of complete cure. Of 48 cases of epithelial cancer or alveolar adeno-carcinoma of the upper jaw, König can point to two who died without recurrence, eleven and nineteen years after operation, and to six still alive and well after post-operative periods ranging from ten to twenty-six years.

36. Reiterating a principle which has been advocated in his clinic since 1859, Freund advises operative treatment for those cases of thoracic immobility which show either stenosis of the upper aperture or dilatation of the lower chest. To the former deformity he thinks tuberculosis of the apices may be due, and advises section through the first rib if there is present a catarrh of the apex, or even a frank tubercular process, provided this process does not extend below the second rib. In dilatation of the lower thorax which has become fixed, emphysema is caused and, as a secondary result, circulatory and respiratory disturbances of a grave nature. For the prevention of these last, Freund advises excision of a portion of the cartilage of each of the lower ribs.

43. Propping's article on intra-abdominal pressure has a very practical application. He shows that when man is in an upright position, there is a decrease of pressure extending to negative in the summit of the abdominal cavity, while in the pelvis the pressure is increased. When the body is horizontal, there is a more equal distribution, but not so much pressure in any spot as there was before in the pelvis. Propping points out the relation of this fact to pelvic drainage. With the body in a half sitting position, and a wick to the pouch of Douglas, the fluid in cases of general peritonitis flows between the coils of intestines to the pelvis, and from there is driven out along the wick by the pressure of the abdominal contents, which is equal to 20 ccm. of water. This phenomenon holds only so long as the intestines are not adherent, — a period lasting from twenty-four to forty-eight hours after operation, — and will not occur unless the abdominal wound is closed tightly about the wick. [G. G. S.]

Obituary.

EMILY BLACKWELL, M.D.

DR. EMILY BLACKWELL has recently died at York Cliffs, Me., at the age of eighty-four. Dr. Blackwell, through a long life of medical activity, had been particularly distinguished as one of the earliest women physicians to gain a position of respect and prominence. She was born in Bristol, England, but her father and his family came to America in the early thirties and after a period of residence in New York removed to Cincinnati, Ohio. Dr. Blackwell, like her elder sister, began the study of medicine in 1848. She was refused admission at the Geneva, N. Y., Medical College, and in succession at ten other medical institutions, but in 1852 succeeded in being admitted to Rush Medical College in Chicago, from which, however, she was excluded the following year. She finally, however, was graduated from the medical school of Western Reserve University, Cleveland, in 1854. She then studied abroad for two years and returned to this country in 1856. With her sister, Dr. Elizabeth Blackwell, she established about this time the New York Infirmary for Women and Children, which, twelve years later, became a teaching institution and established a three years' course. It is said that this medical school was the first in this country to establish a chair of hygiene. Dr. Blackwell was, from its inception, one of its professors.

Dr. Blackwell's sister, Elizabeth Blackwell, died last May in England at the age of eighty-nine years. She is survived by another sister, a Unitarian minister at Elizabeth, N. J., and by Miss Alice Stone Blackwell.

Correspondence.

PARIS LETTER.

NOTES OF TRAVEL.

[From Our Special Correspondence.]

PARIS, Aug. 23, 1910.

Mr. Editor: I have just returned from a month's journey in the North, and find the papers, medical and political, particularly the latter, filled with Ehrlich and his 606. I presume that were I the model correspondent, who does the right thing at the right moment, I should adjourn to the library, get hold of the German papers, and send you a résumé of the question. But I am far from being the perfect individual referred to; beside this, other reasons cause me to lean towards procrastination: the weather is hot and the perusal of German medical literature is arduous; I have seen so much of Germany during my journey that I have had more than enough for the moment; and this very title, 606, puts me out of conceit with the entire subject. That a serious scientific man should not have been able to hit on a more suitable name for his product is remarkable; this shows either an unexpected lack of imaginative power, or else, — perhaps a wish to impress the public with the magnitude of his antecedent labors! So 606 will have to wait a little, so far as I am concerned.

I have been through Denmark and Sweden this year, completing the inspection of the Scandinavian countries that I have been carrying out during the past three summers, and the result of this visit has been to confirm the favorable impression this race has made on me everywhere, — a people of sterling qualities, honest almost to the ludicrous, truthful, straightforward in their dealings, simple in tastes, rough often on the surface, but with kindly hearts.

When I speak of their apparent roughness I mean that they lack many of the superficial nothings that prove so attractive to the traveler among the Latin peoples. Thus a Northman never says "Sir" or "Madam" except under the most exceptional circumstances; no matter what his position, — servant, porter, driver, conductor, — he gives you a plain "*Ja-ha*," or a "*Nei*," and acts as your equal. The northern language has, furthermore, no word for "please": when a Northman makes an effort to be polite, which does not come altogether easy to him, as he is very matter of fact with his fellow countrymen, to whom he is not unapt to speak in the second singular, he has to resort to circumlocutions. Again, his interrogative is a plain "What?"

But if you turn to him on the street or in the country in a dilemma and ask for information or help, there is nothing that is too much trouble for him to do to put you straight. He will give you all the necessary details, and then, if he suspects that you have not understood the unfamiliar tongue, he will turn and accompany you until he brings you to a point from which you cannot go wrong.

There is a curious thing about the Northman; he never expects that a stranger by any possibility is going to speak his language, and when by chance one comes along who does, he is so taken aback that at first he does not comprehend what is being said to him. And there is another very unexpected feature that you soon discover in traveling in Scandinavia: that your character as a foreigner is a title to public help, protection and, in many cases, even leniency in the matter of prices. When you are traveling in the countries of western Europe south of the Rhine, which we will call Latin to give them a name, and you have had a certain amount of experience, you can read the problem that is being worked out behind the impassive mask of the native's face when he thinks he has got hold of a raw tourist, especially of the American variety. The native looks on the easy-going American as a predestined prey sent by a mindful providence for the enrichment of his chosen people, and while he puts a few questions to you, to ascertain how much you know and just how verdant you are, he is in reality taking your measure and calculating just how many times the proper price you are likely to be willing to pay for the article in question.

The attitude of the native of Scandinavia is a totally different one. It is more or less this: "Here is a foreigner. It must be awkward to be in a country where you cannot speak or understand. I wonder what can be done to help him along." From this you will easily infer that the aspect of traveling in these different lands varies enormously.

The honesty of this people — for by Northmen I mean all that speak the Scandinavian tongues (they may call themselves Swedes, Norse, Icelanders, Danes, etc., but they are one race) — is something remarkable. When I say that I spent thirty days in Denmark and Sweden, constantly on the move, without being conscious that on a single occasion I was held up and "done" as a tourist, I speak the absolute truth. For a time I did think that I had been taken in at one place on a small scale, and felt rather sore over it as it spoiled what would otherwise have been a clean score, but fortunately on the boat coming home a Swede explained to me that what I had taken for an imposition was in reality a custom of the country, quite an unreasonable one, but still a custom accepted in the land. So this made me feel better.

When I reached Denmark, and all through Sweden, I had in my handbag two small newspaper wads of English and French small change, gold, silver and copper, ten dollars about in one, and fifteen in the other. This bag, which contained my everyday necessities, lay open in all the hotels, and was certainly not locked during the entire journey, and yet that money was not touched. In Italy a similar wad containing only a franc or two in French copper had disappeared inside of twenty-four hours.

I do not wish to dwell on this point too long, but the impression it made on me was very strong. On no occasion did any one give me bad money, or wrong change; now there is a well-known café on the Boulevards here, attended by foreigners in great numbers, where I will venture to assert positively that a raw American who cannot speak French and who tenders a twenty-franc gold piece in payment for his coffee, will stand an even chance of having a depreciated five-franc coin worked off on him among the change.

On no occasion were bills added up wrong, nor were there any doubtful charges; on the contrary, in several instances I had to remind different people of items left off. When I add, finally, — the finishing touch, — that even in the barbershops they limited themselves to doing what they were asked to do, and omitted to try the universal and familiar extortions, I think I can well close this side of the question.

I do not for one moment mean to claim more for these people than they deserve. I have no doubt that if, in a big center like Stockholm, you were to go to the starred hotel on Baedeker's list marked, "first class modern house, frequented by English and Americans," you would get all that you so richly deserve. But that is not my way of traveling. When I go to Sweden, or Italy, or any place, it is not with the purpose of meeting my estimable countrymen, or of eating the dishes I am used to the rest of the year. On the contrary, these are just the things I wish carefully to avoid. When possible, I arrange to reach a large center in the forenoon; I then leave all my things at the station and go on a prospecting tour. When I have found a quiet, *native* place on some side street, I arrange there for room and breakfast, and am then free to take other meals at the various restaurants as I please. In this way you get into the life of the people, the only point of interest in travel, and when once you find a nice house of this order they will be pretty certain to be able to give you other addresses in the places you are going to next.

With these people there is no haggling over prices. What they say they mean, and you can take it or leave it, as you see fit. Everything in the country, so far as we could see, has its figure, which is known and is generally plainly marked; this gives the stranger a sense of security that cannot be had in southern lands, where you are constantly under that disagreeable sensation that you are

being "done" in *some* direction, even if for the moment you do not see it.

In short, you do not have to live among the Scandinavians very long before you realize that you are dealing with white men, whose cerebral cells work along the same lines that yours do, and with whom it is possible to do business. That this race is really our ancestral stock, and that such good as there is in the American of English descent comes directly from them, does not admit of any question. The Keltish mixture in England seems to have been unimportant; and as for the Normans, what were they but Northmen who had married other Kelts in Gaul!

There is a custom so charming in Sweden that I cannot forbear from mentioning it, — the habit the servants have of courtesying when they receive a gratification on paying the bill. In many of the open-air restaurants the attendants are nice-looking young women of the better classes dressed in the national costumes; it is worth ten times the cost to see the courtesy you are there favored with for a small tip, and to hear the musical intonation of the "*tak so mykke*" (as it sounds), — thanks so much.

A Swede fellow I know in Stockholm — man with a sense of the humorous and unbecoming — wanted me to take a bath there. I needed a bath all right, there was no trouble about that, but I arranged to get one in accordance with our own ideas, explaining to him that my ancestors were all Connecticut Presbyterians and would have turned in their graves if they had seen me going in for a bath on Swedish lines. You have probably heard that in Sweden it is the general custom for the men to be soaped and scrubbed and rubbed by *women* in the public bathing institutions; it is done everywhere, and seems to them quite natural. That may be all right among Swedes, but I do not know how it would answer in other lands; I fancy it's a thing you have to be brought up to, and get accustomed to gradually.

I was struck, in Sweden and Denmark, as I had already been in Norway, with the quietness of the people. In Copenhagen, in some of the popular restaurants down at Tivoli where all of the tables were occupied, there was hardly more noise than in a first-class restaurant in England. Yet this people belongs to the Germanic race, and any one who has been in a popular restaurant in Germany, where every one is eating with mouths wide open and talking one incessant streak at the top of their voices, cannot help being forcibly struck by the difference. This is, of course, helped out by the fact that the northern tongues are infinitely softer and more musical than the German language; there is notably an almost total absence of the *sch* and *ch* sounds that occur so constantly in German and render it so very disagreeable to listen to. In these northern restaurants the clients take things very calmly. There is no calling for waiters, knocking on glasses, or ringing bells. The diner is content to wait his turn, and in doing this his character is put to some strain, as it must be admitted that the waiters up there are, as a class, the slowest and most inefficient corporation I ever came across.

I was greatly interested in a swimming and diving contest held at Stockholm, to which I was fortunately taken by my reprobate friend. I had heard of these before, but had never seen one and would not have missed it for worlds. The men were quite remarkable; the elaborate diving they did from a height that could not have been less than thirty feet was simply astonishing, and then a party of young women proceeded to do the same thing, tricks not so fancy, but done from the same height. To witness a slender lass of about fifteen skim out to the end of that plank and fling herself down that awful height without a tremor was indeed something to see and remember.

But the more practical part of the performance was the life-saving exercises. These were really admirable. How to approach a drowning person in the water and get him ashore is something every swimmer ought to know, and yet I wonder how many of our young men could do it, for it is anything but easy, and under usual circumstances is a most dangerous performance for the rescuer besides. I was struck with the method the Swedes adopt for fast swimming. The stroke is an arm-over-arm one, and the head is kept exactly in the axis of the body; this naturally brings the entire face under water, all you see being the swimmer's occiput. But at each alternate stroke, as the left arm goes under, taking the shoulder with it and turning the head to the right, the swimmer screws his face up a little to one side and you see for a second a huge mouth grabbing a supply of air. The entire race is run in this manner, face downwards.

Wherever we went in Scandinavia, as is the case also in the rest of Europe, the great majority of travelers were Germans. In Denmark they are estimated at eleven twelfths of the traveling public. As a Norse writer has put it, more pithily than elegantly, "For Germans, — like fleas and the wrath of God, — have we always with us!" They have altered their national traveling costume somewhat, or else the German of the North differs from his colleague you meet in such swarms in Switzerland and Italy. Venice, for instance, is now practically a German city; I shook the dust of the place from off my feet when at my last visit there I found that the street urchins were offering to pilot me back to the "*Markusplatz*"! Thus the German tourist of to-day in the North is apt to wear a blue serge costume and yatching cap; those hideous green knicker suits with the dicky Tyrolese headgear and feather that kept the hilarity of all Europe busy for so long a period seem to have altogether disappeared.

But whatever their dress, they are easy to recognize, wherever they are, and there is no place so remote but what you will find a German in Scandinavia. Wherever a man is making a fuss, or reaching for things, or shoving in ahead of others out of his turn, or in general doing something that others are not doing, and making himself disagreeable, you do not need to look at his yachting cap, his bespectacled and rapier-scarred face, or the circumference of his waist, to know what land he comes from. In all countries north or south, whether among people of his own kin or among the Latins, the German manages to make himself thoroughly disliked; there is not a dissentient voice on this subject. By universal consent he constitutes the type of the objectionable traveler whom every one could very well get along without.

One brief anecdote in closing. A friend of mine, a scholar from far-away Iceland, spent a year in a large German university town studying, and I asked him afterwards what he thought of the Germans. He replied without a moment's hesitation, "They are barbarians!" This fairly took my breath away, and I proceeded to ascertain whether there was not some *animus* in his opinion. But no. He said that personally he had nothing to complain of; that individually they had treated him well, but that as a race he considered them barbarians.

Now this man had been a shepherd boy in his youth, but a country clergyman had seen that he had an unusual mind and had had him educated. In the arrogant sons of the Fatherland on the Rhine to be called *barbarians* by a simple peasant from the heaths of a little island touching the Arctic Circle is one of those delicate ironies that has a particularly pleasing piquancy!

"*S.*"

DRESDEN, ROTHENBURG, BERLIN.

[*From Our Foreign Correspondent.*]

BERLIN, Aug. 26, 1910.

Mr. Editor: Despite the attraction of famous galleries and of the Passion Play, we left München and Oberammergau behind, like Yarrow, unvisited, and turned our faces from Heidelberg towards Dresden. The journey through Bavaria, broken by longer stops at Würsburg and Nürnberg, was beautiful for its extensive views of neat, cultivated fields and bits of woodland, and for its frequent glimpses of little red-roofed, walled towns perched among low hills or tucked away in tiny valleys, just like toy towns that children might play with. By far the largest and most perfect and most fascinating of these towns was Rothenburg, whose walls and towers and picturesque houses and up-and-down-hill streets are almost enough to drive an artist to distraction with admiration. Its inhabitants, too, seem unspoiled by the popularity which their town so deservedly enjoys, and preserve their quaint old local customs "unmixed with baser matter." Maxfield Parrish must have visited Rothenburg, for there are bits of it in many of his imaginative sketches. Indeed, the town is like the kind one sees in dreams, and a day spent in roaming its streets gives the same satisfying sense of long-

awaited fulfillment and realization that one experienced on seeing the pirates in "Peter Pan." Dreams do occasionally come true, after all, even in this world.

At Dresden there was much to see and much to learn, though of an entirely different kind. The city has an atmosphere of quiet refinement and culture that makes it remind one of Antwerp; and, as the capital of Saxony, it has also many public buildings whose massive beauty give it dignity and grandeur. Moreover, it is the greatest art center of Germany, and its picture-galleries in the huge Zwinger fill one with despair at their extent and richness. Casual visitors, like ourselves, cannot do better than to remember them for their greatest masterpiece, the Sistine Madonna, just as one remembers the Louvre for the Venus of Melos. Singularly enough, with all its wealth of what the Germans call *Kultur-Material*, Dresden has no university, the royal Saxon institution being at Leipzig. Perhaps it is for this very reason, however, that Dresden has attained its eminence; for, since no energy must be expended on the elementary instruction of many students, there is more opportunity for advanced individual work, and the city is, therefore, specially suited for post-graduate study in art or science. This seemed particularly true at the hospitals which we visited, whose spacious quarters and modern equipment give them unequalled possibilities as teaching clinics. The new Königliche Frauenklinik has the finest equipment of any such institution we have seen, and should be a model for hospital builders and administrators in America. Obstetrics and gynecology are, of course, here considered, in theory and in practise, as inseparably constituting a single department of medicine, as, indeed, they are considered throughout Europe. Surgically the obstetricians we met at Dresden seemed more conservative than those elsewhere in Germany. They do hebosteotomy to a considerable extent, but are still willing to employ forceps in moderate degrees of pelvic contraction, and when Cæsarean section is indicated, usually prefer the direct to the extraperitoneal route. We saw for the first time here the x-ray used in obstetrics. Considerable investigation on the subject has been done at this clinic, and the x-ray is here regarded as of established value in the diagnosis of multiple pregnancy, of tumors and of pelvic disproportions and deformities, though it is employed only near the end of pregnancy for fear of causing abortion. "One considers here the patient first," said the young doctor who escorted us, "and science second," a maxim that might well be more closely observed than it is in some institutions.

From Dresden we came to Berlin, where we are established on the Linden next the American embassy. In comparison with London and Paris, Berlin lacks always the potent fascination of an ancient capital, and at first one is tempted to think it a bit cheap as well as modern. But after one has seen its massive public buildings and *Denkmäler*, and has surveyed the golden magnificence of its numerous palaces, both in the city and at Charlottenburg and Potsdam, and has walked in the Tiergarten from Roland's Brunnen up the marble-statued Sieges Allée to the Pillar of Victory, crowned by its golden Borussia, and thence through the Brandenburger Thor up the Linden to the statue of Frederick the Great, one begins to realize what Berlin represents, and to give it its due place among the imperial cities. In the absence of antiquities, Berlin becomes simplified for sightseers, for in its present form it has not grown up at random, but has been created, and all its principal objects of interest are centrally grouped. The memories of Berlin are chiefly modern, too. Frederick the Great still dominates Potsdam, and, indeed, his personality invites study, for with his military system, his round table, his narrow sofa on which no one could fall asleep without falling off, his stepless stairs, his windmill, and his flute playing, his character certainly presents amusing and suggestive elements of paranoia. The old margraves and electors of Brandenburg are now little more than shadows, to a stranger at least; but the great tetralogy of men who made the empire and whose personalities are reflected most vividly in modern Berlin are the emperors William I and Friedrich III, the statesman Bismarck and the soldier Von Moltke. That was a stirring drama in which these men were the protagonists forty years ago, and the dominating spirit of Germany to-day seems to be the desire to glorify and perpetuate their achievement. Personally William I must have been a man of charming and democratic simplicity, for his palaces at Babelsberg and at Berlin still show a domestic and quiet taste that make them really homes. Friedrich III seems to have inherited his father's sweetness of character as well as the fortitude with which he bore his painful and premature death. The crown of thorns that surrounds the pedestal of his statue at Charlottenburg fitly suggests the suffering and disappointment that were his. Yet even the emperors are not more highly exalted than Bismarck, the latest of national heroes, whose genius most perfectly typifies that of the German race, and speaks to-day from every city of the empire and in every activity of the nation.

There are in Berlin so many opportunities of profitable study and observation that in a brief story one can hardly do any of them justice. Unfortunately we reached the city at midsummer, when its life was at low-water mark. Nearly all the leading medical men are away on vacation, and their juniors at the hospitals are naturally more interested in the opportunities thus given them than in the curiosity of foreign visitors. At the Königliches Charité Krankenhaus we were, however, most hospitably entertained, and saw much of interest. Obstetrically the enthusiasm here now is all for vaginal Cæsarean section, which is freely done for a large variety of indications, including eclampsia and rigidity of the cervix. Surgically the most interesting thing, for an American at least, has been to watch the working of stovaine spinal anesthesia, which is used here as a routine in all suitable cases. Operations under this method are certainly not painless, and usually necessitated the administration of a general anesthetic when the patient's complaints became severe. Indeed, without the stolid fortitude of the race, it hardly seems that spinal anesthesia could succeed except for brief and superficial procedures. For general anesthesia a mixture of oxygen, chloroform and ether is usually employed, and administered by means of the Dräger-Roth inhaler. We have had excellent occasion to watch the working of this apparatus, which has much to commend it. The ether and chloroform are aspirated drop by drop from separate chambers, at a rate which can be exactly controlled by the passage of a current of oxygen into a rubber bag in which the three gases are mixed and from which they are inhaled through a rubber tube and simple mask. This method has the advantages of economy, of constant accuracy and controllability of dosage, and apparently of safety, for no fatalities have yet been reported from its use, and, in all the cases which we saw, the course of the anesthesia was exceedingly smooth. It is customary to begin the administration with ten drops of chloroform and twenty of ether to the minute, increasing these to thirty and sixty respectively during the early stage of anesthesia, and decreasing to five and fifteen or twenty as soon as the patient is well under. The possibility of thus regulating at will the amount and proportion of each anesthetic, and the constant mixture of both with oxygen, seems to reduce general anesthesia to the simplest terms of safety and scientific accuracy.

It would have been possible for us to do much more in Berlin; but as our vacation nears an end we grow hungry again for England and the country and are leaving to-day for Hamburg, to sail thence for Southampton. We feel that it will be pleasant to be once more where every one talks our native tongue and shares somewhat our attitude towards life. Let this not be construed as a slander on Germany. The Germans are in many respects the most marvelous people on the face of the earth. They are the Romans of the modern world, as the French are its Greeks, and, though a little lacking in spiritual ideals, have preserved unabated the vigor and pristine energy of their ancestral Franks and Goths. They are to-day the most prolific and dynamic of civilized peoples, and bid fair to continue so, for the tramp of the

"Teuton feet that never tire"

shows as yet no sign of ceasing. We have learned much in Germany, of the people, their art, their science and their civilization. But the increase of our knowledge and admiration of the Germans has also served to confirm our respect and love for our own English-speaking people and their children wheresoever dispersed.

MEDICUS PEREGRINUS.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 3, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	7	1
Chicago	—	—	Pittsfield	9	2
Philadelphia	—	—	Brookline	3	—
St. Louis	—	—	Gloucester	14	3
Baltimore	—	—	North Adams	5	3
Cleveland	—	—	Northampton	8	1
Buffalo	—	—	Chicopee	—	—
Pittsburg	—	—	Medford	3	1
Cincinnati	—	—	Beverly	4	0
Milwaukee	—	—	Leominster	3	—
Washington	—	—	Hyde Park	4	3
Providence	—	—	Melrose	6	2
Boston	188	71	Newburyport	2	2
Worcester	42	10	Revere	6	2
Fall River	56	31	Westfield	7	3
Cambridge	26	9	Woburn	8	1
Lowell	53	19	Peabody	—	—
New Bedford	35	18	Marlboro	4	3
Lynn	19	17	Attleboro	2	1
Springfield	24	12	Adams	1	1
Lawrence	31	15	Clinton	0	—
Somerville	14	6	Gardner	4	4
Brockton	14	2	Milford	4	3
Holyoke	9	3	Watertown	0	—
Malden	8	2	Plymouth	—	—
Chelsea	23	6	Southbridge	3	1
Newton	9	4	Weymouth	3	2
Salem	8	3	Framingham	—	—
Haverhill	13	7	Wakefield	—	—
Fitchburg	—	—	Webster	2	—
Everett	7	2	Arlington	—	—
Quincy	—	—	Greenfield	2	1
Taunton	16	8			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED AUG. 31, 1910.

GASSAWAY, JAS. M., surgeon. Granted one month's leave of absence from Aug. 7, 1910, on account of sickness.

GARDNER, C. H., surgeon. Granted one month's leave of absence from Sept. 1, 1910.

ANDERSON, JOHN F., passed assistant surgeon. Directed to proceed to Chicago, Ill., and Milwaukee, Wis., upon special temporary duty. Aug. 26, 1910. Detailed to attend the annua meeting of the American Public Health Association to be held in Milwaukee, Wis., Sept. 5-9, 1910. Aug. 26, 1910.

KING, W. W., passed assistant surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to Naples, Italy, and report to Surgeon H. D. Geddings for duty. Aug. 20, 1910.

MOORE, DUNLOP, passed assistant surgeon. Leave of absence for fourteen days from Aug. 10, 1910, amended to read ten days from Aug. 18, 1910.

MCCLINTIC, F. B., passed assistant surgeon. Granted six days' leave of absence from Aug. 22, 1910.

GOLDBERGER, JOS., passed assistant surgeon. Directed to proceed to Reedy Island Quarantine Station upon special temporary duty. Aug. 22, 1910.

VOGEL, CHAS. W., passed assistant surgeon. Leave of absence for fifteen days from Aug. 10, 1910, amended to read twelve days from Aug. 10, 1910.

MCLAUGHLIN, A. J., passed assistant surgeon. Directed o report to Surgeon Rupert Blue for duty. Aug. 13, 1910.

STIMSON, A. M., passed assistant surgeon. Granted fourteen days' leave of absence from Sept. 6, 1910.

FOSTER, A. D., passed assistant surgeon. Granted ten days' leave of absence en route to station. Granted thirty days' leave of absence from Aug. 30, 1910.

ROBERTS, NORMAN, passed assistant surgeon. Granted twelve days' leave of absence from Sept. 6, 1910.

FROST, W. H., passed assistant surgeon. Detailed to attend the meeting of the State Board of Health at Des Moines, Ia., Aug. 17, 1910. Aug. 15, 1910. Directed to proceed to Britt, Ia., upon special temporary duty. Aug. 25, 1910.

GRIMM, R. M., assistant surgeon. Granted four days' leave of absence from Sept. 1, 1910.

KNIGHT, CARLISLE P., assistant surgeon. Relieved from duty at Buffalo, N. Y., and directed to proceed to Ellis Island, N. Y., and report to the Chief Medical Officer for duty. Aug. 17, 1910.

BOYD, FRANK, acting assistant surgeon. Granted twenty days' extension of leave of absence from May 27, 1910, on account of sickness.

MCDANIEL, S. E., acting assistant surgeon. Granted five days' leave of absence from Aug. 14, 1910, under paragraph 210, Service Regulations.

MCGINNIS, R. H., acting assistant surgeon. Granted nineteen days' leave of absence from Sept. 11, 1910.

ROBERTSON, HERMAN, acting assistant surgeon. Granted six months' leave of absence without pay from Sept. 1, 1910.

RODMAN, J. C., acting assistant surgeon. Granted seven days' leave of absence from Aug. 30, 1910.

ROSELLO, M. M., acting assistant surgeon. Granted five days' leave of absence from June 27, 1910, under paragraph 210, Service Regulations.

RUSH, JOHN O., acting assistant surgeon. Leave of absence granted Aug. 6, 1910, amended to read fourteen days from Aug. 13, 1910, with pay, and twenty-eight days from Aug. 27, 1910, without pay.

GAHN, HENRY, pharmacist. Granted sixteen days' leave of absence from Aug. 22, 1910.

HERTY, F. J., pharmacist. Granted one day's leave of absence, Aug. 22, 1910, under paragraph 210, Service Regulations.

BECK, J. E., pharmacist. Relieved from duty at Honolulu, Hawaii, and directed to proceed to Savannah (Quarantine), Ga., and report to the medical officer in command for duty and assignment to quarters. Aug. 20, 1910.

BIERMAN, C. H., pharmacist. Granted four days' extension of leave of absence from July 26, 1910, on account of sickness.

OTT, C. R., pharmacist. Directed to report to Surgeon P. C. Kalloch, chairman board of medical examiners, to determine fitness for promotion to grade of pharmacist of Class 2.

WOLFE, J. A., pharmacist. Granted six days' leave of absence from Aug. 23, 1910, under paragraph 210, Service Regulations.

WEITGENANT, WAYNE W., pharmacist. Directed to proceed to Chicago, Ill., and report to the medical officer in command for duty and assignment to quarters. Aug. 25, 1919.

APPOINTMENT.

WAYNE W. WEITGENANT appointed a pharmacist of the third class Aug. 23, 1910.

RECENT DEATHS.

DR. JAMES H. MCINERNY, of New York, died from cardiac disease on Sept. 5, at his summer residence at Mount Vernon, Westchester County, N. Y. He was born in 1860 and was a graduate of Yale and of the College of Physicians and Surgeons, New York. At the time of his death he was assistant surgeon to the General Memorial Hospital, New York.

DR. FRANCIS H. STUART, a prominent practitioner of Brooklyn, N. Y., died from cardiac disease on Sept. 4. He was a native of Logansport, Ind., and sixty-two years of age. Dr. Stuart was attending physician to St. Mary's Hospital and surgeon to St. Peter's and the Brooklyn Hospitals.

DR. FREDERICK STEFFEN, of College Point, Borough of Queens, New York City, died from cerebral apoplexy, on Sept. 9. He was fifty-two years of age, and had practised at College Point for the last twenty-two years.

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Original Articles.

THE PLACE OF TUBERCULIN IN THE IMMUNIZATION OF UROGENITAL TUBERCULOSIS.*

BY GEO. P. SANBORN, M.D., BOSTON.

THE clinical facts of immunity and recovery from infectious disease, and artificial protection by vaccination, in conjunction with data obtained from research as to the reasons for these phenomena, furnish sufficient evidence for the conclusion that the body is possessed of what may be termed an immunizing mechanism. Under normal conditions it appears to be capable of directing itself to the destruction of bacteria as they enter the body, or, in the case of its failure to repel the initial attack, capable of intense specific reaction, humoral and cellular, directed against the bacteria as they cultivate themselves in the tissues.

As might be expected, the only real success that has been achieved in cure of and protection against infectious disease has been based upon intelligent appreciation that therapeutic measures are without avail unless they minister in some manner to natural and efficient functionating of cells which constitute the immunizing mechanism. The intent is to supply some deficiency which these cells are unable to furnish; to remove some obstacle to their specific action against the infectious process; to furnish stimulus to the cells for the formation of specific antibodies, when such is lacking; or stimulus of some bacterial derivative which shall enable the cells to furnish, through this artificial measure, specific antibodies, resulting in protection or artificial immunity against a specific disease. For example, in acute infections such as typhoid and pneumonia, years of unavailing empirical treatment have yielded nothing in the way of specific medication comparable to antitoxin in diphtheria, with the result that at present the best treatment is believed to be that which keeps hands off, supports and nourishes the patient, to the end of conserving so far as is possible proper functionating of the body cells. The same may be said of pulmonary tuberculosis, in which, by hygienic measures, we afford every opportunity for efficient cellular reaction against the infection. By these measures we promote the efficient functionating of the cells, particularly, we hope, those which constitute the immunizing mechanism.

We have in treatment of diphtheria by antitoxin an example illustrating the supply of a specific antitoxin at a time when, in the natural course of events, the body's cells fail in elaborating a sufficiency.

In surgical treatment of localized tuberculosis by excision of caseous material and drainage of pus, we have an example of removal by artificial means of an obstacle to the efficient working out of the immunizing process. By these measures circulation is to some extent re-established, and the efficient application of antibacterial substances therein contained is made possible.

Localized tuberculosis associated with fever cannot be looked on as really local. The fever is the result of the entrance and disintegration of bacteria and poisons in the blood stream. In this we find reason for the inefficient working out of the natural process of immunization. Evidence obtained through opsonic index observation shows that in these cases excessive auto-inoculation is taking place, and indicates that the immunizing mechanism is being over-excited and, therefore, fails in efficiency. Extirpation of diseased tissue or drainage of pus is commonly followed by a drop in temperature. Recovery and subsequent elevated condition of the opsonic power indicates that by this measure auto-inoculation has been controlled, the immunizing mechanism has recovered from its over-excited condition, and favorable response in the production of antibodies is obtained. Thus in eliminating auto-inoculation we have removed an obstacle to the efficient working of the immunizing process.

Again, in *afebrile* tuberculosis, when the lesion is drained or excised, we aid the immunizing process by removing the focus which is responsible for the continued and characteristic deficiency of the blood stream in opsonic power. This deficiency appears to be the result of continued contact of the blood stream with the outskirts of the infected focus, so that finally it loses, by local combination with the bacteria and their poisons, considerable of its antibacterial substances. At the same time, it is to be supposed that the immunizing mechanism lacks sufficient stimulus to the formation of antibodies, on account of the walled condition of the focus of disease and the inability of the blood to take up a sufficiency of bacteria, to constitute an auto-inoculating stimulus which shall result in an immunizing response. At any rate, opsonic determination has shown that, in localized tuberculosis of the *afebrile* type, the opsonic power is consistently low, a fact which indicates absence of auto-inoculation. Consistent with this supposition are the marked elevations in opsonic power after stirring up of the focus of infection by surgical measures, which fluctuations can only be due to entrance of bacteria or poisons into the circulation, and their effect upon the body cells. It is perhaps needless to say that beyond the advantage to the functionating of the immunizing mechanism due to extirpation or drainage, removal of a badly infected organ or mass of tuberculous tissue safeguards the rest of the body from metastatic infection. Secondly, it removes a mass of tissue which, under ordinary conditions, the body is unable to cause to resolve.

Unfortunately in genito-urinary tuberculosis the many avenues for extension of the disease process renders it commonly impossible completely to extirpate all diseased tissue. Nevertheless, since it has come to be recognized that post-operative hygiene is an important aid, it has been found that frequently the body, relieved of its major focus of disease, is able to react to the obliteration of minor foci, at least to the extent of affording clinical recovery.

If complete extirpation of disease tissue were

* Read by invitation before the American Urological Association, winter meeting of the New England Branch, March 8, 1910.

possible, no further measures would be needed than could be furnished by surgery and hygiene, but even in tuberculous glands of neck, for instance, in spite of apparently excellent opportunities offered to careful and clean dissection, how often does recurrence prove that one can never count on complete extirpation.

While surgical measures have, something in the manner stated, a distinct place in a rational scheme of immunization, they do not completely fulfill indications. No further evidence in support of this is required than chronicity after surgery has done its utmost. In fact, on the whole, surgery is, for the reasons stated, in large numbers of cases, merely palliative. The immunizing mechanism still lacks something to render it efficient as leading to cure.

Through his study of bodily reaction against infection by aid of the opsonic index Wright has furnished us with the rationale of efficient treatment at this point. As has been suggested before, opsonic determinations have shown that in chronic localized tuberculosis, and in febrile tuberculosis, after surgery, by eliminating auto-inoculation, has rendered the lesion localized, the tuberculotropic power of the blood stream is, in the vast majority of cases, greatly deficient. This deficiency may with reason be attributed to the segregated condition characteristic of chronic tuberculous foci, and consequent impossibility of the blood's receiving sufficient bacterial stimulus, which, when applied to the cells, whose function is to produce specific antibodies, would be calculated to incite their formation. On the other hand, it has been shown that, where the body is making a satisfactory response to infection and is progressing toward recovery, the opsonic power of the blood is usually in an elevated condition.

It is reasonable to make deduction that chronicity is in part due to this low antibacterial power of the blood stream, which in turn is due to a deficiency of bacterial stimulus. In part, also, it would appear that chronicity is favored by poor circulation of blood in the infected focus, and difficulty of applying the full antibacterial power of the blood stream against the bacteria barricaded, as it were, therein. We should expect, however, that a blood stream, high in specific antibacterial power, would be more efficient under any condition than would be the case if the antibacterial power were low. At any rate, it should be fairly certain that a blood stream of high antibacterial resistance would render metastastic infection less apt to occur. These considerations appear to be borne out clinically, in that, in the majority of cases, clinical improvement begins when a low opsonic power gives way to a heightened opsonic power following the careful exhibition of tuberculin.

We find, then, that by the use of tuberculin we furnish stimulus in default of which the immunizing mechanism does not proceed to the formation of specific antibodies. We see reason for this in the segregated condition of the infected focus and resulting absence of auto-inoculation. We furnish this stimulus by the injection of tuberculin, and we consistently find that the opsonic power of the blood becomes elevated. This is sufficient evidence of response to the injected vaccine. Coincidentally with favorable response, as indicated by opsonic determination, clinical improvement is commonly to be noted.

These suggestions as to the probable manner of the accomplishment of surgery, hygiene and tuberculin as promoting the efficiency of the immunizing mechanism, furnishes a working basis for rational therapeusis. In genito-urinary tuberculosis, they (surgery, hygiene and tuberculin) constitute the limit of effective treatment based on present knowledge. In other forms of tuberculosis, it may be possible to introduce a fourth measure, namely, determination of blood to the infected focus. It is obviously impossible to derive the greatest advantage from a blood stream rendered high in its antibacterial potency, unless the usual impaired circulation in and about a tuberculous focus can be improved, or in some manner the blood be brought into contact with the bacteria. In tuberculous infections superficially located, application of heat may increase the active circulation, and Bier's bandage and cupping may force the blood serum into the focus of infection. In genito-urinary tuberculosis such measures are, with rare exception, impossible of application.

With foregoing considerations in mind, localized tuberculosis should no longer be considered as a purely surgical problem, with adjunct measures to be applied *to render the surgical measure more efficient*, but rather *as problems in immunization*, in which surgery, hygiene, tuberculin and other measures should be made use of only as they serve to fulfill rational indications as leading to efficient working of the body's immunizing machinery.

What, then, should be our expectation in the practical use of tuberculin in genito-urinary infections? First, when extirpation has been rendered as complete as possible, and after the effect of the auto-inoculation induced by the surgical procedure has worn off, we anticipate that tuberculin will render the blood stream more efficient in destroying bacteria that may enter it from the focus of infection. Secondly, that it will tend to limit the spread of the infection. Thirdly, that after a long period, from months to several years, of careful use of tuberculin, the blood stream may eventually either obliterate the focus or enable walling off to be complete. We may anticipate, in case of ulcers of bladder mucous membrane, where circulation is better than in infected organs or masses of tissue, a more ready yielding to treatment. This appears clinically to be a fact.

We do not expect that a blood stream high in antituberculous power from the use of tuberculin will induce resolution of caseated and disintegrated organs and masses of tuberculous tissue.

PRACTICAL INDICATIONS FOR TUBERCULIN.

(1) In case of organs involved which cannot be extirpated, such as the bladder. (2) In case of any

organ in which tuberculosis is very early and in which disintegration has not taken place to any considerable extent. (3) In case of tuberculosis of both kidneys where it is deemed unwise to operate either. (4) Postoperatively in case that it is apparent that all tuberculous tissue was not removed or where organs that were involved could not well be extirpated. (5) In any case where bladder involvement is present. (6) In any case where there is a suspicion that tuberculous tissue has been left behind.

CONTRA-INDICATIONS FOR TUBERCULIN.

Persistence of temperature after drainage usually indicates that there is still some pocket that has not been reached. If such a possibility is eliminated, and temperature still persists, in the absence of pulmonary involvement which should always be sought, tuberculin may be cautiously used. Tuberculin should not be used in febrile cases until these questions are settled. If there is active pulmonary involvement, if tuberculin is given at all, dosage should be modified according as the pulmonary condition requires.

Tuberculin is never a panacea, it has no resemblance in its action to antitoxin and can never be counted on as an efficient measure of last resort when the patient has one foot in the grave

DANGERS IN THE USE OF TUBERCULIN.

Practical danger of overdosage has been illustrated again and again. The fact that too frequent or too large dosage, instead of raising the antituberculous power of the blood, tends to lower it, should be sufficient evidence that great care must be used. The unfortunate results attending its first application in the treatment of pulmonary cases furnish clinical evidence of its danger. It is difficult, in a given case of localized tuberculosis, where the lesion is not under the eye, to note its effect. Absence of constitutional symptoms subsequent to inoculation does not mean that tuberculin is doing no harm. It may serve to maintain blood in a state of lowered anti-bacterial power, and its effect be manifested by persisting chronicity, by gradual spread, or, finally, and perhaps suddenly, the appearance of new foci of infection. In urogenital tuberculosis, the difficulty of determining whether an organ is too much involved for the use of tuberculin, as against surgery, renders it absolutely essential that these cases should be given tuberculin always at the instance, and under the critical supervision of, the surgeon. Otherwise, the problem for tuberculin may, at the start, be extremely beyond its scope.

METHOD OF GIVING TUBERCULIN.

In giving tuberculin, the writer has for three years followed closely the method of Wright, as being rational, conservative and safe. The keynote of this, the opsonic method, is to so grade dosage that no generalized reactions may be produced; to achieve a succession of immunizing responses calculated to maintain the opsonic power as continuously elevated as possible. By it, we never reach dosage of toxic proportion, save by error; we arrive at large dosage only after a considerable time, during which we have at no time so seriously reduced the tuberculo-tropic power of the blood as to produce severe constitutional symptoms, with their attending dangers. The danger of such lowering of resistance probably varies in different cases, but in many it may conceivably be a distinct menace to the patient in rendering development of other foci possible and favoring extension of present foci.

In practice, this means that initial dosage of tuberculin is minute, varying from 1-50,000 to 1-20,000 mgm. of bacillary substance; in febrile cases, 1-100,000 mgm. to 1-50,000 mgm. Doses are are given at weekly intervals and increased so that at the end of six months or a year dosage may be from 1-1,000 to 1-5,000. A slight rise in temperature, increased frequency of micturition, increase of pain, headache, malaise, nausea, chills, occuring the first day or two after inoculation, are indicative of toxic dosage, and these conditions are found to be correlated with marked reduction in the opsonic resistance. When such symptoms occur, we should always await spontaneous improvement before again inoculating, and then start with a considerably smaller dosage. The production of a small nodule at the point of inoculation is, in the writer's experience, indicative that limit of tolerance is being approached.

In afebrile cases, and those in which changes in the local lesion cannot be observed, there may be total absence of subjective and objective evidence that resistance is being lowered by dosage used. In these cases, we may have positive evidence that tuberculin is doing good in the sense of well being following inoculation and increase in weight. In such cases, we base our increase in dosage on previous experience in treatment of other cases.

The efficacy of tuberculin as an aid in rational immunization can only be judged by consideration of each case separately. Its efficacy cannot be judged in terms of cure at the present time, or until much larger numbers of cases have been treated and reported. The period of treatment is, of necessity, of so long duration, one or two years or more, that complete cases must necessarily at this time be few. Although the writer has a number of cases of chronic tuberculosis of the genito-urinary tract under treatment, only those that are more or less complete are recorded. The admirable article of Thompson Walker[1] on the subject has been taken as a basis for classifying the different tuberculous infections of the genito-urinary tract, and his cases and observations will be frequently referred to as being the products of an unusually extensive experience in treatment of genito-urinary tuberculosis, and in use of tuberculin as a therapeutic measure.

Tuberculin treatment should never be instituted in urogenital tuberculosis until thorough investigation as to the extent of involvement has been made and the question of extirpation has been

[1] Practitioner, London, May, 1908.

decided by the surgeon trained in special methods of diagnosis and treatment. Neither should tuberculin be given by the surgeon except on basis of previous experience in specific immunziation.

RENAL TUBERCULOSIS.

Expectation that exhibition of tuberculin in extensive renal involvement, associated with disintegration and extensive caseation of the kidney, will take place of extirpation of the organ is entirely unfounded. It may reasonably be expected that proper use of tuberculin may maintain the blood stream in a condition of increased resistance to the tubercle bacillus, but, both in theory and in practice, it is unjustifiable to risk the patient's life by leaving unmolested a disintegrated, useless kidney on expectation that the blood stream will, by means of its high antituberculous power, be able to produce resolution. It is obviously impossible to transfer antibacterial elements of the blood stream into a mass of caseated material, or even to conceive of a sufficiently active circulation in the infected tissue surrounding such a mass of caseous material, to cause destruction of tubercle bacilli present and resolution of disintegrated, infected tissue. Involvement of both kidneys, if extensive, may contra-indicate extirpation of either. The use of tuberculin in such cases has been found to produce distinct amelioration in pain, frequency of micturition and temperature, and may be considered a decidedly useful measure for temporary relief, although from the start such cases are beyond hope of cure.

A case of this type is reported by Walker,[2] and briefly is as follows: After three weeks' treatment with tuberculin, pain and hematuria disappeared, and frequency of micturition diminished. Temperature fell to 99° F.; weight increased. After six weeks no bacilli were found in the urine. After three months the patient died of renal failure.

When occlusion of the ureter results in accumulation of pus under pressure, as suggested by Walker, there can be no question of the inadequacy of tuberculin for a cure. When the ureter is involved there is always danger of occlusion, particularly if tuberculin is used. This danger depends on the common induction of a "focal" reaction by tuberculin, which, in the case of an infected ureteral mucous membrane, by automatically induced inflammatory reaction, may produce such swelling of the mucous membrane that occlusion may result. Focal reaction may be avoided generally if small dosage of tuberculin be adhered to.

These considerations further suggest the importance of careful investigation by the trained surgeon, and necessity for his constant watchfulness in treatment of such cases.

Tuberculin should be of the most advantage in the early stage of renal tuberculosis. It is uncommon, however, to arrive at a diagnosis at this early period, because the first evidence noted by the patient, such as cystitis, may not appear until long after the disease has gained considerable headway in the kidney.

Given a diagnosis of tuberculous kidney in its early stage, the question of tuberculin, as against extirpation, cannot be settled until more cases are reported with ultimate results and compared to those obtained by extirpation. A trial of tuberculin cannot be dangerous if it be administered carefully. The question of extent of involvement, if decided, will largely determine the advisability of tuberculin, and must be decided by the surgeon.

Walker reports treatment of an apparently early case as follows:

A history of sudden attack of pain in kidney, shooting into groin and testicle, followed by dull renal ache. Passed blood. No bladder symptoms. Pott's disease twelve years before with cold abscesses. At about the same time amputation of left foot for tuberculous disease. Kidneys not tender; right slightly enlarged. Tuberculin 1-250 mgm. once a month, gradually increased to ½ mgm. "Almost from the first weight increased. Blood has not appeared in the urine since treatment commenced." For eight months the pain in the kidney continued troublesome. After that, it suddenly diminished, until January, 1906 (seventeen months' treatment), when it disappeared. Reduction in the dosage of 1-1,000 mgm. was followed by a noticeably increased pain. In July, 1906, dose was raised, and in February, 1907, patient stated that he had had no pain since the increased dose. There was less pain with larger doses.

Carmalt Jones reports the cases of renal tuberculosis treated in Wright's clinic. Of cases treated, 2 were considered cured, 2 "better," 2 "somewhat better," and 1 dead.

The writer has used tuberculin in 1 case of renal disease which was thoroughly investigated and in which the organ was considered to be not sufficiently disintegrated to demand extirpation. The patient, J. R., fifty-five, male, admitted to the Boston City Hospital service of Dr. Paul Thorndike, Nov. 2, 1908. This case is partially recorded by Cunningham, of Boston, in the BOSTON MEDICAL AND SURGICAL JOURNAL, March 18, 1909, pp. 340–343. A brief résumé is as follows:

December, 1907, noticed increased amount of urine. Since then has urinated ten times at night and urine has been cloudy and thick. For the past ten years had urinated three or four times each night. Six months ago had an attack of polyuria, rising as many as twenty times a night. This lasted three days. No pain referable to the urinary system, and no blood in the urine. There has been little loss of weight, but occasional dull aching pain in small of back.

Physical examination generally negative. Sallow complexion. No external sign of disease, save cloudy urine.

Urine examination, pale, turbid, specific gravity 1016, acid, albumen slight.

Sediment considerable, consisting of much pus, medium round cells, bacteria, triple phosphate crystals. Occasional normal blood corpuscles. Some squamous epithelioma.

Cystoscopic examination (Dr. Cunningham), Nov. 6, 1908. Voided urine cloudy. No residual. Bladder capacity, 9 oz. Bladder easily washed clean. Bladder wall and trigone normal. Right ureteral orifice normal.

[2] Practitioner, London, May, 1908, p. 723.

Ejaculations of urine at intervals of thirty-five seconds. Ejaculated urine very cloudy. Left ureteral orifice normal; ejaculated clear fluid, rate forty-five seconds. Both ureters catheterized; specimen from right kidney very cloudy, in same degree as voided urine; specimen from left ureter normal in appearance.

Macroscopic appearance of specimen from right kidney, and also of voided urine, when shaken, was that of milk. After settling there was a white sediment ½ to 1 inch thick. Supernatant fluid remained cloudy.

Report of the Pathological Department, Boston City Hospital, on examination of the catheter urines:

Right ureter very cloudy. Smears and cultures show B. coli in abundance and few staphylococci. Much pus, mostly polymorphonuclear leucocytes and some red corpuscles.

Left ureter slightly cloudy. Cultures with B. coli and staphylococci. Occasional pus cells.

The urine from the right kidney had all the characteristics of that voided from the bladder, while that from the left kidney was straw-colored, very slightly cloudy, and had little sediment. Tubercle bacilli were sought in stained smears, but none were found.

X-ray examination, Nov. 5, 1908. No evidence of renal or vesical calculi.

Diagnosis of pyelitis was, therefore, made. The colon bacillus was considered as a predominating cause. The kidney involvement was not considered sufficiently serious to require extirpation of that organ, and it was decided to make the attempt to immunize the patient by the use of vaccine prepared from the culture of the colon bacillus obtained from the urine. The patient's serum agglutinated this colon bacillus in dilution of 1-128, thus proving actual infection.

Common association of colon infections with tuberculous conditions was considered, and a guinea pig was inoculated intraperitoneally and in the groin with urine sediment.

Inoculation of colon vaccine, started Nov. 9, 1908, was given three times a week at first, and later twice a week. After the fourth inoculation, the urine assumed a distinctly straw color, and there was scarcely ¼ inch of sediment. Frequency at night reduced from six to three times.

Dec. 15, 1908, urine after sedimentation was of normal straw color and nearly clear. At times the amount of sediment was barely sufficient to cover the bottom of an 8-oz. bottle; at times there was a ¼-inch layer. At the end of December, 1908, after two months' treatment, there were but few colon bacilli in the sediment or supernatant urine.

Frequency of micturition did not continue to lessen, in fact, again reverted to five or six times at night, and every two hours or so during the day. General condition did not show improvement commensurate with clearing of the urine. Loss of five pounds during second month of treatment; moderate exercise produced exhaustion.

Lack of improvement generally brought again to mind the possibility of tuberculosis. The Von Pirquet skin test was performed Jan. 7, 1909, and was brilliantly positive. In the absence of evidence of tuberculosis elsewhere, in consideration of history, failure to improve when the condition of the colon infection actually became better, and positive cutaneous tuberculin test, brought prominently to mind tuberculosis as the best explanation of the condition.

Beginning Jan. 7, 1909, Tuberculin R. was injected at weekly intervals, initial dosage 1-20,000 mgm. (bacillary substance). During the first four weeks patient gained 6 lb., and stated that he felt stronger, had better appetite, and could hold his urine a longer period.

On Jan. 29, 1909, the guinea pig inoculated Nov. 12, 1908, died. Autopsy showed a generalized miliary tuberculosis, and smears showed tubercle bacilli in large numbers.

From Jan. 7, 1909, till April 27, 1909, Tuberculin R. was given weekly, dosage reaching 1-7,000 mgm. but once, usually 1-10,000 mgm. or less. There were no subjective symptoms produced after any inoculation. During early April the patient began to complain of dull pain in right lower abdomen. In the latter part of April complained of profuse perspiration and chilly sensations. Temperature occasionally 100. A mass was felt in right lower quadrant and patient was referred back to the surgeon.

He was operated June 1, 1909, by Dr. Munro, who kindly furnished notes of the case.

"Filling whole right flank, from 2 inches below costal margin to below iliac crest and extending to within 2 inches of median line, a hard, rounded, immovable, tender tumor."

June 1, nephrectomy, Dr. Munro. He found "large kidney full of abscess cavities with pus and caseous material. Pedicle thick and brittle. Ureter traced below brim of pelvis and found small and not thickened."

Fifteen days later patient was out of bed; next day chill, restless. Wound opened; no pocketing found.

Developed high respiration, pulse and temperature. Right lobar pneumonia. Died June 18, 1909. No autopsy.

Pathological report, kidney-tuberculosis.

There are several points of interest in this case. First, as to diagnosis; it illustrates the necessity of bearing in mind the possibility of tuberculosis as the basal process in a case of this type. Tuberculosis is so commonly associated with colon infections that, in the absence of tubercle bacilli in smears, animal inoculation should be carried out.

Second, it shows it may happen that a kidney is seriously involved and disintegrated, without offering evidence that such is the case.

Third, consequently, it further shows that tuberculin treatment may at any time have presented it, — an impossible problem. It is absolutely unjustifiable to expect that tuberculin, by raising the anti-tuberculous power of the blood, should achieve resolution of such an extensively involved organ, or even to conceive that the blood, no matter how efficient it is rendered in antibacterial power, should be able to transfer its antibacterial elements into masses of caseated tissue. Tuberculin may be counted upon to increase the efficiency of the body as against the tubercle bacillus, but it cannot assume the place of surgery in the immunization of these cases.

The efficiency of tuberculin cannot be judged by the outcome of cases of this type.

VESICAL TUBERCULOSIS ASSOCIATED WITH RENAL INVOLVEMENT.

Renal tuberculosis is commonly complicated by secondary bladder tuberculosis. It may be difficult to say which is the original seat of infection, bladder or kidney. Cystitis associated with renal disease may clear up after extirpation

of the diseased organ. Walker (*loc. cit.*) states that in some cases cystitis appears to be due, not to actual tuberculous infection of the bladder, but to irritation caused by the deposits from the kidney. In claiming cure of tuberculous cystitis by removal of the kidney, this possibility must be borne in mind.

When, in spite of extirpation, cystitis persists, use of tuberculin is indicated. Walker concludes that it is a valuable adjunct to operation. He reports the following case (*loc. cit.*):

Patient had constantly aching left kidney eight months. Worse in morning, aggravated by exercise. Nocturnal micturition for six months. Blood in urine. Frequency half-hourly in day, two-hourly at night. Left kidney large and tender. Cystoscope showed general tuberculous cystitis, left ureter retracted. One month later large tuberculous left kidney removed, and a month later tuberculin begun. During twelve months' treatment there was increase in weight, frequency of micturition became hourly instead of half hourly, pain less; improvement was slow but undoubted.

Brief summary of a case of this type treated by the writer is as follows:

Female, forty-seven, married.

Increased frequency for over five years. Three months before operation cystitis became severe; incontinence of urine; much pus and many tubercle bacilli found.

At operation right kidney and ureter were found to be extensively tuberculous and were removed.

When seen by writer, two months after operation, there was a free discharge from two operative wounds. Urine foul, cloudy, contained pus and tubercle bacilli and large numbers of colon bacilli. Micturition during the day every twenty minutes; at night, ten or fifteen times. Excessive vesical pain. Temperature 100 to 102° F. Prostration, emaciation. Bad prognosis given by the attending surgeon.

Tuberculin R. was given at weekly intervals, beginning with 1-20,000 mgm. (bacillary substance). Temperature normal after two weeks. Dosage of 1-8,000 mgm. at end of two months. General condition, strength, weight, appetite, showed at this time a decided gain. Pain and frequency did not improve commensurately. A colon bacillus isolated from urine was agglutinated by the patient's serum at a dilution of 1: 28. Colon vaccine prepared and injected twice a week at first. Initial dose, 10,000,000.

Before the end of two weeks there was less pain and frequency; the urine appeared a little less cloudy and less foul. In the second month of treatment with the combined vaccine the urine became comparatively clear. After six months from the start, the wounds had healed; the urine, no longer foul, contained very little sediment. Urination every two hours in day, less often at night, associated with very slight burning. At this time patient had been up and about increasingly for two months; had gained considerable weight.

At the time of writing (March, 1910) the patient had received tuberculin weekly twenty-one months with occasional breaks. The maximum dosage, 1-2,000 mgm. For six months colon vaccine was given, at first twice weekly and later once a week. Maximum dosage, 60,000,000. It was omitted about a year ago. The urine sediment was slight and no colon bacilli were to be found on recent examination. It still contains tubercle bacilli, as recent inoculation experiment proved. Micturition every three to five hours, occasionally once or twice at night. No pain. Gain in weight approximated at 30 lb. Is able to attend to household duties and to go about without discomfort. She states that she feels better than she has for several years.

There are certain features of this case that are worthy of note: First, immediate improvement in cystitis following administration of colon vaccine, there having been no improvement in this regard during two months of exclusive tuberculin treatment; second, the fact that colon bacilli were very few in the urine after six months of treatment with colon vaccine; third, that, although the maximum dosage of colon vaccine was but 60,000,000, and the last dose was given approximately a year ago, immunity established has apparently continued to the present time; fourth, the presence of living tubercle bacilli in the urine indicates that the process is still active somewhere, but the patient's excellent condition, and absence of temperature, indicates that she has at present a well-defined degree of immunity; fifth, the presence of these bacilli indicates that every possible measure should be made use of to increase the patient's resistance, and, particularly, that we must maintain the antituberculous power of the blood-stream at as high a degree as possible by the use of tuberculin; sixth, it is interesting to note that the patient is able to say, based on her subjective symptoms of well being, or the opposite, following a dose of vaccine, as to whether the dose as given is increased or diminished. It has been found in every instance in which the dosage has reached 1-2,000 mgm. the patient does not feel as well for three or four days after inoculation. It has been found that a dosage of from 1-8,000 to 1-5,000 mgm. (bacillary substance) is the most satisfactory with which to maintain the present excellent condition. There has been in the treatment of this case at no time any suspicion of subjective symptoms following either the colon vaccine or the tuberculin.

This case illustrates sufficiently well the rôle of tuberculin, namely, of increasing the antibacterial power of the blood stream, to the end of rendering the immunizing mechanism more efficient in coping with the residual tuberculous process, after the major portion has been removed.

VESICAL TUBERCULOSIS WITHOUT EVIDENT RENAL INVOLVEMENT.

There may occur, according to Walker (*loc. cit.*) a considerable number of cases of tuberculous cystitis, unaccompanied by demonstrable renal involvement. Of 42 cases, he found 10 in which the disease was apparently confined to bladder, and 32 in which foci were found in other parts of the urogenital system. In 23 of these 32, the other involvement was in the genital system.

When, as a result of the application of usual methods of diagnosis it is concluded that the bladder is the chief seat of involvement, we have a condition unsuitable for surgical treatment and unsatisfactory with other usual methods.

We have to deal with a tuberculous infection of a mucous membrane, ulcerated and indurated. Such lesions are definitely known to be amenable to tuberculin.

Again quoting Walker (*loc. cit.*):

"In such cases best results may be obtained from tuberculin treatment." He states that sometimes after two or three injections the patient will report improvement. Less often the symptoms persist in increased or lessened severity, and improvement is only obtained after many months of treatment. The patient first experiences increased vigor, pain diminishes and disappears, and calls to micturition become less troublesome. From a frequency of fifteen minutes during the day and incontinence at night, improvement to two hours through the day and once or twice at night may be obtained in several months. Hematuria gradually ceases. The urine remains for a long time without change, but may eventually become clear, and the urinary pigment, which was deficient, increased. The patient put on weight.

He selects the following case from a few in which the tuberculous process has apparently been arrested:

Man, thirty-one, in July, 1903, had hematuria and hemoptosis. For four years cystitis, symptoms had increased gradually. Cystoscope showed ulceration left side of bladder. Groups of fine tubercles found. Four months treated with drugs. Symptoms the same. Steadily lost weight. Tuberculin begun November, 1903, 1-250 mgm., repeated every two weeks. January, 1904, urine unchanged. He ceased to lose flesh, held his urine four hours during the day, rose once at night. Much stronger, and had regained former figure. Cystoscope showed groups of tubercles, but less ulceration. Hemoptosis in March, 1904, and about weekly during the early part of the year. He began to gain flesh and appearance showed improvement. In 1904 burst of hemoptosis and hematuria. September, 1904, to January, 1905, had gained one stone and a half in weight. Cystoscope, June, 1905, showed few fine tubercles; ulceration had healed. September, 1905, no pain or hematuria. Urinated three or four times a day, not at all at night. Urine still hazy, trace of pus. January, 1906, injection reduced to 1-1,000 mgm. for three weeks. Blood appeared in urine and was present some weeks. It disappeared and the urine gradually cleared, with increased doses of tuberculin. Urine became absolutely clear and remained so for several months. July, 1907, attack of cystitis. Urine cloudy, no tubercle bacilli found, numerous staphylococci. Recovered from this attack of staphylococcus cystitis and feels well.

Jones reports the cases of tuberculous cystitis treated in Wright's clinic as follows:

Two cases cured; 4 much better; 8 better, meaning either some relief from pain or frequency of micturition. One case was no better, 1 worse and 1 unknown. There were relapses in 5 cases. In 13 cases there was secondary colon infection. In 10 of the successful cases, initial dose was less than 1-15,000, but often 1-25,000. After a time it was raised gradually to 1-4,000. Serious results may follow large initial doses. Treatment of successful cases averaged one year two months. Five or six were treated six months or less.

The writer has treated a case of genito-urinary tuberculosis which in its early history furnishes an excellent illustration of the course of an untreated case of tuberculous bladder, apparently unassociated with renal disease.

In early October, 1908, F. G., male, about twenty-eight years old, was referred for treatment. For ten years he had suffered from frequent micturition, generally every two or three hours. For three or four years had passed a little blood once or twice each year. At times there was considerable pain and burning on micturition, but this was not constant. Four years before the above date the symptoms of cystitis became marked, and when blood appeared he was referred to a surgeon for observation. Cystoscopy was at the time performed by J. H. Cunningham, Jr., who found several ulcerated areas in the mucous membrane, and made a positive diagnosis of tuberculosis. During the following four years he occasionally passed blood, had some pain on micturition. Frequency every two or three hours; once or twice at night. Urine generally not cloudy. His general health continued to be fairly good, although untreated. In October, 1908, he developed a swollen right testicle, which was, when the writer saw it, the size of a clenched fist. It had become swollen in a few days; was only slightly tender. His physician believed it to be due to the gonococcus, but there was no history of exposure or clinical evidence of the disease. The Von Pirquet cutaneous reaction was intensely positive. In a short time the tissues broke down, fluctuation was made out and considerable thick pus was aspirated. No pyogenic organisms were present. A guinea pig inoculated, killed after four weeks, showed tubercle bacilli in the mesenteric glands, inguinal glands, and tubercles were found studding the peritoneum.

The sequence of events in this case, and the observations, furnish clean-cut evidence of a tuberculous cystitis extending over a period of years and final extension to the testicle.

It indicates that, in an apparently healthy individual, tuberculosis may exist in the bladder for a long time, and illustrates the tendency of bladder tuberculosis to extend to other organs of the genital system. It is particularly interesting, because of the sequence of events in the same case following use of tuberculin for a considerable time. The treatment of this case will be considered under the next heading.

VESICAL TUBERCULOSIS ASSOCIATED WITH TUBERCULOSIS OF THE GENITAL SYSTEM.

In 23 cases cited by Walker (*loc. cit.*) tuberculosis was found to be coexistent in the bladder and in some of the genital organs. This association is very commonly met with.

He states that his patients steadily lost ground under various local and general treatment, and that he considered them eminently suited for tuberculin treatment, that in none of them was he able to bring about a cure, though he treated them over long periods. In most cases a considerable amelioration of symptoms was obtained. The distressing, frequent and urgent micturition is sometimes diminished to a remarkable degree.

One illustrative case, a man, thirty-eight, when seen, had symptoms of cystitis for eighteen months. Left seminal vesicle was hard and in the left lobe of the prostate was a large hard nodule. Tubercle bacilli found in the urine. Cystoscope showed a cystitis without definite tubercles. During six months tuberculin was given. Dosage, 1-2,000 to 1-800 mgm. He gained weight; there was no blood in his urine since the early part of the treatment. Micturition less frequent.

A second case for four months urinated every ten minutes and was incontinent at night. Urine thick and milky, prostate and seminal vesicle affected. After four months there was a gain of weight, lessened pain, urination every one and a half hours during the day; every two hours at night. After twenty-one months' treatment urination was every three hours, and twice at night, still milky. At the end of twenty-eight months' treatment the urine was clear, frequency every three hours in the day time, once at night.

The case "F. G." will be here continued as one of tuberculous cystitis with secondary testicular involvement.

Beginning Oct. 7, 1908, Tuberculin R. was injected once a week, initial dosage 1-20,000 mgm. (bacillary substance), the second 1-15,000 mgm., the third 1-10,000 mgm., the latter repeated weekly until Dec. 22, when it was increased slightly to 1-8,000 mgm. After the pus was aspirated from the testicle, a discharging sinus continued to discharge until the last of December. The testicle gradually lessened in size and the epididymis could be felt as a somewhat enlarged, hard mass. After the first four doses of tuberculin, micturition became less frequent (for several years it had averaged every two or three hours). On Dec. 22, 1908, after about three months' treatment, the patient stated that for the past week he had several times held his urine seven hours without much discomfort, and had not been up at night to micturate for some time. June 15, 1909, the dosage had reached 1-2,000 mgm. T. B. Urination every four or five hours and not at all at night. Aug. 3, Tuberculin B. E. was substituted for Tuberculin R. inasmuch as results in other cases appeared to be superior than those obtained by the use of Tuberculin R. Initial dose 1-20,000 mgm. Dec. 24, 1909, dosage had reached 1-1,000 mgm. B. E. and the last dose, March 4, was 1-800 mgm.

The testicle is now of practically normal size, the epididymis hard, but smaller than at first, micturition three or four times a day, never at night; pain after micturition, as experienced at first, has almost disappeared; no blood in the urine since treatment was begun; weight about as usual; general condition excellent; subjectively and objectively perfectly well; has been able to attend to business from the start of treatment as he had previously, but with less discomfort. He has received no local or general treatment other than tuberculin and advice as to hygiene.

There has been no suspicion of constitutional or focal reaction following injection of vaccine.

This case is of interest in the matter of diagnosis. The finding of tuberculous ulceration in the bladder, in 1904, indicates that bladder symptoms, extending over from five to ten years, were within reasonable probability due to a condition of tuberculous cystitis; testicular involvement, which occurred four years after ulcerations were found, and was proved to be tuberculous by animal inoculation, confirms the accuracy of Dr. Cunningham's cystoscopic diagnosis.

The case is further valuable, as indicating the efficiency of tuberculin so far as indications may be obtained from study of any one case. Symptoms had gradually gotten worse over a long period previous to the beginning of tuberculin treatment, and involvement of testicle came as evidence of unfavorable progression of the tuberculous process. The improvement associated with the exhibition of tuberculin may not only be taken as evidence of its efficiency in cystitis, but also in an early tuberculous process in the epididymis.

The outcome of the case also shows that tuberculin may be given successfully without the production of any symptoms of intolerance of either a general or a local nature.

The question of when to stop tuberculin treatment can only be determined by the method of trial and error. The writer proposes to inoculate a guinea pig with the centrifugalized sediment of the urine. If bacilli are to be found in the urine, the treatment will be continued; if not found, tuberculin will be stopped for a month or two and the patient kept under careful observation. Tuberculin will be started again if increased frequency of micturition, pain, or other symptoms of cystitis develop.

TUBERCULOSIS OF THE GENITAL SYSTEM.

The chief danger of tuberculous infection of the genital system is that it may infect the bladder. Walker (*loc. cit.*) considers the onset of cystitis to indicate extirpation, if possible, of the organ involved, but otherwise does not make use of extensive operative procedures, this because of the tendency of these lesions to contract and become walled off as a result of the benefit of tuberculin and general hygienic measures.

He reports a case of tuberculous epididymitis, prostatitis and vesiculitis, in which decided improvement took place after four years' treatment. The lesion in the epididymis in this case was of nineteen years' duration.

Jones (*loc. cit.*) reports the following cases of tuberculous testicle treated in Wright's clinic; 3 cases were cured, 2 "much better," 2 "better," and 2 doubtful as to the result.

Jones sums up 34 cases of genito-urinary tuberculosis treated with tuberculin in Wright's clinic as follows: The results would indicate that great improvement may be obtained in 3 out of 7 cases, and slight improvement in 2 more cases; treatment may last a year or more. There were secondary infections in one half the cases.

ACUTE PANCREATITIS, WITH THE REPORT OF TWO CASES.*

BY PHILEMON E. TRUESDALE, M.D., FALL RIVER, MASS.

ACUTE pancreatitis is an appropriate subject to present for your discussion at this time, for it is about twenty years since the notable contributions of Dr. Reginald H. Fitz[1] marked an epoch in our knowledge of this disease. The Middleton Goldsmith lecture was delivered by him before the New York Pathological Society in 1889. In this essay there was outlined a more definite and precise symptomatology than had hitherto been known. The classification of the disease by Dr. Fitz was based upon a comprehensive study of the terminal pathology, and was fundamental to the intelligent interpretation of diseased processes in the living subject. His

* Read before The Massachusetts Medical Society, June 7, 1910.

accurate deductions are still quoted by the authors of our modern textbooks.

At that time the origin of the disease was attributed to the extension of a gastro-duodenal inflammation along the pancreatic duct. Some investigators have maintained the theory of chemical and autodigestive changes. Of these, Truhart [2] reported 74 cases of acute pancreatitis, in only 14 of which were micro-organisms demonstrated. That, however, would not eliminate their presence as a cause in a much larger number. The frequent accompaniment of gallstones and their septic influences have been pointed out by Fitz,[3] Opie,[4] Flexner,[5] Robson,[6] and others, who have proved the association of these infections from the biliary tract. Opie [7] discovered this relationship at an autopsy of a case operated by Bloodgood. A gallstone, the size of a pea, was found occluding the ampulla of Vater, thus forming a continuous passage through which the bile traveled from the common duct directly into the pancreatic duct. To this interesting discovery he added seven others, and inferred that in many cases the stone might be temporarily lodged long enough to allow damage to the pancreas and then escape, leaving no other evidence of its presence.

The close anatomical relationship of the pancreatic duct and common bile duct is an important factor in the associated pathology. In a large percentage of cases the opening of the common bile duct is surrounded by pancreatic tissue.

Egdahl,[8] in an analysis of 108 cases, says that about 42% of the cases of acute pancreatitis are associated with gallstones, and considers them the most common single cause. Although the consensus of opinion is in favor of infectious agents from the intestinal tube and bile ducts, in 10% of Egdahl's cases the presence of mumps was an associated and causative factor. This is evidence that metastatic infections, either through the blood or lymphatic stream, enter into the etiology.

The hemorrhagic phenomenon which is present in the fulminating cases remains unsolved. When death occurs early the extravasation of blood seems to dominate the whole process. The theory that arteriosclerosis produces this dyscrasia has been disproved. Mr. Robson [6] has suggested that the hemorrhage may depend upon the presence of glycerine. Others have attributed the hemorrhage to the action of the pancreatic juices. Williams [9] found that in Kaiserling preparations from specimens of the acute hemorrhagic pancreas the colors did not materialize and thought possibly that the action of the pancreatic juices had something to do with this result.

When these hemorrhages occur, the disintegration of the substance of the gland ensues, and infection promptly converts the process into an acute fulminating inflammation.

The frequency with which the abdomen has been explored in recent years has made possible the recognition of the less fulminating and yet acute inflammations of the pancreas. The presence of fat necrosis is considered the pathognomonic sign. This lesion results from the escape of pancreatic ferments into fat tissue, splitting the fats into fatty acid and glycerine. Langerhans first produced this change by injecting into rabbits and dogs an infusion, made by grinding up the pancreas of a freshly killed rabbit with finely splintered glass, and succeeded in producing a small opaque focus at the site of injection which had the histological characters of fat necrosis. He consequently concluded that it was possible to produce fat necrosis by the action of fresh pancreatic juice upon living fat tissue. Balzer,[10] in 1879, first recognized the association of fat necrosis in acute pancreatitis.

Opie,[11] in his experiments, succeeded in reproducing the more widely spread condition of fat necrosis observed in man, and showed that the same cause is responsible for it as for the local lesions. Flexner [12] and Oser [13] found that injections of dilute acids, dilute alkalies, artificial gastric juice, turpentine or suspensions of bacteria, while causing more or less serious injury to the parenchyma, were liable to be accompanied by necrotic changes in the pancreatic and abdominal fat. Clinically, its recognition is of great importance, since its presence in practically all cases is taken to indicate a severe inflammatory lesion of the pancreas. It was formerly interpreted as a fatal sign, but we know to-day that its presence does not necessarily indicate a lethal termination. Truhart disproved the old theory by collecting ten cases in which fat necrosis was present, and yet an immediately fatal issue did not result.

The changes which occur in the gland itself in acute hemorrhagic pancreatitis are usually rapid and destructive, involving the entire parenchyma of the gland. As a result we have degeneration of the entire glandular elements. The islands of Langerhans are less readily destroyed than the secreting cells of the acini.

The following two cases have occurred in my practice:

Case I. S. C., female, age fifty-three, single. Seen in consultation with Dr. A. C. Peckham, Dec. 3, 1907. She had always been well except for an attack of acute indigestion in 1904. Since this attack she complained of habitual constipation, but her digestion was not a source of discomfort. Dec. 1, 1907, following a period of constipation of three days' duration, she developed severe acute symptoms. Epigastric pain radiating to both sides, vomiting of mucus and bile; the pain with a sensation of fullness in the epigastrium continued except when temporarily relieved by hypodermic injection of morphia. She was admitted to the hospital on Dec. 4. Temperature, 100; pulse, 100. The patient was obese and had a slight degree of jaundice. Her abdomen was distended and tympanitic. There was tenderness over the upper half, with spasm of the right rectus muscle. Urine negative. Diagnosis, gallstones.

Upon opening the peritoneal cavity through a right rectus incision the omentum was found adherent around the gall bladder and pylorus. The duodenum was engorged. Scattered over the omentum, duodenum and gall bladder were small, round, opaque areas. The gall bladder was distended—thickened and not collapsible. The head of the pancreas was considerably enlarged. The gall bladder, which contained inspissated bile and a deposit of very fine granular material upon the mucous membrane, was drained. A small piece of omentum and a portion of the fundus of the gall bladder,

upon which were several of the small opaque areas, were removed for histologic examination. These showed a leucocyte infiltration surrounding small areas of fat necrosis. The patient recovered.

CASE II. My second case was of the acute fulminating type and characterized by the group of symptoms detailed by Dr. Fitz in 1889: "Sudden, severe, often intense epigastric pain without obvious cause, in most cases followed by nausea, vomiting, sensitiveness and tympanitic swelling of the epigastrium. There is prostration, often extreme, frequent collapse, low fever, and a feeble pulse."

On Oct. 26, 1907, Dr. George G. Parlow was called to see Mrs. L. F., aged twenty-six years, housewife, native born. Well up to the time of her marriage, when she complained of a muco-purulent discharge from the vagina, associated with frequent and painful micturition. Jan. 25, 1907, was delivered in normal labor of a poorly developed fetus at about the eighth month of gestation. She developed a bilateral pyosalpinx and pelvic abscess during her convalescence. On March 1, 1907, both fallopian tubes and the left ovary were removed. Drainage was employed for a large ovarian abscess which had ruptured during its enucleation. Discharged from the hospital, March 30, weight 174 lb. Her general health improved, and except for obstinate constipation, she was symptomatically well up to the morning of the attack now to be described. Her weight some days before was 230 lb.

On Oct. 26, while in her yard, following mild but sudden exertion, she was seized with agonizing pain in the epigastrium. She fell upon the ground and remained there for several minutes, then managed to walk into the house. Hot drinks and hot applications proved ineffectual for relief. She vomited an ordinary basin full of dark fluid material. Dr. Parlow's first observation was made a few hours after the onset of her attack. She was in a state of collapse, with a rapid, feeble pulse and subnormal temperature, perspiring freely, and indicated the epigastrium as the location of her pain. Cardiac stimulants were administered by hypodermic injection, and a gradual recovery ensued. The pain was most severe in the epigastrium and radiated toward the left groin, and was aggravated by turning upon the same side. Tenderness over the abdomen was general. An enema was given without result. The pain was relieved only by hypodermic use of morphia. On the following morning the pulse at 130 had improved in quality. The temperature was 101° F. She described the discomfort in the epigastrium as a feeling of intense weight, unremitting and radiating to the back. There was no vomiting after the first day. An ice-bag upon the abdomen gave the most comfort. On Oct. 30 there was noticed a slight degree of jaundice, the urine was a deep red, and a small stool by enema was of light yellow color. During the next few days she remained in a precarious state, the pulse varying between 120 and 130, the temperature from 99.5° to 102°. Flatulence was a troublesome symptom, and the abdominal discomfort thereby made extreme was relieved by enemas.

On Nov. 4 I saw the patient in consultation with Drs. Parlow and Curry. She complained of a constant dull aching pain across the upper abdomen, with occasional paroxysms induced by the formation of gases in the stomach and intestines. Her face wore an expression of exhaustion and pain. Tongue was dry. Sclera had a yellowish tint. The abdomen was distended, tympanitic and tender everywhere, especially in the zone above the umbilicus, where there was an indurated mass the margin of which could not be well defined. The temperature was 101.5° F.; pulse, 130; respirations, 36. I had palpated her gall bladder at a previous operation and had felt no stones. Acute cholecystitis with perforation and abscess was considered, as well as abscess from perforation of the stomach, duodenum or tranverse colon. In view of the absence of earlier symptoms pointing to the biliary or intestinal tract, together with the suddenness and severity of onset, slight jaundice and the presence of a tumor in the epigastrium plus peritonitis, the diagnosis of acute pancreatitis was ventured. The patient appeared to be on the border line, her condition hardly justifying surgical interference.

White blood count, 35,000; polymorphonuclears, 83%; lymphocytes, 11%; large mononuclears, 5%; transitional, 1%.

Operation on Nov. 6 at the patient's home. During the previous twenty-four hours there had been eight bowel movements, moderate amount, liquid and pale in color.

The abdomen was opened in the mid line above the umbilicus. The subcutaneous fat was quite yellow. A sero-sanguineous fluid escaped from the peritoneal cavity. Beneath the parietal and visceral peritoneum were disseminated areas of fat necrosis. These were numerous and conglomerate in the immediate vicinity of the pancreas. The gall bladder was distended. No stones were felt. The pancreas was much enlarged, and presented a dark mottled appearance through the gastro-colic omentum, to which it had become attached. An incision was made through the peritoneal cover, and the finger passed into the body of the pancreas, the substance of which was very friable and bled freely. In spite of the hemorrhage, wide deep openings were made into the gland. No pus cavities were opened. Fragments of the necrotic pancreas and the omentum were removed for examination. Tubes of Loeffler's blood serum were inoculated from the necrotic tissue; these remained sterile. Split rubber tubes enclosing gauze were used for drainage and the wound dressed.

The operation was of short duration, and there was no apparent shock. The pathological findings were as follows: The specimen consists of a small piece of omentum and some separate bits of a very friable hemorrhagic tissue. The specimen from the omentum has several yellowish-white, greasy spots, varying in size from ¼ to ½ cm. in diameter.

Microscopical examination. — Sections of the omentum show numerous areas of fat necrosis. Sections from the hemorrhagic tissue show much free blood and cell detritus surrounding definite areas of necrosis. In one spot there is connective tissue, marking off what apparently corresponds to a gland lobule. Within this lobule are the faint outlines of gland acini; some of them are outlined in blood. No living cells, but much nuclear detritus is seen throughout the section.

Diagnosis. — Acute hemorrhagic pancreatitis.

The convalescence was eventful. The temperature and pulse gradually approached normal for the first week. The discharge from the wound was copious, mixed with blood for several days, followed by the thin secretion from the gland, containing pus. This discharge subsequently became very irritating, causing a dermatitis over a large area. A paste of castor oil and bismuth proved to be very effective in relieving the consequent discomfort and limiting the extent of the excoriated surface.

On the ninth, tenth and eleventh days the discharge diminished perceptibly, and the temperature rose to 103°, pulse 140 and respirations 40. The sinus was enlarged by the introduction of the finger, after which free drainage was re-established. For the subsequent week the patient's condition was not encouraging. There was an irregular elevated temperature, with pulse between 130 and 140. On the twentieth day after operation I removed a sloughing mass which presented

at the opening of the sinus. It measured 15 cm. by 3 cm., and was composed of a mass of necrotic tissue surrounding a central duct which coursed its entire length. (See Fig., Case II.)

On Nov. 27 patient had a chill, followed by phlebitis in the right leg. Again there followed a wide variation of temperature with rapid pulse. There was but little hope for her recovery at this stage. A culture was taken from the discharging sinus. An autogenous vaccine was prepared by Dr. George P. Sanborn from the growth of colon bacilli. This was administered at first in doses of ten millions on Dec. 7 and 8, twenty millions on Dec. 10 and 11, thirty millions on Dec. 14, 17 and 21. There followed a gradual approach to normal of temperature, pulse and respiration. Sugar had appeared in the urine, but was not estimated quantitatively until Nov. 28, when there was found 5.2% with the polariscope, and Lohnstein tube specific gravity was 1.026. No albumen. Twenty-four-hour amount, 90 oz. On Dec. 2 the amount of sugar diminished to 0.7% by Lohnstein tube; on Dec. 5, 0.43%, and it was found absent for the first time on Dec. 9 by Mylander's solution, and did not reappear. The twenty-four-hour amount varied from 72 oz. to 90 oz., and the specific gravity from 1.005 to 1.011. Four-ounce starches were added to the diet on Dec. 16 and continued for one week, when a mixed diet was allowed. The stools during this period were normal, well digested and contained no starches or fats. Fat globules were observed on Nov. 10 and in several liquid discharges on later dates.

On May 2, 1910, this patient was found to be in good general health. Her weight had returned to 205 lb. She complained of epigastric distress from one to two hours after meals, especially if she had eaten meat and potatoes. Her bowels alternated between constipation and diarrhea. Examinations of the urine and feces were made by Dr. Herbert as follows:

Urine: specific gravity 1.028, acid, no albumen, no sugar with Mylander's reagent. Urea with a Doremus test, 0.018. Stools showed undigested muscle fiber. No starches or fats.

June 3 test breakfast was administered, the examination of which showed an entire absence of free and combined hydrochloric acid. Also an absence of chlorides, which would account for undigested muscle fiber.

DIAGNOSIS.

The diagnosis of acute pancreatitis usually is made after exploratory incision. The cases of moderate severity are the most difficult to recognize. Frequently associated with an acute cholecystitis or cholangitis, it remains difficult to determine the source from which the symptoms originate. In Case I the pain was at first located in the epigastrium, later becoming general, with occasional paroxysms, and it returned after the influence of the morphia had worn off. With the appearance of jaundice these cases simulate a suppurative cholangitis. The head of the pancreas is early involved, and, although the pain is referred to the epigastrium, it radiates over the abdomen rather than to the subscapular region. Tenderness and muscular spasm are usually more pronounced in the right upper quadrant. In the presence of such symptoms pancreatic infection can only be suspected.

The Cammidge [14] reaction which was first described in 1904 has received recognition as a diagnostic test by many writers, including Robson,[15] Moynihan,[16] Ochsner,[17] and others. In the application of this test one should be reasonably skeptical. It is quite likely to be found positive when so desired, and vice versa.

In sixty-two cases of pancreatitis, Pilcher,[18] of Rochester, Minn., found the urinary reaction positive in 82%. Positive reactions were obtained in all the so-called subacute cases. He concludes that a typically positive reaction with a negative control is almost pathognomonic of pancreatitis.

The errors in Pilcher's investigations were pointed out by Dr. Wilson,[19] pathologist at the same hospital, in a paper read at the Triennial Congress at Washington, one month ago. His tests were carried out by taking the urine from patients whose histories were not sent to the laboratory. He obtained the reaction in cases which were not found at operation to have pancreatitis, and he failed to obtain the reaction in others in which the presence of the disease was demonstrated at operation.

He went further and obtained a positive reaction in the urine of young healthy adults temporarily overfed. Dr. Wilson, therefore, concluded that the presence of this reaction was related to the changes of metabolism, and that its value as a diagnostic agent in pancreatitis was open to doubt.

The acute hemorrhagic cases are confounded at first with intestinal obstruction, and perforating ulcer of the stomach or intestine, phlegmonous cholecystitis or ruptured gall bladder and ptomaine poisoning. Although intestinal obstruction does occur at the same time, it is limited to that portion above the jejunum. The patient may pass flatus with repeated enemas. The distention is less marked in pancreatitis than in intestinal obstruction. Vomiting in the latter condition is persistent, while in acute pancreatitis it may subside early. In cases of a perforating ulcer an ulcer history may be obtained. If ruptured gall bladder is suspected, previous evidence of trouble may be found. In ptomaine poisoning there is diarrhea from the beginning.

In acute pancreatitis the onset of the attack which may follow a period of constipation is sudden, severe and frequently followed by collapse. Vomiting occurs early. If death does not supervene, the process becomes circumscribed, jaundice appears, the stools become bulky and contain fat. Ochsner [20] and Opie [21] have observed cyanosis as a symptom.

Elliot [22] mentions the fact that in acute pancreatitis a tympanitic note on percussion is obtained over the tumor by the location of the gland behind the duodenum and pyloric end of the stomach. The pancreas may become so large, however, as to appear in contact with the anterior abdominal wall and collapse the duodenum.

TREATMENT.

There are mild cases which undoubtedly clear up without treatment. When the disease is of moderate severity and associated with cholecys-

titis and cholangitis, drainage of the bile passages is indicated.

In acute hemorrhagic pancreatitis the situation differs somewhat from that found at the beginning of an acute fulminating process in the appendix, gall bladder or pelvis. In the latter diseases operation in the first twenty-four hours usually finds the patient in as favorable a condition as he will be, while in acute hemorrhagic pancreatitis, the degree of shock which accompanies the onset of the disease must be added to the risk of surgery.

Mayo Robson [23] advocates operation before the period of collapse has passed off, since he says that this may be dependent upon septic absorption.

Mikulicz [24] believes that we should not in general allow the severe symptoms to pass and delay the operation until the formation of an abscess. Nevertheless, of the cases which he collected, only 9 out of 46 operated upon in the acute stage recovered, while 18 out of 35 recovered when the operation was performed in the later stage. However, he points out the unsatisfactory side to such statistics, inasmuch as most cases were operated upon under mistaken diagnosis of perforative peritonitis or intestinal obstruction, and the abdomen thoroughly explored for the suspected perforation or occlusion. The post-mortem examination in these cases first demonstrated the true condition. It is obvious that such "irrationally conducted" proceedings in the presence of an already existing condition of shock must result in a high mortality.

It is probable that many of the surgical deaths incurred by operations undertaken in the first twenty-four hours would be medical deaths if let alone, yet an operation if not carefully and expeditiously executed can, at the outset, remove the only chance a patient may have for recovery. Every death from acute pancreatitis in the first twenty-four hours is not necessarily from surgical neglect.

When an acute process assumes a severe hemorrhagic character, as the result of a dyscrasia similar to that which occurs in a pure pancreatic apoplexy, but little hope can be entertained from operative interference. A patient presenting the symptoms of shock at the onset of this disease, when the diagnosis can be made, should be treated by the use of hot saline infusions first and surgery later. When a differential diagnosis cannot be made, and the degree of shock is not too severe, immediate exploratory laparotomy would seem to be indicated. Whether the condition disclosed is a perforation of the stomach, intestine or gall bladder, or an acute pancreatitis, a short, well-executed operation will offer the most hope.

Dr. Fitz,[25] in his original monograph, dismissed the treatment in the following paragraph: "It is evident that all treatment at the outset can be nothing but palliative. With the formation of pus in the omental cavity comes the opportunity for the surgeon. The possibility of the successful removal of the pancreas is suggested by the healthy condition of the patient seventeen years after he had discharged this organ from his bowels." This is the attitude of many conservative surgeons of to-day.

The second case reported above is an example of many others in literature showing the tendency of the destructive process to become circumscribed and the resistance which may be manifested in a case the onset of which was quite severe.

The operation upon this patient, although performed at a much later date in the course of the disease than would ordinarily be selected, probably presented a more favorable outlook than if it had been done in the first twenty-four hours.

Nevertheless, appreciating the danger of gangrene, the formation of a phlegmon in the loose tissues of the retroperitoneal region rich in lymphatics, and of general sepsis, one would not wisely delay operation after the pulse had recovered a good quality.

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DISCUSSION.

Dr. David D. Scannell, of Boston: I think I can best crystallize my remarks on the subject by presenting a case of acute hemorrhagic pancreatitis actually operated on July 1, 1909 (the patient is present in person).

George F. S., fifty-five, wood-turner. Boston City Hospital, July 1, 1909. Family history negative. Previous history also negative from the point of view of symptoms referable to the condition for which he was operated.

Present illness. — Three days ago, patient was seized with acute stabbing pains in his upper abdomen; to use his own expression, "he retired in apparently good health at 9.30 P.M. and awoke at 11.30 P.M. with sharp pains like knife thrusts through the stomach, followed by vomiting until 7.45 the next morning. No symptoms of collapse. These pains were associated with more or less gradual distention of the abdomen and marked constipation. After twenty-four hours the vomiting ceased, and patient found his greatest discomfort in dull epigastric pain and the abdominal distention. After twenty-four hours in bed, the patient took a train to Boston, a six hours' journey, sitting up the whole distance in an ordinary passenger car during the whole of his journey. His suffering was intense, and his color and expression so bad that he was a source of much anxiety to his fellow-passengers. From the time of his arrival in Boston until his admission to the Boston City Hospital (seventy-two hours from the beginning of the attack), his abdominal distress was intense.

Physical examination at the time of entrance. — Patient in a state of collapse and suffering intensely;

face pinched, slightly cyanotic and anxious; nose cold; tongue heavily coated; slight jaundice in both sclera, though no cutaneous jaundice could be made out; pulse 128 and of wretched quality; temperature 99.8°.

Abdomen markedly distended and spastic throughout, the greatest spasm being in the upper half of the abdomen and here most marked just to the right of the middle line. While tender all over, the abdomen was most tender in the epigastrium and right hypochondrium, the distention and spasm making definite palpation quite out of the question. There was dullness in both flanks and tympany above; rectal examination was negative.

Diagnosis. — The history and the physical examination seemed to make the diagnosis of acute hemorrhagic pancreatitis the most probable one, though an acute gall bladder, with or without perforation, or a perforated gastric or duodenal ulcer, were kept in mind.

Operation. — High right rectus incision. Immediately on opening the abdominal cavity, a moderate amount of sero-sanguinolent fluid escaped; the intestines were everywhere distended; there was no evidence of fat necrosis. Directly under the incision, and occupying the anatomical site of the head of the pancreas, was a mass of adhesions, roughly comparable to the size of a clenched fist; this mass continued to extend across the abdomen, about the direction of the pancreas, though less large than under the wound. Before exploring this mass, the stomach was inspected and showed no perforation; the duodenum was covered over by the mass, and, therefore, was not to be scrutinized; the gall bladder was moderately distended, but to quick palpation presented no abnormality; no stones were to be felt; the general peritoneal cavity was walled off with strips of gauze and the mass explored with the finger; immediately there set up a most brisk hemorrhage, coming from no particular vessel, but from the whole mass; the finger, without difficulty, went down through the swollen area to what was unquestionably the head of the pancreas; the patient's condition, wretched to start with, became distinctly and acutely worse, and it was deemed wisest to terminate operative procedure as rapidly as might be; gauze packing in considerable amounts was pushed down to virtually the patient's back bone, and the hemorrhage fairly controlled. In view of a possible association of a chronic gall bladder as the cause of the pancreatic lesion, it seemed wisest to drain the gall bladder, which was rapidly and easily done, rubber drainage being used. The abdominal wound was closed for the most part and shock treatment and slow saline by rectum were instituted.

Recovery was astonishingly rapid. The original packing was removed gradually, so that it was entirely out by the fifth or sixth day. There was almost immediately evidence of slight digestion of the wound from the escape of pancreatic juice. The gall bladder drained efficiently, and all drains were out on about the twelfth day. After the operation, practically no pain whatever was complained of. Three weeks from the day of operation the patient was discharged well.

Four weeks later, the patient was readmitted, with severe pain in his right hypochondrium over the site of the incision, associated with nausea and vomiting. At this time, physical examination showed extreme tenderness over the old scar and a localized swelling about the site of his gall bladder. Under ether, the previous scar was opened up with an escape of about one-half pint of thin bile. This was drained, and the patient did well for fifteen days, during which interval he drained bile freely. His general condition steadily became worse, with a complete loss of appetite and a distinct loss in weight. During the latter period of this interval, more or less definite pain was complained of below and to the right of the umbilicus, with the development at this site of definite spasm, tenderness and swelling. A third operation was done and a large amount of straw-colored, flaky fluid evacuated; there was no frank pus. The omentum and serous covering of intestines showed evidences of fat necrosis. Drainage was established and for some days little hope was entertained of the man's recovery. For three weeks after this last operation the discharge from both incisions was most free. At the end of that time the discharge stopped and the patient rapidly regained his health, and within a month of the last operation was discharged well. Since that time there has been a steady and progressive gain in every respect, with entire absence of digestive disturbances, increase of weight and general betterment.

Dr. Tobr Wagner Harmer, of Boston: I was interested to hear what Dr. Truesdale said of the Cammidge reaction. I think, if any one has worked conscientiously with this test in the laboratory with a clinical knowledge of the cases, he can spell out in a very few words "the Cammidge reaction is dead." It is not a specific test for pancreatic disease. Dr. Boos and I have been interested in working on this subject, and have performed a large number of tests. We have been careful to exclude any material containing sugars, and with but a few exceptions have selected only those cases in which pancreatic involvement seemed unlikely. Every case with a white count over 17,000 showed a positive Cammidge reaction, regardless of the clinical condition, and regardless of the type of leucocytosis, neutrophilic, basophilic or myelocytic. We obtained autopsies of four cases, and in each the pancreas was normal. Again last year Dr. Boos obtained a negative test in a case of Dr. Balch's with acute pancreatitis. You will find a number of instances reported in the literature (Bushnell, Gruner, Schroeder, Ransohoff, Kinnicutt, Lyle) in which the test was negative and the pancreas diseased.

Dr. Daniel Fiske Jones, of Boston: In regard to diagnosis, I do not hear much said about the differential diagnosis between pancreatitis and intestinal obstruction. The first lot of cases I saw were all diagnosed as acute intestinal obstruction. This mistake is not so frequently made at present. Then in regard to operation, it seems to me it ought to be emphasized a little more that practically the only possible treatment for these cases is early operation — and by operation I do not mean simply an exploratory laparotomy, but a thorough opening up of the capsule of the pancreas itself. This area should be packed with gauze to prevent escape of pancreatic secretion into the general abdominal cavity, and to give drainage. The operation to be of value must be early, and the gland freely opened up to relieve tension before extensive destruction of the gland takes place.

Dr. J. C. Munro, of Boston: There are one or two points which I should think should be emphasized. It is possible to get well without opening up the pancreas. I have seen a number of such cases both at the hospital and one or two in my own private practice where simply opening the abdomen apparently cured the patient. There is no doubt that in the acute cases there is nothing but surgery that ought to be considered. I have operated on a dozen or more, and don't think that in most of them the question of intestinal obstruction came in at all. The thing that has aided me in clearing up a diagnosis of a case before operation is the presence of a high pulse and a rather low temperature, the fact that the pain is intense, the fact that all these patients have a slight jaundice which is not the jaundice of gallstones, but is the jaundice that goes with the pancreatic infection of the gall bladder.

We see it in cases of acute pancreatitis. In the first three or four hours the pain and spasm is all in the upper part of the abdomen. It is, I think, rather characteristic. I think the outlook is not so black as the books would have us believe if these cases are operated on before the patients are *in extremis*. I think that drainage of the pancreas is sufficient, as where there is not acute hemorrhage we do not use much gauze packing; we use just a strip or two.

DR. F. B. LUND, of Boston: Some years ago I reported six cases of this disease, and in these cases, as in my subsequent experience, I have been much impressed with the difficulty of making a diagnosis between acute pancreatitis and perforation of the stomach or gall bladder. The rise of temperature, tenderness, spasm and absence of constipation have served to render a diagnosis of intestinal obstruction improbable. The picture of acute pancreatitis is very much like the picture of acute perforations, especially of the gall bladder, for the reason that they are usually preceded by a history of gallstones. The percentage of cures, owing to the position of the pancreas, virulence of the infection and the difficulties of drainage, will always be great, but without drainage, and judicious drainage, all the cases of gangrenous pancreatitis certainly must die. It is astonishing how much of the pancreas can slough and at the same time leave behind enough pancreatic tissue to take care of the digestion of the individual. In a case of mine which was ill for a long time, and finally died, an autopsy was made. After the sloughing of several large pieces of pancreatic tissue, nearly a normal amount of pancreas appeared to be left behind. Of course it is possible that part of what we considered pancreatic tissue was really the peripancreatic fat. Localized abscesses or necroses of the pancreas naturally give better results under drainage than general hemorrhagic pancreatitis.

THE INFLUENCE OF EXHAUSTION UPON PUERPERAL MORBIDITY. BASED UPON A STUDY OF 5,000 PUERPERIA.

BY JOHN T. WILLIAMS, M.D.

(From the Clinic of the Boston Lying-in Hospital.)

THE use of the hospital records for this investigation was opened to me by the courtesy of Dr. Charles M. Green, visiting physician, to whom I desire to express my deep obligation. My interest in this subject was aroused by Dr. Franklin S. Newell's paper, published in conjunction with those of other members of the staff, in reporting and analyzing the first one hundred Cæsareans performed at the Lying-In Hospital.[1] Dr. Newell found that when Cæsarean section was performed after labor had been going on for some hours, complications during the convalescence were more frequent than when the operation was performed before the onset of labor; and that when the Cæsarean was done late in labor, the morbidity was extremely high.

This raised the question of whether similar results should be expected after prolonged labors, terminating either spontaneously or artificially in delivery through the vagina; and, with the hope of answering this, I have undertaken to analyze the records of 5,000 cases delivered in the house clinic of the Boston Lying-In Hospital. In order to exclude factors other than exhaustion so far as possible, cases of eclampsia, placenta previa, detachment of normally situated placenta and patients delivered by Cæsarean section have been excluded, as have also miscarriages, premature labors and patients entering with or developing acute infectious diseases where infection took place previous to labor. With these exceptions, the cases were consecutive in number, confinement number 10,759 being selected at random as a starting point, the final case being number 16,223.

The test of morbidity which I adopted is that in most general use [2] of a temperature over 100.4° F. at any time during the puerperium. Only elevations of temperature during the first ten days have been considered. There are obviously two ways in which exhaustion may influence puerperal morbidity: First, in itself resulting in elevation of temperature and other disturbances; and, second, in lowering the patient's resistance to pathological processes.

THE PHENOMENA OF EXHAUSTION.

Textbook descriptions of the behavior of the temperature after delivery are rather meagre. Williams [3] says: "Not infrequently the temperature may become slightly elevated towards the end or just after the completion of a difficult labor. Under such circumstances it rarely goes above 100.4° F. (38° C.), usually falls to normal within twelve hours and does not rise again. A higher temperature during labor in all probability indicates infection of the liquor amnii." Edgar [4] states that "the temperature is slightly raised by the act of labor. . . . The physiological rise averages about 0.48° F. (0.27° C.). For the first six or seven hours after delivery the temperature continues elevated, and then sinks slowly, so that considerably before the expiration of the first twenty-four hours it has returned to the antepartum point. The temperature curve . . . varies slightly with the period of the day at which delivery occurs."

The journals appear to be lacking in literature dealing directly with this subject. Ryder,[5] writing on "Temperatures Occurring During the Puerperium," describes a reactionary temperature which develops immediately after labor, reaches 101 to 103 and drops quickly to normal. As a result of the careful study of 5,000 puerperia, I am prepared to substantiate in the main the correctness of these statements, but with certain reservations and explanations which a more detailed analysis has made possible.

After 5,000 labors I found an elevation of temperature to 100° F., or higher, at some time during the first twelve hours in 1,025. It was present immediately after delivery in 395 cases, of which, in 335, it fell during the first twelve hours; in 45 rose still higher and in 15 remained the same.

[1] BOSTON MED. AND SURG. JOUR., 1909, clxi, 803-816.

[2] *Vide* Edgar: Practice of Obstetrics, 1907, p. 711, and Williams' Obstetrics, 1908, p. 336.

[3] *Loc. cit.*

[4] Practice of Obstetrics, 1907, p. 675.

[5] Surg., Gynec. and Obstet., 1907, iv, 48.

(Only bi-daily temperatures were recorded, so that, whether this means that in these latter instances the temperature rose after delivery and was taken by coincidence during the subsequent fall at the same level as at delivery, or whether it actually remained stationary, it is impossible to state. The former would appear more probable.) The temperature rose during the first twelve hours of the puerperium to 100° F. or above in 675 cases,

Charts Illustrating Types of Exhaustion Temperatures.

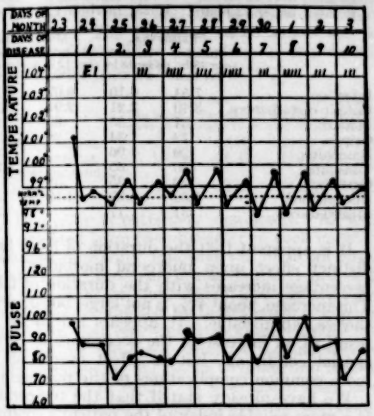


Chart I.

No. 12,940. Primipara. Flat pelvis, twenty-three-hour labor, terminating in spontaneous delivery in the evening. Elevation of temperature immediately after delivery; fall to normal next morning.

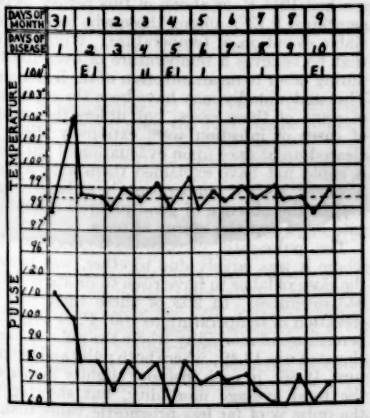


Chart II.

No. 13,936. Primipara. Justo-minor pelvis, twenty-six-hour labor, terminated by high forceps in the morning. Rise of temperature following delivery, reaching climax in the evening; drop to normal the next morning.

and of these only in the 45 already mentioned did the temperature immediately after delivery equal or exceed this mark.

In 23 patients the temperature at delivery reached 101° F. or over, in 20 of these falling during the first twelve hours and in 3 rising still higher. On the other hand, 106 patients experienced a rise of temperature, reaching to 101° F. or higher twelve hours after delivery. Only 26 of these showed a temperature of 100° F. or over immediately after the birth of the child.

It is of interest to inquire into the effect of the time of day at which delivery took place upon the temperature curve, as was referred to by Edgar. Of the 1,025 cases in which the temperature reached 100° F. at some time within the first twelve hours after delivery, 346 were delivered between noon and midnight and 679 during the morning hours. The temperature rose in 81.14% of the latter and fell in 62.46% of the former, showing that the course of temperature is markedly influenced by the diurnal variation. Taking only the instances of a temperature of 101° F. or above, 77.35% of the morning deliveries were followed by a rise and 75% of the evening by a fall. The temperature curve in 1,000 consecutive cases was studied irrespective of height. Morning births numbered 552; afternoon and evening, 458. In 60.86% of the former and 58.45% of the latter the temperature followed the diurnal variation in its curve.

It may, therefore, be said that the temperature during the first twelve hours after delivery is elevated at some time in 20.5%, and that not only in these cases, but in the others, the temperature curve corresponds to the diurnal variation in from 60% to 80%, and is reversed in the remainder. This reversal does not mean a reversal of the bi-daily variation in temperature for the individual, as was shown in practically every case by the subsequent course. Upon what it is dependent this study has thrown no light.

When elevation of temperature occurred, it was not accompanied by any especial or characteristic disturbances. It has most commonly been considered a symptom of exhaustion, although Temesvary [1] has explained it as the result of the increase of blood pressure, following the shutting out of blood from the uterus after expulsion of the child. This temperature is practically always below 100° F. by the end of twenty-four hours. Whatever its cause, the duration of labor does not bear a direct relation to it. Temperatures of over 100° F. occurred in 23.78% of the primiparæ whose labors exceeded eighteen hours in length, and in 25.07% of those in whom the duration of labor fell within normal limits. On the other hand, such temperatures are much more frequent after primiparous labors than multiparous, and are more common in multiparæ who have gone over twelve hours in labor, occurring in 18.6%, as against 14.17% of those in whom labor terminated within its normal duration. In other words, the length of labor is not necessarily an index of its severity, but the occurrence of eleva-

[1] Quoted by Edgar: *Loc. cit.*

tion of temperature does take place in direct ratio to the severity of the labor, being most frequent in primiparous, next most frequent in prolonged multiparous, and relatively infrequent in short multiparous labors. That there should be any such differences were the temperature due solely to circulatory changes seems illogical; therefore it would seem more probable that this phenomenon is to be explained by exhaustion or some other metabolic disturbance directly dependent upon the severity of the labor.

The behavior of the pulse-rate is, on the whole, a less reliable index of the amount of exhaustion than the temperature, since there are so many factors which affect it — pain, excitement, hemorrhage, ether, etc. The pulse-rate was studied in 1,000 consecutive cases. It fell during the first twelve hours in 64.4%, rose in 19.8% and was found at the same level in 15.8%; 66.15% of the instances of rise in pulse-rate accompanied rises in temperature.

THE SECONDARY EFFECTS OF EXHAUSTION.

It is, of course, difficult in analyzing a large series of cases where individual factors of diverse and multiple character must come into play to lay down inflexible standards of judgment for each separate case. On the other hand, the consideration of certain general aspects of this subject must be of the greatest value. We cannot perhaps determine the exact amount of exhaustion in each single case, but we have three very good general indices of it in the duration and character of the labor, the temperature and the pulse-rate after delivery. For the sake of clearness I have considered each of these separately.

The normal duration of primiparous labor is usually stated to be eighteen hours, and of multiparous, twelve, and I have adopted these limits as the dividing line between normal and prolonged labors. Accepting the standard previously laid down, I found the total morbidity, exclusive of temperatures resulting from mastitis, in the entire 5,000 cases to be 11.06%; in 2,687 primiparæ, 12.23%; and in the 2,313 multiparæ, 9.55%. The reasons for excluding mastitis were, first, that exhaustion could hardly be expected to influence inflammation of the breasts; and, second, that the actual result of the investigation showed that it did not.

	Per Cent.
Total morbidity from mastitis,	2.16
Morbidity in primiparæ with labor of over 18 hours duration,	2.48
Morbidity in primiparæ with labor of under 18 hours duration,	2.85
Morbidity in multiparæ with labor of over 12 hours duration,	1.51
Morbidity in multiparæ with labor of under 12 hours duration,	1.51

The greater frequence of mastitis in primiparæ is not due to the greater severity of labor, but rather to the fact that the breasts are being distended and the ducts dilated for the first time, and the nipples never having been hardened by previous nursing are more likely to become cracked.

To show first the relation of the duration of labor to morbidity during the puerperium, I have prepared the following tables, one showing the total morbidity, the other an analysis of the separate conditions:

PRIMIPARÆ.

			Per Cent.
In labor over 18 hours,	968;	morbidity,	14.46
In labor under 18 hours,	1,719;	morbidity,	11.11

MULTIPARÆ.

In labor over 12 hours,	790;	morbidity,	12.02
In labor under 12 hours,	1,523;	morbidity,	8.33

	PRIMIPARÆ.		MULTIPARÆ.	
	In labor over 18 hr. Per Cent.	In labor under 18 hr. Per Cent.	In labor over 12 hr. Per Cent.	In labor under 12 hr. Per Cent.
Infection,	7.54	6.10	6.07	3.74
Enteric disturbances,	3.40	2.21	2.91	2.36
Mental,	.51	.35	.63	.45
Grippe,	.72	.34	.38	.32
Bronchitis,	.20	.06	....	.32
Tonsillitis,	.20	.35	....	.19
Cystitis,	.20	.35	.38	....
Unexplained,	1.32	1.37	1.59	.78
Miscellaneous,	.31	.17	....	.13

It is apparent that the duration of labor has a distinct effect upon puerperal morbidity. The percentage increases with the duration of labor. This increase, about 4%, is not large, but is, nevertheless, appreciable. It appears not to be the result of an increase in the occurrence of certain special conditions, but to affect evenly all the more common complications of the puerperium.

We have already stated that the temperature is a more reliable index of the patient's condition than the duration of labor. The percentage of morbidity among patients having a temperature of 100° F. or over during the first twelve hours after labor was 19.53%; and of those in whom it reached 101° F. or above in this period, 38.09%; as against 9.13% among those who had no appreciable elevation of temperature. Williams [7] says that he believes a temperature of over 100.4° F. during labor to mean infection of the liquor amnii. This undoubtedly may have been the explanation of some of these cases, but unless the majority of cases of infection were extremely slight and cleared up at once upon evacuation of the uterus, it could not have explained them all. At least, however, such a temperature is a danger signal, and in the absence of good progress should indicate emptying the uterus at once.

The pulse-rate, exclusive of operative cases, where it was largely due to ether, was found at the close of labor to have risen to or above 100° in 943 instances. In 202 of these there was also elevation of temperature to 100° F. or over. The percentage of morbidity where the pulse alone was elevated was 13.49; where both pulse and temperature, 13.86; in each instance slightly higher than the total average morbidity, but showing that the pulse is of far less prognostic value than the temperature.

One more point has seemed worthy of investigation, namely, the relative results of early and

[7] *Loc. cit.*

late interference as regards the smoothness of convalescence. I have classified as high operations all interference at or above the brim, no matter what the presentation or method of delivery. I have also classified manual extraction of the placenta as a high operation, for this should be rightly considered a major obstetric operation. Following the custom at the Lying-In Hospital, which does not recognize the term "intermediate forceps," all cases of interference after the presenting part had passed through the brim have been termed low operations. These were chiefly forceps. The high operations altogether numbered 268; the low, 524; and the spontaneous deliveries, 4,208. The following table shows the percentage of morbidity according to the duration of labor and the method of delivery.

	Primiparæ.		Multiparæ.	
	In labor over 18 hr.	In labor under 18 hr.	In labor over 12 hr.	In labor under 12hr.
High operations,	27.63	25.88	24.59	20.63
Low operations,	16.94	11.47	11.76	5.55
Spontaneous deliveries,	20.88	12.80	14.22	9.41

This table is extremely significant. As would be expected from the character of such cases, the greatest morbidity followed the high operations. Here again, however, it was in direct proportion to the length of time which had elapsed before labor was terminated by interference. This does not mean that one should recklessly interfere too early before the birth canal has had an opportunity to soften up, the cervix to dilate and the child child's head to mold. It does mean that in delayed labors one should operate for the sake of the mother as early as is consistent with the safety of the child. Still more significant is the relative morbidity of spontaneous delivery and low forceps. The consistently and decisively better results of shortening labor by the use of forceps when the head is low are certainly striking. They are undoubtedly due to the lessening of exhaustion from pain and muscular effort.

CONCLUSIONS.

1. A temperature of 100° F. or above occurs at some time during the first twelve hours after delivery in about 20.5% of all cases.

2. The temperature curve during this period in the majority of cases corresponds with the diurnal variation.

3. This elevation of temperature does not necessarily correspond to the duration of labor, but probably does to its severity.

4. The pulse-rate is a less reliable index of exhaustion than the temperature. It most commonly falls during the first twelve hours, a rise in the majority of cases accompanying a corresponding rise of temperature.

5. Puerperal morbidity, with the exception of mastitis, increases in direct proportion to the duration of labor.

6. This increase affects equally all the more common complications of the puerperium.

7. Cases in which there is an elevation of temperature during the first twelve hours after delivery are followed by a higher morbidity than those in which there is not; and when this temperature reaches to 101 or over, the subsequent morbidity is 38.09%.

8. An elevation of pulse at the end of labor is of comparatively slight prognostic importance from this standpoint, but is followed by a slightly increased morbidity.

9. The morbidity is greatest after the high operations, but here, as is also true of the low operations and spontaneous delivery, the morbidity increases in direct proportion to the duration of labor.

10. The morbidity after low forceps is less than after spontaneous delivery, presumably because labor is shortened and exhaustion lessened.

11. From every standpoint from which it has been considered, it is evident that exhaustion during labor has a distinct influence toward increasing puerperal morbidity.

THE VALUE OF TUBERCULIN IN TUBERCULOSIS OF THE URINARY TRACT.*

BY HUGH CABOT, M.D., BOSTON.

The use of tuberculin as a curative agent has been on trial for many years, but its use in lesions of the genito-urinary tract is comparatively recent. This is certainly true of its successful use, and is probably due to the fact that our knowledge of these lesions has increased rapidly of late years and we have, therefore, been able to use tuberculin with better understanding and in more appropriate cases. In general, its use is not to be advised, and little benefit can be expected in the presence of massive tubercular lesions, from which constant reinfection can occur. More recent knowledge has enabled these lesions to be dealt with surgically, leaving only a modicum of the disease in which milder measures may be effective. In our experience the brilliancy of the results has been inversely proportionate to the severity of the disease, and tuberculin has been chiefly valuable in stamping out the secondary processes in the bladder and ureter.

The cases in which we have used it may be divided roughly into two classes:

(1) Those in which the disease has been apparently completely removed, as in unilateral kidney infections without bladder involvement. In these cases its use has resulted in permanent and prompt wound healing, in contrast to cases in which a sinus follows operation, leading either to the stump of the ureter or to the pedicle. While cases of this type usually recover under ordinary methods, it has seemed that tuberculin saves much time and anxiety to the patient.

(2) Those cases in which though the principal focus of the disease has been removed, a certain amount still remains. As types may be taken, the unilateral kidney lesions with bladder involvement and unilateral lesions of the epididymis and vas, with involvement of the prostate. It is this class of cases to which I particularly wish to call

* Read before the New England Urological Society, March 8, 1910.

your attention, as their after-treatment by other methods has, with us at least, been unsatisfactory and we have regarded tuberculin as a distinct addition to our methods of treatment.

In treating cases of the first class we have for the past year been giving tuberculin after the method advised by Trudeau to all cases of nephrectomy or epididymo-vasectomy for tuberculosis, beginning immediately after operation. This has resulted in perfect wound healing and a noticeable absence of troublesome sinuses, which we have so often seen in the past.

TECHNIC.

This is essentially that advised by Trudeau and that which has been used here in the tuberculosis classes at the Massachusetts General Hospital by Dr. John B. Hawes, to whom we are indebted for advice. The preparation used is a bouillon filtrate kindly furnished by Dr. Trudeau. Injections are begun with minimal doses, generally about .005 mgm., a dose so small as not to produce a reaction in these cases. The dose is fairly rapidly increased until 0.1 mgm. is given, the interval between injections at first being three or four days, later about a week. The injections are continued and the dose increased until the patient receives 10 mgm., always provided no reaction occurs. This point is ordinarily reached in about three months, when in cases of the first class the injections are discontinued and the patient discharged. In cases of the second class, the injections are generally continued at a maximum dose until the patient is free from symptoms, or six months have elapsed. Then we have generally discontinued the injections in order to get the benefit of intermittent rather than continuous treatment. In some of the cases with larger doses, reactions both local and general have occurred, but these seem to have done no harm, and in some instances have been followed by distinct benefit.

At present our cases are too few to warrant detailed conclusions, but in all there has been some relief of the symptoms, and in many the relief has been very marked.

The following are histories of three cases of somewhat different types, but all belonging to the second class:

Mrs. E. A. E., thirty-five. In 1905 began to have painful and frequent micturition. In August was laid up in a hospital in Montreal on account of her bladder. In October, 1906, came under the care of Dr. F. S. Watson, who found a suppurating left kidney. Her condition was so poor as to permit only a nephrotomy which showed the process to be tubercular. During the next year she improved considerably and in October, 1907, cystoscopy showed ulceration about the left ureter, and catheterization of the right ureter showed a normal kidney on that side. In November, 1907, the remains of the left kidney were removed by Dr. Watson. During the subsequent two years the patient's general condition improved, but the bladder remained very irritable in spite of various forms of local treatment. In May, 1909, at the request of Dr. Watson, she was started on tuberculin. The symptoms showed prompt improvement to an amount which had been unattainable by other methods. The tuberculin has been continued somewhat intermitttently to the present time. She is now fairly comfortable except that the bladder capacity is still small. Though far from well, she is much improved.

Miss B. E. P., twenty-two. Seen Dec. 1, 1908. Patient of Dr. M. H. Richardson. About five years ago began to have frequency of micturition. This has slowly increased until during the last six months it has become intolerable. Cystoscopy shows bladder contracted to 3½ oz. Left ureteral orifice dilated, but kidney doing good work. Right kidney practically doing no work. Dec. 10: The right kidney was removed and found entirely destroyed. The left kidney was explored and appeared substantially normal, though considerably enlarged, and with a much dilated ureter, the cause of which I am unable to explain. Patient improved markedly after operation, but considerable bladder irritability remained. In October, 1909, she was started on tuberculin. The pain and frequency promptly disappeared, the bladder capacity increased from 7 to 14 oz. and the urine improved very much. Tuberculin was continued until January, 1910; since that time she has remained in a comfortable condition and there seems to be no indication for treatment.

Mr. A. H. Y., forty-two. In January, 1908, began to have frequency of urination without obvious cause. In June, 1908, left epididymis became swollen and tender. He was more or less confined to the house for the next three months. Bladder irritability very variable. First seen April, 1909, on account of persistently cloudy urine. The left epididymis was enlarged, hard and nodular. The vas was thickened as far as the external ring. Prostate not apparently abnormal, though probably involved. The left epididymis and vas as far as the brim of the pelvis were removed. Tuberculin was begun in the latter part of May, 1909. The wounds healed promptly and have given no further trouble. The urine promptly cleared up, the frequency of urination practically became normal, though he has continued to have recurrent attacks of frequency, with a little pus in the urine. He is still under observation and on treatment with tuberculin. His general condition is excellent. There has been no further involvement of the prostate or the other epididymis, but there is still evidently some disease in the prostate, as from time to time he has frequent urination.

BACTERIAL VACCINES IN PYOGENIC INFECTIONS OF THE URINARY TRACT.*

BY H. P. HASTWELL, M.D.

THE report which I have the pleasure to present to-night is based on the results obtained in the use of bacterial vaccines in twenty-five cases of infections of the urinary tract treated at the Massachusetts General Hospital. As the colon bacillus has been the micro-organism present in almost all of them, I shall speak only of the vaccines of this bacillus, although the few cases where other pyogenic bacteria have been found, for the most part streptococci and staphylococci, have shown the same outcome under treatment with their autogenous vaccines, and the observations in regard to colon vaccines may, therefore, be applied to those of other pyogens as well. The presence of tubercle bacilli has been excluded in all by the injection of sediment into guinea-pigs.

In those cases of colon infection which com-

* Read by invitation before New England Urological Society, March 8, 1910.

monly occur in females, more especially in young girls, where the anatomical lesion seems to be a pyelitis or a pyonephritis, the treatment with vaccines in our hands has been completely unavailing. In their chronicity these cases may be compared to typhoid carriers, for in some the infection has been followed for several years. At irregular intervals they suffered acute attacks of lumbar pain, with chills, fever and frequently bladder irritation. When these acute symptoms subsided, they would be subjectively well, passing cloudy urine with pus and colon bacilli. X-ray for stone was always negative, and the cystoscope showed mild cystitis which was most marked about the ureter of the affected side. Bacterial vaccines had no effect in preventing acute exacerbations nor in lessening the amount of pus or bacilluria. Treatment was continued in all for six months, and in some for a year, with every variation in dosage and in the spacing of inoculations that seemed worthy of trial. In order to make more clear the obstinacy and the fruitless results of treatment in these cases of bacilluria, I should like to cite briefly the following history:

A Jewess, twenty-one years old, was admitted to the wards June 2, 1908. She had been married two weeks before, and a few days after had painful and frequent micturition with burning. These symptoms soon subsided, and a week later she had severe pain along the right costal margin and in the right loin. There were chills with fever and a high pulse, tenderness and rigidity in the right upper quadrant, and tenderness at the right costo-vertebral angle. Urine cloudy, albumen slightest possible trace, sediment, many pus cells, few red and squamous cells, no casts. Culture, profuse growth colon bacilli. At operation the right kidney was exposed, the surface found studded with small abscesses, and the capsule was split. Culture from surface of kidney showed colon bacilli. July 13 she was seen in the Out-Patient Department complaining of pain in the right side, with frequency and painful micturition. The right kidney was enlarged and tender. Several x-ray plates were negative. Cystoscopic examination by Dr. Lincoln Davis showed normal bladder with normal ureters. Indigo-carmine test slightly delayed action in discharge of pigment from right ureter. A few cubic centimeters of urine collected from each kidney by ureteral catheter showed colon bacilli in both. Treatment with an autogenous vaccine was begun and was continued till the middle of May, 1909, without any improvement in the symptoms nor in the condition of the urine. While under vaccine treatment she had several attacks of severe pain in the right side, with chills and fever, which forced her to bed. In November, 1908, an abortion was done when she was two months pregnant, as it was thought that it was not safe to let her go to full term. In December, 1909, she had a normal labor at the Boston Lying-In Hospital, and during the puerperium an attack of pain in the right side with rise in temperature lasting twenty-four hours. When last seen, on Jan. 3 of this year, her symptoms were unrelieved. The urine showed 1-10% of albumen, with pus and many small round cells single and in clumps, numerous hyaline and granular casts. Culture profuse growth colon bacilli.

In the acute and the subacute infections of the kidney pelvis, bacterial vaccines seem to offer promising results, but we venture this statement with reserve, as our cases have been too few to make any definite assertion. As an example, I would like to give the following history:

A woman thirty-five years, admitted to the wards April 6, 1908, giving a history of severe bladder pain with hematuria coming on suddenly ten days before. A few days later pain was felt in the right kidney region and soon after in the left. Temperature, 103.6; pulse, 90. Examination showed rigidity in both upper quadrants and tenderness in the flanks over both kidneys. Cystoscopic examination by Dr. Davis showed bladder reddened and injected, with ulcerations. Pus from left ureter. Indigo-carmine test showed delayed action on both sides, especially on left. Urine, acid, 1012; albumen slight trace, sediment, pus, squamous and round cells, no casts. Culture, profuse growth B. coli. She was treated in bed with bladder irrigations and given urotropin. The temperature fell to normal. April 13, vaccines were started. April 19, an improvement in her general condition was noted. Her pain was much less and there was less sediment in the urine. May 14, she was discharged to the Out-Patient, where vaccine treatment was continued. Culture of urine showed a slight growth of B. coli. June 3, complained of slight pain in left kidney region, but examination showed no tenderness nor rigidity. Cystoscopic examination: Bladder normal, slight edema about ureteral orifices, which are otherwise normal and functionate normally. Urine clear, culture showed no growth. We were unable to trace this patient after her discharge, so we cannot state the permanency of the result.

One case in this series had an irritable bladder from an infected ureter stump left after nephrectomy for chronic pyelitis. Treatment with bladder irrigations and urotropin was without influence on his condition, but he has shown marked and continued improvement with vaccines.

In all cases of nephrotomy with drainage of large pus sacs, vaccines produced no impression on the local suppuration and had no influence in diminishing the septic absorption.

The milder cases of bladder infections have responded well to treatment with bacterial vaccine. Some who had first received urinary antiseptics and irrigation were afterwards given vaccine treatment alone, and their improvement seemed more striking and rapid with vaccines. After the first few inoculations, the irritation, frequency and pain were lessened and diminished steadily as treatment progressed. The condition of the urine showed a corresponding but slower improvement. The bacilluria, as in the kidney infections, was very obstinate. In a few of the bladder cases, a bacteria-free urine was obtained after a prolonged treatment, but usually this was accomplished only in conjunction with a urinary antiseptic. In all of them where the urine was examined four to six months after they had been discharged bacteria-free, a slight bacilluria was again found, although they were symptomatically well.

In the severe case of cystitis, where there were marked changes in the bladder wall and mucosa, vaccines did not appear to have any effect.

From an experience with this small number of cases of urinary infections, I should say that vaccines were indicated in acute pyelitis which

does not respond well to ordinary measures. They will probably furnish us a means of attacking post-operative foci, such as an infected ureter stump, which are difficult otherwise to clear up. In cystitis, in a limited number of cases, they offer a less troublesome, possibly a more rapid, therapy than that by irrigations and urinary antiseptics.

Clinical Department.

PERSISTENT VOMITING OF PREGNANCY.

BY F. W. JOHNSON, M.D.,

Gynecologist-in-Chief, Carney Hospital.

DECEMBER, 1907, Mrs. A. H. entered the Carney Hospital two months pregnant. She had been vomiting pretty constantly for the three weeks previous to entering. At the time of entrance there was constant nausea, with inability to keep anything in the stomach. There was an appetite. The bowels were constipated. Water and all nourishment was stopped by the mouth. Every two hours a minim of iodine and creosote in ten minims of water were dropped on the tongue. In two days vomiting had ceased entirely and nourishment was begun by the mouth. There was no more vomiting and she went without further trouble to full term.

April, 1910, she again entered the hospital three months pregnant. For ten days there had been constant nausea and inability to retain anything in the stomach. Water and all nourishment was stopped by the mouth. Oxalate of cerium was tried with no good result; then 5 gr. of Burrough's Welcome & Co.'s thyroid extract was tried by the mouth every eight hours with little improvement. The extract seemed to cause nausea. Five gr. of the extract were then given subcutaneously every eight hours with immediate relief.

Medical Progress.

REPORT ON PROGRESS IN OTOLOGY.*

BY HARRIS PEYTON MOSHER, M.D., BOSTON.

(Continued from No. 11, p. 440.)

INTRACRANIAL COMPLICATIONS OF OTITIS MEDIA.

THE symptoms and treatment of brain abscess are given. In serous meningitis, which McKernon[6] says is not an infrequent complication of extensive mastoid or sinus disease, lumbar puncture is given as an important aid in both diagnosis and treatment. In purulent leptomeningitis, early operation and drainage are the most hopeful measures. Cushing's suggestion of the use of urotropin to render sterile the micro-organisms is emphasized.

CEREBRAL ABSCESS.

Taylor[7] discusses cerebral and cerebellar abscesses and particularly makes the point that, in these days of diagnostic lumbar puncture, great caution must be displayed in using it, in the presence of cerebral or cerebellar abscess, lest the altered conditions of tension lead to rupture of the abscess into the membranes.

OTITIC BRAIN ABSCESS.

Sachs and Berg[8] discuss in this article the difficulties of brain abscess with special reference to drainage. Localization is most common in the temporosphenoidal lobes or in the cerebellum. If in the former, there will be, in addition to general symptoms, headache, somnolence, nausea and vomiting and slight optic neuritis, some hemiparesis and impairment of speeech perception. Sensory aphasia is a common accompaniment of otitic brain abscess in the temporosphenoidal lobes. Right temporosphenoidal abscess is sometimes associated with dysarthria, not with sensory aphasia. Abscess in the cerebellum, in addition to general abscess symptoms, may show cerebellar ataxia, diminution or increase of deep reflexes, abducens paresis, acoustic nerve symptoms and possibly cerebellar seizures. The motor area is rarely the seat of otitic brain abscess, wherefore the author's second case reported in this article is important because it proves that an undoubted otitic abscess may involve the motor area. The three main considerations from a surgical standpoint are: (1) A wide exposure of the area of the brain in which the abscess is supposed to lie. This is best done by raising an osteoplastic flap. (2) A most important consideration is the protection of the meninges against infection by the purulent contents of the abscess cavity. If this lies near to the cortex of the brain, or on it, it is more than likley that the meninges will be protected from infection by a barrier of natural adhesions that have formed before the operation is done. These are the most favorable cases for surgical interference. (3) Proper drainage of the abscess cavity. Here we must remember that there are two entirely different kinds of abscess cavities in the brain — one with soft walls that readily collapse when the contained pus is evacuated, and the other with rigid walls that show no tendency to fall together and that must be obliterated by the slow process of granulation. In the former, all that is required is the establishment of drainage by a thin slip of rubber tissue at the most dependent point of the cavity. In the latter, the drainage must be by a tube of some kind, whether rubber, decalcified bone or other material, according to the choice of the operator. This tube must be inserted at the lowest point of the abscess cavity, otherwise there is bound to be retention of pus.

CEREBRAL SURGERY.[9]

The special points of technic on which he lays stress are, first, the anesthesia, with the complete shutting off of the anesthetist from the operative field, which he accomplishes by means of an arrangement of the operative sheets that completely cuts off the anesthetist. He secures

* In compiling this Report on Progress in Otology for the last year the reviewer has made extended use of the *Index Medicus;* of nose, throat and ear literature compiled and published by the editor of the *Laryngoscope* in the issue of March, 1910. The reviewer wishes to thank Dr. Goldstein for his admirable and most useful publication.

[6] J. F. McKernon: Jour. Am. Med. Asso., Jan. 9, 1909.

[7] W. Taylor: Med. Press and Circ., Jan. 20, 1909.

[8] B. Sachs and A. A. Berg: Med. Rec., Jan. 23, 1909.

[9] H. Cushing: Jour. Am. Med. Asso., Jan. 16, 1909.

free respiration in the prone position by a special form of outrigger to the operative table. The continuous auscultation by the anesthetist of the cardiac and respiratory action is also provided for by a phonendoscope attached to the patient's chest by adhesive strips and connected with the anesthetist's ear by a device like the head gear of a telephone operator. This he considers especially important. The next thing mentioned is the subtemporal decompression trepanation as an early measure in case of possible brain tumor that cannot be exactly localized. This is performed in a safe area and is often of itself sufficient to relieve symptoms. If localizing signs appear later, the removal operation can be performed. While in tumors above the cerebellum lumbar drainage is invaluable, Cushing calls particular attention to the dangers of lumbar puncture in cases of subtentorial tumors, from forcing down the brain substance into the spinal canal. The possibility of an unsuspected cerebellar growth, he thinks, should always be kept in mind, and the puncture not made unless the dura is exposed and ready for immediate opening in case medullary symptoms supervene. This leads him to speak of the value of a bilateral opening with wide exposure in other cases of growths difficult of access, which is also useful in preventing compression or mutilation of cerebral tissue in operation. In the older high operations for removal of Gasserian ganglion, there was also much of compression and contusion of the temporal lobe, although no tumor was already compressing the brain, and Cushing gives special cautions for this procedure. He is able to report seventy-four operations with only two deaths, and he prefers the simple evulsion from the pons of the sensory root alone, leaving the ganglion in its bed with a half-inch gap between its hinder border and the original pontine attachment, a gap he thinks not likely to be bridged, even admitting the possibility of a central regeneration.

CRANIAL TECHNIC.

Dr. Hartley[10] enumerates the following as the prime requisites for avoiding the dangers of shock and sepsis in operations on the brain: (1) Instruments which will open the skull quickly over any desired area and to any extent. These are the motor, saw and guard, osteotome, drill, fraise and measure. (2) A method of cranio-cerebral topography permitting an accurate exposure of the desired area. Chipault's is the best method, as it is adapted to the skull of all ages, races or individual peculiarities. (3) Osteoplastic flaps cut so that they will expose the desired area in the easiest manner. (4) The replacing of the bone flap in every possible case, or covering the defect with an accurately fitting foreign material (celluloid or aluminum). He prefers autoplasty when possible. (5) The most perfect hemostasis in the preliminary as well as in the final steps of the operation. The operation he divides into two steps, the first concerned only with the skull, the final with the dura and brain. All drugs should be given up several days before operating, and a record of pulse-rate and blood pressure should be taken twenty-four hours before operation. The patient's head is raised on the table between 15 and 30°, which Hartley has found sufficient to stop venous bleeding and lower arterial pressure. He has not been able to compare the effects of Crile's rubber suit and carotid compression or of Dawbarn's sequestration-anemia with this, but if they will improve the arterial pressure better than elevation and with no greater danger of inducing sudden syncope, he willl certainly use them. During the operation he would have the blood pressure recorded by the anesthetist by a sphygmomanometer on the arm, as a sudden fall will warn the operator of any impending sudden collapse and will probably enable us to avoid the 25% of sudden deaths following prolonged operation. The details of the operation are given and the necessity of careful hemostasis during the second stage emphasized, as well as the importance of avoiding infection of the lateral ventricles. Possible later complications are: (1) Shock, in prolonged operations with hemorrhage or after large tumors have been removed and the cerebral statics disturbed by the space left. In such case the acute cerebral edema of Von Bergmann occurs. To avoid this Hartley tampons and gives counter pressure through the flap. (2) Hyperpyrexia: This occurs after both severe and moderate handling of the brain, especially if the ventricles have been opened, and is due to toxicity of the neoplasm secretion, infection, or irritation of thermic centers in the bulb. (3) Encephalomeningitis may be due to injury or to infection from the patient's blood or without. It usually appears during the first month after operation, coming on slowly, with localized convulsions, contractures, paralysis, somnolence, mental torpor or delirium. (4) Hernia may be present at the time of operation as a tumor of the base or as a voluminous tumor of the centrum ovale, or at a later period in the form of encephalitis.

[10] F. Hartley: Jour. Am. Med. Asso., Jan. 9, 1909.

THE PHYSIOLOGY AND PSYCHOLOGY OF HEARING, WITH SPECIAL REFERENCE TO DEVELOPMENT OF SPEECH.[11]

How are sound waves transmitted from the labyrinthine fluid to the auditory nerve, and what particular changes take place in them during this transmission? Helmholtz was the first to offer any definite solution to these problems, and for many years his resonance or piano-string theory was accepted as being the most satisfactory. At first he thought that the rods of Corti respond to different notes, as do the strings of a piano, but when it was shown that some animals have no rods, he transferred this function to the fibers of the basilar membrane. It was supposed that this membrane, because of its position and peculiar

[11] G. Hudson-Makuen: Laryngoscope, vol. xx, no. 6, p. 612, June, 910.

structure, served the purpose of receiving the sound waves, selecting them according to their adaptation to its transverse fibers, which increase in length from the base of the cochlea to its apex; that the high tones were perceived by the shorter fibers at the base and the lower ones by the correspondingly longer ones towards the apex, and that the responsive vibrations were taken up by the hair cells resting upon the membrane, where they were changed into impulses suitable for conduction by the auditory nerve to the hearing center of the brain.

This was an ingenious theory, but it has not stood the test of time, for neither in its structure nor in its size has the basilar membrane been found to meet the requirements which Helmholtz imposed upon it. The transverse fibers are not sufficiently numerous to produce the range of pitch that the human ear is capable of perceiving, and their disposition in relation to the longitudinal fibers and various blood vessels makes it physically impossible for them to vibrate after the manner of piano strings. Moreover, it has been found that the membrane does not extend to the lowermost part of the cochlea and that the hair cells in this region do not come in contact with it, and, therefore, cannot transmit its vibrations to the neuro-epithelial cells, where they are supposed to be transformed into nerve impulses.

This latter objection to the piano-string theory seems also to be opposed to the so-called telephone theory, which regards the basilar membrane as a kind of second drum membrane between which and the tectorial membrane the so-called "pressure patterns" are made which impart their vibratory motions to the hair cells. This theory supposes that the analysis of tone or the perception of pitch takes place in the cerebral cortex, while the piano-string theory locates this function in the cochlea.

In addition to the anatomical objections to the two basilar membrane theories which have mentioned, there seems to be good phylogenetic, ontogenetic and histological reasons for the entire abandonment of this membrane as a conspicuous factor in the transmission and perception of tone and for the substitution of the tectorial membrane in its stead. On account of the extreme delicacy of the tectorial membrane, however, the difficulties of demonstrating absolutely the exact manner in which it performs this function are almost insurmountable, and we can only say that it appears in all respects to be better adapted to the functions which have been described.

AURAL COMPLICATIONS IN THE EXANTHEMATA.

The author [12] concludes his paper as follows: In scarlet fever, children are quite liable to middle-ear inflammation which may or may not involve the mastoid cells. Adults are much less so, and rarely have mastoiditis. In measles, both adults and children are very susceptible to middle-ear involvements, and adults are especially in danger of mastoiditis. In cases where a tremendous aural discharge is present for more than two or three weeks, the mastoid operation should be seriously considered as a means of providing drainage, since it is more efficient than a small pin-hole perforation in the delicate membrana tympani. Occasionally a case will arise in which the diagnosis may be difficult. If after carefully ruling out every other possible cause by exclusion, the mastoid remains in doubt, and the symptoms of the patient are at all serious, it is better to operate. The danger is greater from waiting. If after the acute symptoms of scarlet fever and measles have subsided, pus in the middle ear is kept active by profuse nasal or nasopharyngeal discharges, the physician should examine the patient for adenoids. If these growths are present, they should be removed. This procedure in the course of diphtheria, however, is questionable.

[12] C. R. C. Borden: Ann. Otol., Rhinol. and Laryngol., September, 1909.

STUDY OF THE EUSTACHIAN TUBE IN ITS RELATION TO THE RADICAL MASTOID OPERATION.

Oppenheimer [13] states that, in order to remove all sources of infection in the radical mastoid operation, the tympanic end of the Eustachian tube should be made surgically clean by causing its obliteration. This may be done at the time of the operation or during the after-treatment. When curetting the tube during the operation, small oval or round curettes should be used, so that they can pass into the mouth of the tube. As far as possible all diseased bone and diseased mucous membrane should be removed. Great care, however, should be exercised in doing this in the region of the carotid canal as dehiscences may be present and the artery injured seriously. If skin grafting be employed at the radical operation, the epidermis should be forced well into the tube so that the parts of the tube which have been deprived of their mucous membrane by the curetting will be thoroughly covered.

PURULENT DISEASES OF THE EUSTACHIAN TUBE.

The author [14] concludes as follows: Those cases of middle-ear suppuration in which the perforation is situated in the anterior inferior part of the drum membrane, and which have been considered to be due to disease situated around the tympanic orifice of the tube, or to nasopharyngeal disease, are in reality due to suppuration of the tube itself and should be called "tuborrhea." This condition is characterized by a wide open tube, due to relaxation. Such cases should be treated by irrigation of the tube through the Eustachian catheter. The relaxed tube is treated by passing a roughened bougie through it and by massaging it. Reinfection is apt to occur, but it responds readily to a repetition of the treatment.

THE ISTHMUS OF THE EUSTACHIAN TUBE. A CONTRIBUTION TO THE PATHOLOGY AND TREATMENT OF MIDDLE EAR DISEASES.

Yankauer,[15] in an exhaustive article on the isthmus of the Eustachian tube, makes the follow-

[13] S. Oppenheimer: Med. Rec., Dec. 25, 1909.
[14] E. Urbantschitsch: Monatsschr. für Ohrenh., vol. xliii, heft. 7, 1909.
[15] Sidney Yankauer, M.D., New York: Laryngoscope, July, 1910, pp. 675–718.

ing points: The pharyngeal portion of the Eustachian tube is homologous with the nasopharynx and must be considered a part of it. The tympanic portion of the tube is homologous with the tympanic cavity, and it should be regarded as a part of it. The portion of the Eustachian tube previously known as the bony portion could be called appropriately the pretympanum. The most important part of the tube is the isthmus. This may be reached for diagnostic or operative purposes first from the pharyngeal side through the Eustachian catheter and, second, through the external auditory canal through an incision made for this purpose in the anterior inferior part of the drum membrane or through a perforation previously existing as a result of disease.

After making these statements Yankauer describes the method of reaching the Eustachian tube through the catheter and describes and figures his applicators and sounds. By means of an applicator he applies cocaine and adrenalin to the tube and then dilates with bougies if a stricture is present, or, if acute or subacute inflammation of the mucous membrane exists, applies argyrol in solutions as high as 50%. In acute inflammation of the middle ear he has opened up the Eustachian tube in this manner and medicated it and feels that he has aborted a certain number of cases of impending suppuration. Following this procedure he states that there is immediate cessation of the throbbing earache and tinnitus. If the inflammation be of a mild degree, or if the case is seen in its earliest stages, before redness and bulging of the drum membrane are present, the relief obtained will be permanent and the disease will be brought to an immediate and abrupt termination, often by one application. In the terminal stages of acute otitis media, when the discharge has ceased and the perforation has closed, but when deafness, tinnitus and fullness in the ears persist, the use of intratubal applications of argyrol yield prompt and definite results. In subacute inflammation of the middle ear, especially those cases characterized by serous or seromucous fluid in the tympanic cavity, cases which have hitherto been found to be obstinate under the usual methods of treatment, the application of argyrol has been found to be very efficacious. The writer has devised a routine plan of treatment of the isthmus of the tube, which may be summed up as follows: (1) The application of cocaine and adrenalin solution to the region just beyond the isthmus. (2) The passage of the largest possible sound and its retention for five or ten minutes. (3) The application of a 50% solution of argyrol to the region beyond the isthmus. (4) The inflation and deflation of the middle ear.

Feeling that strictures of the Eustachian tube could be dealt with best through the external auditory canal, and arguing from the fact that when the radical mastoid operation fails to cure suppuration the fault usually lies in a failure to close the Eustachian tube, Yankauer proceeded to close the tube at the isthmus in a number of cases of chronic suppurarion of the middle ear. Some of the cases had been advised to have the radical operation performed, but had refused. In these cases there was no operative middle-ear treatment beyond the removal of polyps, so that the procedure of closing off the Eustachian tube at the isthmus could be more easily carried out. Some 21 cases were operated upon, and of these 13 were cured. Of these, 12 were examined a month before the paper was written and were found to have remained well, 2 for three months, 1 for seven months, and the rest for one to two years. In many cases of chronic middle-ear suppuration, therefore, Yankauer believes that the tube is a more important factor in keeping up chronic middle-ear suppuration than necrosis of the ossicles or even disease of the mastoid antrum. His recorded cases certainly seem to bear out his view, and it is to be hoped that his results will be substantiated immediately by other observers.

Yankauer closes the Eustachian tube by working through the external auditory canal. By experimental work upon the cadaver he has devised appropriate instruments for the procedure.

The paper ends with a striking observation. After closure of the Eustachian tube at the isthmus, Yankauer found that existing perforations in the drum not only failed to heal, but actually grew larger. With this observation in mind he operated upon several cases of otosclerosis, hoping that by letting more sound waves in upon the stapes the hearing would improve. This he found to be true. The new point in his cases, however, was the fact that the perforations made in the drum did not close as they invariably did in the older experiments of a similar nature, but they remained open. This is an observation the clinical importance of which is very considerable.

(*To be continued.*)

Reports of Societies.

THE AMERICAN DERMATOLOGICAL ASSOCIATION.

THIRTY-FOURTH ANNUAL MEETING, HELD AT THE ARLINGTON HOTEL, WASHINGTON, D. C., MAY 3, 4 AND 5, 1910.

FIRST DAY, TUESDAY, MAY 3.

(Concluded from No. 11, p. 444.)

MYCOSIS FUNGOIDES, WITH REPORT OF A CASE.

DR. LUCIUS C. PARDEE and DR. ROBERT F. ZEIT, of Chicago. In summing up the various features presented in this report, the authors said there could scarcely be any doubt that the case was clinically one of mycosis fungoides. All the classical features of this disease, as described by numerous observers, were present. The premycotic or prefungoid stage was marked and extended over a known period of at least two years. The lesions at that time were typical of the well-known erythematous form and were accompanied by the usual intense pruritus. These were followed in the course of time by the formation of fungoid tumor masses on various portions of the body which macroscopically had the aspect ordinarily described as that of small round-

celled sarcomata and which underwent the usual course of development, with occasional retrogressions. The blood findings were those of progressive anemia until toward the end of life, when the characteristics of a lymphatic leukemia were rapidly added and dissolution followed. The autopsy developed the findings of lymphatic leukemia, plus the gross aspect of mycosis fungoides.

DR. JAMES NEVINS HYDE, of Chicago, said the post-mortem findings in the case reported by Drs. Pardee and Zeit were quite unusual and had set a new record in connection with mycosis fungoides.

DR. A. RAVOGLI, of Cincinnati, said it seemed that this disease had different ways of appearing, and also varied in its course. In some instances it was of a sarcomatous nature from the outset, while at other times the eczematous premycotic condition existed for a long period before the appearance of the tumors.

DR. H. W. STELWAGON, of Philadelphia, said these peculiar sarcomatoid cases could be divided into three general groups: First, we had the frank generalized sarcomatosis, under which Kaposi placed all these groups: then we had the cases of leukemia and pseudo-leukemia with cutaneous symptoms, to which the one reported in Dr. Pardee's paper seemed to be closely allied; and, third, we had the cases of granuloma fungoides. The last certainly had seemed distinct from any leukemic process.

DR. WILLIAM A. PUSEY, of Chicago, thought this case apparently belonged to the type that we classified as mycosis fungoides. Furthermore, it showed a definite connection between mycosis fungoides and leukemia.

DR. PARDEE, in closing, said that, as far as the internal findings of mycosis fungoides were concerned, it seemed to him that this phase of the subject had not been thoroughly looked into in many of the cases that were on record; otherwise, perhaps, the association of the skin lesions with changes in the internal organs would have been more frequently found.

FIBROMA MOLLUSCUM, OR UNIVERSAL NEURO-FIBROMATOSIS.

DR. A. RAVOGLI, of Cincinnati, detailed a case of this kind which was reported on account of its relative rarity. The affection seemed to be a congenital one. The mollusca ranged in size from that of a pinhead to a hazel nut and were scattered over the entire body. The lesions showed no relation to the lines of the skin, nor to the underlying nervous ramifications. The tumors had their origin in a deep subcutaneous nodule. After reaching their full development, they underwent degeneration, gradually disappearing and leaving a pigmented spot. It was apparently a disease of the nervous system, involving the terminal filaments of the cutaneous nerves.

DR. WILLIAM S. GOTTHEIL, of New York, said that while neurofibromatosis was a well-sounding name, the question was whether it was appropriate. In the cases that he had seen and examined, in the small tumors they found something which they could not demonstrate as anything but pure fibroma, without any connection with the nerve sheaths. In the larger growths there was myxedematous degeneration. In none of his cases did they find any distinct connection with the sheaths of the nerves, and there were no nerve fibers in the tumors.

DR. LOUIS A. DUHRING, of Philadelphia, said that in this disease, as in mycosis fungoides, we had several varieties and aberrant types. In the so-called Recklinghausen's disease the pigmentation was marked, and it was in this degree of pigmentation that they chiefly differed from the other types so familiar to observers. The majority of these cases might be classed under the head of simple fibroma molluscum, and thus differentiated from neurofibromatosis. In the average case of the former there were no subjective symptoms, and in the course of the disease there might in time be retrogressions or other changes.

DR. RAVOGLI, in closing, said that most of the writers on this subject did not make much distinction between fibroma molluscum and neurofibromatosis. In his own case, the lesions had their origin from a deep, subcutaneous nodule, developing into peculiar growths which were composed of connective tissue fibers, and for that reason he called them fibromata. He had made careful and repeated search for the nerve fibers without finding them.

EXPOSURE TO THE SUN AS AN ETIOLOGICAL FACTOR IN ALOPECIA.

DR. GEORGE F. HARDING, of Boston, said that his deductions from the observations of 312 cases of alopecia in young people between the ages of twelve and twenty years would indicate that exposure to the sun was harmful rather than beneficial to the hair and scalp. These patients were seen in private practice during the past four years, and all of them had been for a year or more going in the open without head covering. The exposure in the majority of the cases occurred in the summer. Over two hundred spent their summers at the seashore, and in these the symptoms were the most pronounced. A large proportion (293) were blondes; this might have been merely a coincidence. On the other hand, it might be accounted for under the old theory that persons and animals with dark hair and skin were less sensitive to the sun's rays than blondes. The fact that light hair was, as a rule, much finer and delicate than dark might also be taken into consideration. The symptoms in these cases were quite constant, but varied in degree with the amount of exposure which had been undergone, and somewhat with the individual. The hair was dry, lusterless and faded; there was an evident lack of sebaceous secretion, with itching. The alopecia, as a rule, showed itself in those cases of but one season's exposure about a month or six weeks after the return to the city, and responded quite readily to treatment. In those who had had several seasons of exposure without intervening treatment, the fall had been continuous, and baldness was often marked. Those cases did not respond well to treatment, and the prognosis was decidedly unfavorable for a good growth of hair.

DR. WILLIAM A. PUSEY, of Chicago, said that several years ago, reasoning from the analogy of the x-ray, he was led to question the wisdom of exposing the tender and sparse scalps of many people to sunlight. The analogy was very close between the highly actinic rays of the sun and x-rays, and there was no doubt that we could produce baldness by the latter.

DR. JAMES NEVINS HYDE, of Chicago, said we knew that the x-ray and electricity might prove to be either most damaging or most beneficent agents. It depended largely on the dosage, and in the matter of the effect of sunlight in producing either hirsuties or alopecia, probably the racial element had much to do with it.

DR. JAY FRANK SCHAMBERG, of Philadelphia, speaking of the superior hair growth of negroes living under primitive conditions, said the fact must be borne in mind that there were other factors besides light which influenced their hair vitality. Indoor life, excessive eating, complex social burdens and mental activity all tended to lessen tissue vitality, and these factors were absent in negroes, Esquimaux and Indians living under primeval conditions.

DR. LOUIS A. DUHRING, of Philadelphia, thought

this was an opportune time for the profession to direct attention to the injurious effect of long-continued sunlight upon the scalp and hair, with the hope that fewer young people would unnecessarily expose themselves in this way.

General Discussion on Vaccine Therapy.

VACCINE THERAPY AS APPLIED TO CUTANEOUS DISEASES.

Dr. T. Caspar Gilchrist, of Baltimore, opened the discussion with a paper on this subject, in which he confined himself to the results of his own experience with the use of vaccines in the treatment of cutaneous diseases at the Johns Hopkins Dispensary and in private practice during the last three and one-half years. Over three hundred cases had been treated. As far as vaccine therapy was concerned in the treatment of cutaneous affections, Dr. Gilchrist said his experience might be summarized as follows: He had found it to be a distinctly valuable adjunct to our therapeutics. The staphylococcus albus vaccine was of undoubted value in the treatment of all pustular affections of the skin, but especially, in his experience, in the treatment of relapsing furunculosis, staphylococcic dermatitis, sycosis non-parasitica, in certain forms of eczema, in pustular rosacea and in acne when the disease was largely secondarily infected with the staphylococcus albus. He had also found the vaccines to be of value in the treatment of erythema multiforme, especially of the relapsing bullous type, and in rosacea where the flushings were decreased by the vaccine therapy. It was also helpful in dermatitis herpetiformis and pityriasis rosea, so much so that he would recommend vaccine therapy to be tried when the disease did not yield to the usual method of treatment. Bacillus acne vaccine he had found to be of great value, especially in the treatment of those chronic nodular relapsing types of acne vulgaris, and it had proved to be in his hands in a great many cases a curative agent.

BACTERIOTHERAPY IN CERTAIN DISEASES OF THE SKIN.

Dr. Martin F. Engman, of St. Louis, discussed this phase of the subject, and presented the following conclusions: (1) The dose of all forms of vaccines should be at first small. Doses of bacterial suspensions were, of course, approximate. (2) Small, continuous doses were best. (3) Increasing the dose was frequently risky. (4) Stock suspensions they had found very reliable and could be used in most instances. (5) Autogenous vaccines were indicated when stock suspensions failed. (6) Clinical indications alone had guided them in their latest and best results. (7) The opsonic index had proved to be unreliable and impracticable, and was not necessary. (8) The failure to obtain results in vaccine therapy might be due to faulty technic. (9) Vaccine therapy would fail in a certain percentage of cases. (10) Vaccine therapy was indicated in diseases of the skin due to a specific micro-organism. (11) In vaccine therapy we had at last a reliable beneficial agent in combating the deeper and more virulent staphylococcic infections of the skin.

VACCINE THERAPY IN THE TREATMENT OF DISEASES OF THE SKIN AT THE MASSACHUSETTS GENERAL HOSPITAL.

By Drs. Harvey P. Towle and George P. Lingenfelter, of Boston. The authors stated that before any new method in medicine or surgery could attain an assured position, it must have passed successfully through an evolutionary period of longer or shorter duration. But a small percentage survived the ordeal, and almost none could pass through unchanged, and this, it seemed, would be the case with the theory of vaccine therapy. It would undoubtedly survive, but it had already undergone very considerable modifications. The great mass of data resulting from the indiscriminate experiments during the first stage of enthusiasm was now sifted, and it began to be realized that the method had decided limitations and was by no means suitable for every case. This was the first step toward a fuller understanding. The cases to be treated by vaccines were now selected with greater care, and the authors felt justified in assuming that while vaccine therapy was undoubtedly a step in the right direction, the results obtained, considered as a whole and from all points of view, were not sufficiently superior to recommend the complete abandonment of the older, well-tried methods. The results seemed to show rather that we should avail ourselves of this new therapeutic agent as a powerful adjuvant to other methods rather than as a specific. It might be that in the future our knowledge of the exact meaning of the vaccine action would be sufficiently enlarged to enable us to advance still further along the line in vaccine therapy.

Dr. Francis J. Shepherd, of Montreal, spoke of the work of one of his assistants with this method, whose results with the vaccine treatment were brilliant in acne, especially in the superficial forms. He also had obtained excellent results in furunculosis and in the treatment of carbuncles. In some of the deeper forms of acne, the treatment was not satisfactory.

Dr. H. W. Stelwagon, of Philadelphia, said that, before hearing these valuable papers, he had about reached the conclusion, both from his own observations and from the work of other investigators, that the enthusiasm as to the vaccine therapy was on the decline. Nevertheless, in view of the brilliant results of vaccine therapy, as indicated in the papers just read, he felt it his duty to take up the method again experimentally.

Dr. William T. Corlett, of Cleveland, said that vaccine therapy was new, and, like many other new modes of treatment, it was liable at first to be misused and misjudged, but that eventually it would find its proper place when its beneficial effects would be better appreciated. In acne vulgaris, some cases under his observation had been treated very successfully by the vaccines, including some that had resisted other forms of treatment. In sycosis vulgaris he thought that the vaccines were especially indicated.

Dr. S. Pollitzer, of New York, said he held very much the same position on this subject as Drs. Hartzell and Stelwagon. Practically, everything was still to be proven. His principal objection to the evidence presented by the readers of the papers was fundamental; they had not employed vaccine therapy in the sense in which that term was ordinarily used. We understood by vaccine therapy the introduction into the system of bacillary substances derived from the dead bodies of the organisms that produced the disease, with the expectation of curing the disease by stimulating phagocytosis or opsonic activity.

Dr. William A. Pusey, of Chicago, said it was extremely difficult to judge of the value of any therapeutic measure in the diseases to which the vaccine therapy was chiefly limited, and the great value of these papers lay in their collation of a large number of observations by expert critical observers.

Dr. Randolph B. Carmichael, of Washington, D. C., said he recently saw two very aggravated cases of sycosis in which the autogenous vaccines had been used with not very favorable results.

Dr. Jay Frank Schamberg, of Philadelphia, said it should not be demanded that vaccine therapy, in order to be accorded an established place in our system of therapeutics, should alone and of itself cure the various conditions for which it was applied. It should

merely be required that it effected results, either alone or conjoined with other remedies, that were distinctly superior to those obtained by other means.

DR. OLIVER S. ORMSBY, of Chicago, said that for the past few years they had used the staphylococcus albus stock vaccines in large doses, but with rather disappointing results. More recently, however, they had carried on their work almost exclusively with the autogenous vaccines in smaller doses, and their results had been much better, although not as brilliant as they had hoped for. He thought that with an improved technic there was no question about the value of the treatment.

DR. E. WOOD RUGGLES, of Rochester, N. Y., said that his work with vaccine therapy was limited to the autogenous vaccines. In furunculosis, his results with the treatment had been good, so far as subsidence of pustular lesions was concerned, but the underlying acne (comedones and oily skin) was little if at all affected. He had used only staphylococcus vaccine.

DR. HOWARD FOX, of New York, said that his results with the vaccine therapy during the past year had been rather disappointing. From his own experience, which was limited, and from what he had learned from others, he had been led to the conclusion that vaccine therapy in dermatology had a very limited field. In furunculosis, his results with the staphylococcus vaccine had been fairly good, while in acne indurata they had been very disappointing.

PELLAGRA IN OHIO.

By DR. WILLIAM T. CORLETT and DR. OSCAR T. SCHULTZ, of Cleveland. The authors stated that, following the awakening that pellagra existed in this country, many pseudo-cases were brought to the attention of experts in cutaneous medicine. The paper then gave a brief history of one of these cases seen in Ohio, where the patient was supposed to have contracted the disease from "corn smut." In the opinion of one of the writers, this case was nothing more than an obstinate form of eczema. An investigation of supposed epidemics of some unknown disease of the skin in two of the state hospitals for the insane in Ohio revealed nothing unusual. All doubt as to the presence of pellagra in this country was removed, however, on visiting the hospital for the insane at Peoria, Ill. The authors then gave in detail the history of the first case of this disease recognized in Ohio, with photographs of the skin lesions, post-mortem findings and histology. It was thought, in conclusion, that the disease, while not wholly confined to certain regions of this country, yet its limitation was fairly well defined and that from the testimony of those who had seen most of the affection in this country, it was not entirely new.

DR. JAMES W. BABCOCK, superintendent of the State Hospital for the Insane at Columbia, S. C., and president of the National Pellagra Congress, said he understood that there was considerable skepticism in regard to the existence of pellagra in this country, and it was only those who had served in public institutions, particularly in the southern states, and who had been face to face with this condition for years, who could comprehend the importance of having more light shed on this mysterious malady. A year ago a conservative estimate of the number of pellagrins in the United States placed the number at 1,500; recently, the figures had been gone over, and it now appeared that the disease had been recognized in twenty-seven or twenty-eight states. Cases had been reported in two hospitals in Illinois, and subsequently in a third, and it had been shown beyond the shadow of a doubt that the disease existed in some of the western states, including California, so that we now had come to the conclusion that it had a very widespread distribution. Dr. Babcock said that from personal investigation and inquiry he was satisfied that pellagra had existed in South Carolina for nineteen years, at least, and there were traditions of cases that went back as far as 1870. In reply to a question as to the mortality of the disease, the speaker said that in one insane asylum for white people in the South where they had observed the disease since 1896, they had 27 cases, with 18 deaths. The mortality, according to different observers in the South, varied anywhere from 40% to 70%.

DR. JAMES NEVINS HYDE, of Chicago, showed an original copy of a volume entitled "Historia Natural Y Medica," by Dr. Gaspar Casal, which was published in Madrid in 1762, and which, so far as was known, was the first contribution to the subject of pellagra. Dr. Samuel Sherwell, of Brooklyn, was properly credited with having made the first contribution on this subject, to the American Dermatological Association. This was in 1882.

DR. HOWARD FOX, of New York, referred to his work in experimental serum therapy in pellagra, and regretted that he was not yet prepared to present a paper on that subject.

DR. S. SHERWELL, of Brooklyn, said the case referred to by Dr. Hyde was published in the *Journal for Cutaneous and Venereal Diseases*, in February, 1883. The patient was an Italian sailor, with both subjective and objective symptoms, forming together a classical picture of the disease. Two years later a similar case presented itself at his clinic, almost or quite identical to the first. Both cases ended fatally.

DR. H. W. STELWAGON, of Philadelphia, said that several European observers who had studied this disease had made the observation that pellagra had occurred in persons who had never eaten corn. Among this number was Kaposi, and, he believed, Besnier also.

DR. SHERWELL thought that the fungus or parasite to which pellagra had been attributed might occur in all cereals analogous to corn, such as rye, etc.

DR. M. B. HARTZELL, of Philadelphia, reported a case of apparently typical pellagra occurring in a subject who had never been outside the state of Pennsylvania, and who, so far as could be ascertained, had never eaten Indian corn.

DR. LOUIS A. DUHRING, of Philadelphia, believed that the causative factor of pellagra was distinctly internal, and probably of a toxic nature.

DR. WILLIAM A. PUSEY, of Chicago, speaking of the exclusion of corn from the diet, said that when it came to the statement that a patient in this country had never eaten Indian corn, the reliability of such a statement could be seriously questioned. The statement was analogous to the contention of Jonathan Hutchinson in regard to the relation between leprosy and eating fish; Hutchinson was always prepared to prove that any one had eaten fish. Dr. Pusey said that while we had made an important advance in recognizing the presence of pellagra in this country, he was inclined to believe that the diagnosis was now being overworked. Pellagra was not a condition in which we could make as satisfactory a diagnosis as we could in tuberculosis or syphilis. The diagnosis rested on a trial of symptoms — psychical, gastro-intestinal and cutaneous. It was essentially a picture of auto-intoxication, such as we met with in gastro-intestinal disturbances, and he believed that many of the cases of so-called pellagra might well be questioned as to the accuracy of the diagnosis.

PRURIGO, AND THE PAPULE WITH THE URTICARIAL BASIS.

By DR. O. H. HOLDER, of New York: This paper embraced an anatomical study of the pale papule of prurigo.

SOME PROBLEMS IN METABOLISM OCCURRING IN PATIENTS WITH CERTAIN DISEASES OF THE SKIN.

Dr. L. Duncan Bulkley, of New York, said that faulty metabolism was recognized as a cause of many diseases; it might affect all the body tissues, and it was natural to expect that the skin participated. While definite and specific statements could not yet be made as to the exact and particular metabolic derangements belonging to various diseases of the skin, there were abundant clinical evidences that the cellular derangements which constituted the bottom fact in skin lesions had an intimate connection with and dependence upon metabolic errors. The urine, coming directly from the arterial blood, furnished a most suitable indication of the condition of the blood, as it had been prepared through metabolism; consequently, repeated, careful volumetric analyses of its constituents furnished the most certain method of determining the performances of anabolism and katabolism in the tissues.

Dr. Louis A. Duhring, of Philadephia, said that this subject of metabolism in relation to diseases of the skin had interested him for many years, and he had long since ceased to study and treat diseases of the skin — as he did years ago — from the standpoint of the lesions alone. If we wished to permanently cure many of the skin lesions, we must study the patient and conditions within the body. He had long been dissatisfied with the usual local treatment in a large number of chronic inflammatory diseases of the skin.

Dr. King Smith, of Toronto, said that Dr. Sims Wood, of London, England, in an address before the students of the Toronto University, had laid great stress upon the close relationship between the men who worked in the laboratory and the clinicians.

Dr. M. B. Hartzell, of Philadelphia, asked Dr. Bulkley if he controlled the results he obtained by comparing them with the urinary findings in those who had no skin eruptions. The speaker said he was convinced that such a comparison would show just as wide variations in one as in the other.

Dr. S. Pollitzer, of New York, said that while quantitative analyses of the urine might be very useful, they did not constitute studies in metabolism. In fact, they were utterly worthless for that purpose unless at the same time the diet of the patient was controlled, and the intake and output compared.

Dr. Bulkley, in closing, reiterated his belief that faulty metabolism was an important factor in connection with diseases of the skin.

SECONDARY ECZEMA.

Dr. John A. Fordyce, of New York, in his paper on this subject, stated that, in observing a large number of cases of dermatitis in hospital and dispensary practice, he had been struck by the frequency with which forms of skin infection which were usually diagnosed as eczema had been secondary to some antecedent lesion or disease of the skin, such as scabies, wounds or traumatisms which had become infected, abscesses, furuncles, intertrigos, sinuses left after operations on bones, etc.; in other words, the percentage of eczemas in which some antecedent pathological condition could not be determined seemed to be in the minority. From an extensive experience with cases of eczematoid dermatitis in which a history of antecedent pus infection was obtained, the conviction had come to him that irritation of the skin produced by discharges from abscesses, sinuses, ulcers and other pus-secreting surfaces was the true basis of these phenomena. This irritation might be followed by eruptions of most diverse forms, such as a dry scaling dermatitis or large moist areas, or a combination of dry scaling lesions and moist and crusted ones. Sometimes the picture was that of an acute vesicular eczema, and could not be distinguished from the usual forms of eczema which had been attributed to some internal disturbance. In all or most of these forms the affection was distinctly autoinoculable, and in many a condition of chronic eczema or dermatitis persisted for months or years. There might or might not be relapses; in many cases recovery was permanent. On the other hand, with a lowered resistance to pus infection, recurrences took place as furuncles and abscesses, with a subsequent eczema. One of the most prominent features in many patients with eczema was the increased susceptibility which their skin presented either from the beginning, or which developed as the process progressed. It was this heightened susceptibility which led to relapses, as was often seen in workers in chemical laboratories, in whom the vapor of formaldehyde provoked forms of dermatitis of the nature of eczema. The same condition was seen in individuals who had once developed dermatitis from poison ivy or other local irritant; after one attack, many of these people were increasingly susceptible to the specific irritant, and it was quite possible in these cases to attribute the frequent recurrences to a state of anaphylaxis. Individuals who showed such an increased susceptibility to irritants might perhaps be sensitized to the chemical products of pus organisms, just as patients with tuberculosis might be sensitized to tuberculin. Assuming, therefore, that we might have a state of hypersusceptibility to irritants which might be present either from birth or acquired from some change in the biological properties of the blood serum due to various affections, we could readily understand how irritants of the most varied kind might evoke a dermatitis. These serological changes might a also explain the simultaneous or successive occurrence of skin and mucous membrane affections in patients who had become sensitized with an irritant, in the one case acting on the neurovascular apparatus of the skin, and in the other on the mucosa.

Dr. Martin F. Engman, of St. Louis, said that Dr. Fordyce, in his paper, had opened up a field which showed the way to a great deal of valuable work.

Dr. M. B. Hartzell said he was quite convinced that in a certain number of cases there was a local sensitizing of the skin. We found certain eruptions in certain localities again and again in certain individuals who at first showed no such sensitiveness to such irritating agents.

A FATAL CASE OF BULLOUS DERMATITIS.

Dr. S. Pollitzer reported this case, which he summarized as follows: The patient was a middle-aged man, of good habits, in good health, except for a chronic diffuse nephritis which apparently gave no trouble. He was attacked with a dermatitis that had the character of a fine, scaling, pruritic erythrodermia and that rapidly spread over the entire integument. Its development was in some places preceded or accompanied by a severe edema, which subsequently subsided, but a moderate edema of the entire surface persisted for two weeks. Ten days after the appearance of the scaling red areas, crops of large bullæ appeared in various parts of the body, but mainly on the extremities and the buttocks. The development of fresh blisters, in general smaller than at first, continued in greater or less number throughout the course of the illness and the skin became diffusely pigmented. Temperatures following a septic curve up to about 104 developed, the patient became delirious and fell into a typhoidal state which terminated after a fortnight in coma and death, the whole course of the illness lasting about forty days. The blood showed at first an extra-

ordinary eosinophilia, which later assumed moderate proportions. Blood cultures, cultures from the blister serum and inoculations of the latter were negative, as was also the examination of the illumined dark field. The post-mortem examination threw no light on the case. As to the diagnosis of this remarkable case, it might be said that we were certainly not dealing with a pemphigus, as modern usage limited that term to a disease which was primarily bullous. The acute form of pemphigus, which alone could come under consideration in this connection, might be excluded by the absence of any infected wound, and, above all, by the preliminary diffuse scaling.

DR. J. A. FORDYCE, of New York, spoke of a case similar to the one reported by Dr. Pollitzer, excepting that there was no history of any antecedent eruption. The case also ended fatally. The etiological factor in these cases, the speaker said, was still unknown. It was perhaps some obscure proteid or a chemical product.

DR. DUHRING said it seemed to him that whatever the cutaneous lesion might be at the outset, the condition often or generally developed into what might properly be called pemphigus, and he could see no objection to classifying it as a case of pemphigus malignus.

DR. JAMES NEVINS HYDE, of Chicago, said the case reported by Dr. Pollitzer was a commentary upon our occasional impotence and lack of knowledge. Here we had an interesting and fatal case reported under a title which referred to a condition of the skin merely, and yet the symptoms showed that we were obviously confronted with some toxic process which profoundly influenced the entire economy, and of which the skin lesions were simply the superficial evidence of the deeper trouble.

DR. POLLITZER, in closing, said that in pemphigus malignus or acutus to which Dr. Duhring had referred, there was usually a history or preceding injury, followed either immediately or in the course of a few days by an acute septic condition, with the formation of bullous lesions on the skin. There was no history or evidence of such a condition in this case.

Book Reviews.

The Sexual Life of Woman in its Physiological, Pathological and Hygienic Aspects. By E. HEINRICH KISCH, M.D., Professor of the German Medical Faculty of the University of Prague; Physician to the Hospital and Spa of Marienbad; Member of the Board of Health, etc. Only authorized translation into the English language from the German by M. EDEN PAUL, M.D. With 97 illustrations in the text. New York: Rebman Company. 1910.

Those who are familiar with Kisch's previous writings on this subject, beginning with his "Climacteric Period in Women," published in 1874, will welcome this assembling and analysis of the opinions of a wide range of authorities, and also of the views developed by the accomplished author's lifetime of investigations in an important field. On the other hand, those who read the author for the first time will find this book a mine of information on all matters pertaining to the sexual function in woman.

The subject-matter — 667 large pages — is divided into three parts: the onset of menstruation — the menarche or puberty; the culmination of sexual activity — the menacme; and the cessation of menstruation — the menopause. A detailed description is given of the normal and morbid anatomy of the female genital organs, also of their physiology and their deranged function under the different conditions of disease. There are numerous statistical tables from authors of note, although the references are seldom given in full; ninety-seven illustrations, showing well the points made by the author, and a fairly good index.

The translation from the German has been well done, although the use of such words as "sacrache" for pain in the region of the sacrum, and the occasional uncertainty of meaning because of the omission of commas, offends the student of English in several places. The many directions for treatment scattered throughout the work should be of assistance to the practitioner. Altogether, this may be regarded as one of the important books of the time.

A Manual of Operative Surgery. By SIR FREDERICK TREVES, Bart., G.C.V.O., C.B., LL.D., F.R.C.S., Sergeant-Surgeon to H. M. the King; Surgeon-in-Ordinary to H. R. H. the Prince of Wales; Consulting Surgeon to the London Hospital; and JONATHAN HUTCHINSON, F.R.C.S., Surgeon to the London Hospital. New (third) edition, revised and rewritten. In two octavo volumes. Volume II. Pp. 820, with 302 engravings and 8 full-page plates. Philadelphia and New York: Lea & Febiger. 1910.

This second volume of Treves' "Surgery" is as attractive in appearance as Volume I, and deals with a variety of topics in an entertaining and instructive fashion, but it is fragmentary. It does not carry out the promise of Volume I. In that it is disappointing. The writers deal with operations on the head, neck and spine, with operations on the thorax and breast, on the blood vessels and nerves, on tendons and muscles, on bones and joints and with amputations. With amputations they are especially concerned, with the concern of surgeons of the old school. In this book of 809 pages, 201 pages, or a quarter of the whole volume, are devoted to amputations. Consequently, there are many things which appeal to well-read, modern surgeons which are lacking, and the index of the book is grievously disappointing. In it we fail to find such words as *hypophysis*, as *cerebral decompression*, as *pituitary body*, as *hyperthyroidism*. The little article on Graves' disease is so trifling as to be negligable; in the chapter on surgery of the thorax, *differential pressure* is not mentioned; and in the description of amputation of the whole upper extremity, —a matter with which the authors especially concern themselves, — no proper comment is made on methods of controlling shock and hemorrhage.

Of such a nature are the faults of this book. Nevertheless, the book is by no means to be con-

demned. It is well written, the topics are presented attractively, and the comments of the writers leave an impression on the mind of the reader. In other words, we believe it is a book which the well-informed general surgical reader will peruse with interest. It is not a book to which the overworked clinical surgeon will turn for information on special points of technic.

Dislocations and Joint Fractures. By Frederic J. Cotton, A.M., M.D., First Assistant Surgeon to the Boston City Hospital; Assistant Professor of Clinical Surgery in Tufts College Medical School, Boston. With 1,201 illustrations, 830 from drawings by the author. Philadelphia and London: W. B. Saunders Company. 1910.

In this unusual book of 638 pages Cotton has reanimated one of the dullest topics in all surgery. By that work he has done a very great service. Not only has he written the book himself, but he has illustrated it, so that one sees vitalized the victims of the injuries which he describes. The work is delightful, spirited, scholarly and original, and is not only a book of reference, but a book for casual reading. It brings the subject of dislocations and joint-fractures up to date, a feat long neglected.

Here are some of his own remarks on his work: "Dislocations do not present themselves to us as such, but rather as *injuries to* or *near* the *joints*. Dislocations neatly and academically classified — considered as of settled diagnosis and irrespective of complications — could be considered, with all the reduction schemes thrown in, in but few pages. *Injuries to and about joints*, on the other hand, constitute one of the most doubtful fields of surgery, a field strewn with wrecks, — the products of mistakes and of unavoidable difficulties, prolific in discontent and in resultant actions at law — actions based only too often on unavoidable uncertainty or error. . . . This dangerous field has been rather inadequately surveyed. . . . There is bound to be a broadening recognition of the fact that *each fracture is a mechanical problem in itself*, so far, at least, as reduction is concerned. . . . Our duty is *to obtain in the given case the best result obtainable in this case, by whatever means are at hand*, often irrespective of traditional methods. . . . I can see that the day is past when we may defend ourselves by abjectly falling back on what the eminent Dr. X. said in the last century."

Such stimulating reflections, taken from the author's introduction, indicate the scope and nature of his work. He is an independent writer, who does his own thinking; he neither ties up to nor discards x-rays; he appreciates the work of others; he is fertile in suggestions regarding treatment; he approves of massage; he operates upon simple fractures when necessary; he gives excellent advice regarding the possibilities of actions at law; and he fills his book with vital, new and instructive pictures. Surgeons, house surgeons and general practitioners should own and study this volume.

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THE QUESTION OF INFANT MORTALITY.

It has long been recognized and no doubt will long continue to be the fact that the mortality of childhood is far greater than that of any other period of life. Many of the reasons for this are sufficiently obvious, but the more the subject is investigated the more apparent it becomes that a large proportion of these deaths are unnecessary, and under proper conditions of hygienic living could in great part be prevented. A recent publication of the Department of Commerce and Labor makes the statement that of the total number of 732,538 deaths in 1909, 196,534 were of children under five years of age and 140,057 of infants under one year of age. In other words, approximately one death out of every five in that year was of a child under one year old. Of these deaths the mortality is somewhat higher in the cities than in rural districts. In New York state, with a mortality of 12,942 in July, 3,486 deaths occurred under one year of age. During this month there were upwards of 2,000 deaths from enteritis alone. Of the total number of deaths under one year, 64% were in New York City.

Efforts are being made, both by individuals and collectively, to study the exact causes of this great mortality, and also to devise practical means for its reduction. Among the organizations which are doing excellent work in this regard may be mentioned the American Association for the Study and Prevention of Infant Mortality, the object of which is primarily to co-ordinate all sanitary agencies for the purpose of reducing the number of preventable deaths in infancy. The report before us suggests that in order that such a comprehensive plan may be carried out, it is essential that reliable statistics of infant mor-

tality should as soon as possible be available for the entire United States. Inasmuch as the deaths under consideration are chiefly those under one year of age, it becomes extremely important that births should be much more accurately registered than is at present the case.

Dr. Arthur Newsholme has made an important contribution to the subject by his recent report on infant and child mortality published in England. Among other things, he draws attention to the fact that "infant mortality is the most sensitive index we possess of social welfare and of sanitary administration, especially under urban conditions." It appears that the districts suffering most from a heavy child mortality continue to have higher death-rates among adults than the districts where the infant mortality is low. The observation is furthermore of interest that the study of the death-rate of England and Wales during the last fifty years leaves it doubtful whether any greater weeding-out process is exercised by a heavier than by a lighter infant mortality. If such effect exists, it is counterbalanced by the influence exerted by the environment to which children are exposed in districts of high infant mortality. Dr. Newsholme, therefore, feels justified in making the following statement: "It is strictly correct to say that a high infant mortality implies a high prevalence of the conditions which determine national inferiority."

Mr. John Ritchie, Jr., has made a careful study of the conditions underlying infant mortality as they exist in Boston, his paper being originally published in the Boston *Transcript* for March 30, 1910. Mr. Ritchie points out certain fallacies and difficulties in the way of estimating the mortality, particularly in view of the laxity in the notification of births. It appears that Boston is far ahead of many of its sister cities in its system of vital statistics, since approximately 95% of its births are recorded and deaths actually known. From this it follows that the infant mortality may be very closely determined, as contrasted, for example, with a city like Chicago, where it is said that not more than 65% of newborn babies are registered. With Baltimore the percentage falls as low as 45%. The comparison between American cities, therefore, as to infants' deaths must be misleading and inexact. So far as may be determined with the evidence at hand, Boston stands well among American cities in respect to its infant mortality.

It is evident, however, that, before any exact statistics may be gained, it will be necessary that various parts of the country shall adopt, if not a uniform, at least an approximately exact, method of registration of births and deaths. With our growing knowledge of the prophylaxis of disease in general, and of infantile disease in particular, it is not to be questioned that before many years have passed a creditable showing will be made in respect to deaths among small children. In the meantime, co-operation is desirable between civic and scientific bodies to the end that the investigation be most searching in its character and comprehensive in its scope.

THE ETIOLOGY OF BERIBERI.

THE excellent medical work being done in the Philippines is illustrated by a series of articles in a recent number of the *Philippine Journal of Science* on beriberi. This disease, prevalent particularly in the East, but also not infrequently appearing in sporadic form in more western countries, has long evaded a determination of its cause. It now appears to be somewhat conclusively shown, as verified by a number of observers, that the disease is due to the eating of white rice in which the polishing process has been carried out. The suggestion of this relationship was first by Braddon and later confirmed by various other investigators. For some time, however, after the discovery that white rice produced the disease it remained obscure by what mechanism this was brought about. The various theories entertained from time to time do not here concern us. In the process of these preliminary researches attention was drawn to the possibility of an explanation on the hypothesis of a defect in nutrition. Fowls fed on rice were found to be sensitive to different varieties. Further study along this line with rices known to have been associated with epidemics of beriberi proved that a certain reaction in fowls might be taken as an indicator of the beriberi-producing power of a given rice. It is the belief of Fraser and Stanton that the polyneuritis of fowls is entirely analogous to beriberi in man and, therefore, that the experiments with rice feeding may be regarded as essentially conclusive. It appears from various evidence that Siam rice is more potent in producing beriberi, for example, than Rangoon rice. It was a natural step to investigate chemically the rice granule and also to study the effect produced by its preparation for the market. As a final result of these investigations it has been shown that beriberi is a disorder of metabolism and certainly in the Philippines is associated with a diet of which white rice is the principal

constituent. White rice as produced in the mills is deficient in some substance or substances essential to the normal metabolism of nerve tissue, and these essential substances appear in superabundant amount in the polishings from the rice. The interesting fact is, therefore, adduced, that the prevention of beriberi in the Philippines will be accomplished by substituting for the ordinary commercial white rice a rice in which the polishing process has been omitted or carried out to slight degree, or by the addition to an ordinary white rice diet of articles of food rich in the substances deficient in the prepared white rice. The polishings from white rice might, for example, be so used. Parboiled rice also seems to accomplish a like result. The exact nature of the constituents necessary to the metabolism of the nerve tissue cannot as yet be definitely stated, but the important practical fact remains that the covering of rice ordinarily removed in process of cleaning is essential for the prevention of beriberi, if rice be a staple diet.

Details of this extraordinary scientific discovery are given in several articles appearing in the same number of the *Journal*, together with an instructive series of photographs of fowls illustrating their appearance when suffering from the polyneuritis induced by a diet of cleaned white rice. It is presumably not to be supposed that the occasional epidemics among fowl in this country at times presumed to be poliomyelitis are beriberi, but the suggestion lies near that the feeding of the fowls affected with this paralyzing disease may well be investigated in the light of the information derived from the experiments to which we have alluded. If the foregoing theory of the causation of beriberi is correct, and the evidence seems cumulative that it is, there can be little question that another serious menace to life has been removed and that this dreaded disease of eastern countries will be placed in the growing category of those regarded as entirely preventable.

MEDICAL NOTES.

Officers of American Electro-Therapeutic Association. — The American Electro-Therapeutic Association held its twentieth annual convention at Saratoga Springs, N. Y., Sept. 13, 14 and 15. The following officers were elected for the ensuing year: President, Dr. Frederick de Kraft, New York; Vice-Presidents, Drs. F. Howard Humphris, of London, and Frank B. Granger, of Boston; Treasurer, Dr. Emil Heuel, New York; Secretary, Dr. J. Willard Travell, New York; Registrar, Dr. Frederick M. Law, New York; Trustees for three years, Drs. Charles R. Dickson, of Toronto, and Thomas D. Crothers, of Hartford, Conn.

Far Eastern Association of Tropical Medicine.— According to the quarterly report of the Bureau of Health of the Philippine Islands, the first biennial meeting of the Far Eastern Association of Tropical Medicine was held in the city of Manila from March 5 to March 12, 1910, inclusive, and in Baguio on the 13th and 14th of March. Delegates were present from Japan, China, Hongkong, Straits Settlements, India, Siam, Java and other Far Eastern tropical countries. The character of the papers read at the congress was of a very high order and much original scientific work was presented, some of which will no doubt rank among the epoch-making announcements in medicine during the present century.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Sept. 20, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 12, typhoid fever 11, measles 3, smallpox 0, tuberculosis 60.

The death-rate of the reported deaths for the week ending Sept. 20, 1910, was 17.50.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Sept. 17, 1910, was 219, against 177 the corresponding week of last year, showing an increase of 42 deaths, and making the death-rate for the week, 17.03. Of this number 108 were males and 111 were females; 208 were white and 11 colored; 158 were born in the United States, 57 in foreign countries and 4 unknown; 42 were of American parentage, 151 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 24 cases and 3 deaths; scarlatina, 10 cases and 0 deaths; typhoid fever, 18 cases and 4 deaths; measles, 3 cases and 0 deaths; tuberculosis, 50 cases and 26 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 20, whooping cough 2, heart disease 22, bronchitis 2. There were 15 deaths from violent causes. The number of children who died under one year was 67; the number under five years, 85. The number of persons who died over sixty

years of age was 64. The deaths in public institutions were 92. Cerebrospinal meningitis, 4 cases and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases and 2 deaths. Diphtheria, 1 death. Scarlet fever, 4 cases.

Deducting deaths of non-residents, the total is 191 and the death-rate is then 14.85.

DIPHTHERIA IN WESTFIELD, MASS. — It is announced that the appearance of diphtheria in the Polish section of Westfield has lead the health authorities to postpone the opening of the largest schools. Thirty-five cases of the disease and five deaths have occurred in one week.

A CASE OF HOOKWORM DISEASE IN BOSTON. — A case of hookworm disease in a native of the Cape Verde Islands is under treatment at the Carney Hospital, South Boston. The patient reached this country recently and landed in Providence after a sea voyage from the tropics.

THE POLIOMYELITIS SITUATION. — It is reported that the Middletown, Conn., Board of Education has decided to close the public schools for an indefinite period owing to a recent outbreak of poliomyelitis in that city. In nine days fourteen cases were reported, with three deaths, two of them in adult school girls. The situation in regard to poliomyelitis in Rhode Island, particularly in Providence, has been disturbing for some weeks past. The death has just been reported of a boy of sixteen whose illness led to the closing of the Arlington Grammar School at Cranston. The epidemic at Springfield, Mass., has apparently spent itself. Very few cases have been reported from Boston or its immediate neighborhood.

NEW YORK.

A CENTENARIAN. — Mrs. Antoinette Boeram died at her home in New York City on Sept. 9, at the age of one hundred and two years. She was born at Denton, Orange County, N. J., the year that President Madison was elected, and was the daughter of Dr. Nathaniel Elmer, Jr. She was twice married, and is survived by one daughter, eight grandchildren and six great-grandchildren. One of Mrs. Boeram's daughters died only a week before her own death.

BEQUESTS. — St. Luke's Hospital, New York, is to receive half the estate of the late Mrs. Mary Nevins Mayo, widow of Dr. Mayo, of New York, valued at $100,000, on the death of her nephew, Russell N. Bellows, named as residuary legatee under the will. By the will of Mrs. Charlotte D. Ferry, who died recently at Litchfield, Conn., $3,000 is left to St. Luke's Hospital for the endowment of a free bed in the children's ward. Among the charitable bequests in the will of Mrs. Sarah Titus Zabriskie, of New York, who died recently at her summer residence at Newport, R. I., is one of $1,000 to St. Mary's Free Hospital for Children, New York.

QUARTERLY MORTALITY REPORT. — The condensed quarterly report of Bureau of Records of the City Health Department for the quarter ending June 30, 1910, has just been issued. The principal decreases from the average number of deaths in the corresponding quarters of the preceding five years are as follows: Pulmonary tuberculosis, 319; simple meningitis, 340; cerebrospinal meningitis, 285; apoplexy and softening of the brain, 380; pneumonia, 128; bronchopneumonia, 242; Bright's disease and acute nephritis, 125; violent deaths (suicide excepted), 150; deaths under five years, 758; deaths in tenement houses, 1,230. In no disease did the increase of deaths over the quinquennial average amount to 100; the largest being in cancer, 67.

BUILDING OF NEW YORK ACADEMY OF MEDICINE. — The New York Academy of Medicine has secured the purchase of two city lots adjoining its present quarters, with a view to ultimately increasing the size of its building and thus meet its growing needs, especially as regards accommodations for its great library. One of these lots, 20½ by 100 feet, is next its building on Forty-third Street, and the other, 25 by 100 feet, is directly back of this, with a frontage on Forty-fourth Street. The price of the one is $100,000 and of the other, $120,000. It has been decided to raise a mortgage upon the present building at 4½% to pay for the new lots, and at this rate it will cost $6,000 a year to pay interest and taxes upon this property until the mortgage is paid off by contributions, or the taxes are remitted when the Academy occupies it for its own use. The present lease of the building on the new Forty-third Street lot does not expire until 1916, but the Forty-fourth Street lot, on which there is an unoccupied two-story stable, will be used for stack and administration purposes as soon as there is sufficient money on hand with which to begin construction.

DEATH-RATE. — The death-rate in the city during the month of August showed a very marked

decrease from that of July. Not only was it remarkably low for this season of the year, but it was lower than in any previous month in 1910, and the lowest since September of last year. The rate was 14.91, as against 17.79 in July and 15.25 in August, 1909. The corrected rate, excluding non-residents and infants under one week old, was 14.14. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from measles declined from 13.25 in July to 7.25 in August; the weekly average from scarlet fever, from 9 to 2.75; from diphtheria and croup, from 26.5 to 19.75; from whooping cough, from 10.75 to 9.25; from epidemic cerebrospinal meningitis, from 5.5 to 4.5; from pulmonary tuberculosis, from 162.75 to 152.25; from pneumonia, from 49.75 to 47; from bronchopneumonia, from 65 to 49.75; from diarrheal diseases, from 399.25 to 268; from diarrheals in children under five years of age, from 376.5 to 255; from apoplexy and softening of the brain, from 17.25 to 14.25; from organic heart diseases, from 103.5 to 89.75; from appendicitis and typhlitis, from 17.75 to 12.5; from Bright's disease and acute nephritis, from 93 to 90.75; and from puerperal diseases, including septicemia, from 14 to 12.25. Among the few diseases in which there was an augmented mortality were the following: The weekly average of deaths from typhoid fever increased from 12 to 15.75; from acute bronchitis, from 9.75 to 11; from cancer, from 66.25 to 70.75; and from cirrhosis of the liver, from 18.5 to 23.5.

Epidemic Poliomyelitis. — Epidemic poliomyelitis has been added to the list of communicable diseases, the occurrence of which is required by the State Department of Health to be reported to local health officers, and by them to the department. The last *Monthly Bulletin* calls attention to the fact that fully 2,500 cases occurred in New York in 1907, the largest epidemic of the disease ever reported in the state, and goes on to say that while laboratory workers have recently demonstrated that infantile paralysis is an infectious disease caused by a specific organism, "the laboratory has not yet put us in possession of the essential facts as to how the disease enters the human body, or how to prevent or check its spread. The laboratory work must be supplemented by a field study. We need to classify the early symptoms and establish, if such there be, types of the disease; we need to investigate the conditions under which infection seems to occur, with a special inquiry as to the mode of entry of the virus into the body. The New York State Department of Health desires the co-operation of the physicians of the state in the making of such an investigation. Valuable work upon the same lines has already been done by the medical profession and the State Board of Health of Massachusetts, and for the sake of uniformity, and with a view to ease of comparative study, the New York State Department of Health is sending out to the health officers for distribution among the physicians of the state a duplicate of the blank used by the Massachusetts Board in its investigation. It is sincerely hoped that every physician in whose practise a case of infantile paralysis may occur will use this form and make as full a report as possible. With a view to the prevention of the disease, the State Department of Health expects that every case discovered will be quarantined. Some local boards of health have already passed an ordinance requiring a quarantine in this disease, and such action is approved by the department. The discharges from a patient (stools, urine and sputum) should be disinfected."

Current Literature.

Medical Record.

Aug. 27, 1910.

1. Bull, C. S. *The Post-Operative History of Eighteen Cases of Magnetic Foreign Bodies Removed from the Eye by the Haab or Giant Magnet.*
2. Levin, I. *The Importance of Early Recognition of Cancer.*
3. Mendel, L. B., Chapman, J., and Blood, A. F. *On the Adaptation of the Human Saliva to Diet.*
4. King, R. W. *The Chemistry of the Urine in Pulmonary Tuberculosis.*
5. Fernandez, J. S. *The Simple Extraction of Cataract.*
6. Lydston, G. F. *The Car-Barn Bandits. A Brief Study in Degeneracy.*
7. Hoffman, J. J., and Jackson, J. A. *Report of a Case of Sarcoma of the Adrenal Gland.*
8. Liell, E. U. *Anchoring the Kidney for Dislocation or Displacement.*
9. Jones, H. *Two Cases of Actinomycosis.*

Sept. 3, 1910.

1. Haig, A. *The Circulation as a Factor which Determines the Effects of Microbic Invasion.*
2. Satterthwaite, T. E. *Some of the Open Questions in Tuberculosis.*
3. Tilton, B. T. *Special Dangers Associated with Operations on the Biliary Passages and Their Avoidance.*
4. Seymour, U. G. *The Use of Day Camps and Night Camps in the Home Treatment of Tuberculosis in New York City.*
5. Fauntleroy, A. M. *A Simplified Method for the Transfusion of Blood.*
6. *May, J. V. *The Juvenile Form of General Paresis, with Report of a Case.*
7. Dickinson, G. K. *Anemia, with Some Remarks as to Its Pathogeny and Hypodermic Treatment.*
8. Ardati, N. *Observation on Dengue.*
9. Ostheimer, M. *Measles and German Measles; Characteristics of the Present Outbreak in Philadelphia.*

6. May describes the juvenile form of dementia paralytica and reports a case. The onset is essentially the same

as in adults. There is a gradual change in the disposition of the child, with an arrest of development, both physical and mental, failure of memory, apathy and indifference, followed by a progressive mental deterioration, and terminating finally in complete imbecility. Physically there are tremors, pupillary changes, incoordination, ataxia, muscular weakness and trophic disturbances. Death usually occurs from exhaustion, bronchopneumonia or some intercurrent infection. [L. D. C.]

SEPT. 10, 1910.

1. NEWTON, R. C. *A Brief Study of the Contribution of Ignaz Philip Semmelweis to Modern Medicine.*
2. BALLENGER, E. G. *The Etiology of Prostatic Hypertrophy.*
3. HUBER, J. B. *The Anti-Tuberculosis Propaganda.*
4. LEDERMAN, M. D. *Acute Inflammations of the Middle Ear and Their Treatment.*
5. BOYCE, H. A. *Hospital Noise.*
6. BRADY, W. *The Catching Cold Phobia.*
7. NILES, G. M. *Some Remarks on the Treatment of Pellagra.* [L. D. C.]

NEW YORK MEDICAL JOURNAL.

AUG. 20, 1910.

1. LYDSTON, G. F. *Lessons for the Athlete in the Jeffries-Johnson Battle.*
2. WEINSTEIN, J. W. *Atony of the Stomach.*
3. BARNES, G. E. *A Critical Review of Existing Theories and the Presentation of a New Theory of the Etiology of Achylia Gastrica.*
4. MILLS, H. B. *Blood Pressure and Urinalyses in Chronic Nephritis.*
5. PETER, L. C. *Ophthalmic Studies in Chronic Interstitial Nephritis.*
6. PROESCHER, F. *Resistance of the Spirocheta Lymphatica to Antiformin.*
7. MACWHINNIE, A. M. *Vincent's Angina.*
8. MARSH, E. H. *A Case of Vitiligo with a History of Heredity.*
9. MELTZER, S. J. *Ehrlich's Remedy for Syphilis.*

AUG. 27, 1910.

1. FAUGHT, L. A. *Oral Prophylaxis.*
2. PITFIELD, R. L. *Hypothyreoidism.*
3. STANTON, E. M. *A Critical Analysis of One Hundred and Eighty Cases of Acute Intraperitoneal Infections.*
4. KNOTT, J. *"Celestial" Surgery.*
5. GILLESPIE, E. *The Use of the Association Tests in the Study of Certain Types of Insanity.*
6. WEINSTEIN, J. W. *Atony of the Stomach.*
7. BISSELL, W. G. *Diphtheria Bacilli Carriers.*
8. POHLY, A. G. *Anemic Ulcers of the Throat.*

SEPT. 3, 1910.

1. WECHSELMANN, W. *The Treatment of Syphilis with Ehrlich's Dioxy-Diamido-Arseno-Benzol.*
2. GREGORY, M. S. *The Psychopathic Wards at Bellevue; Their Functions and Aims.*
3. WALSH, J. J. *The Evolution of Hygiene and Sanitation.*
4. BUTLER, G. F. *Twilight Talks by the Doctor.*
5. SPANGLER, R. H. *The Treatment of Epilepsy with Hypodermic Injections of Rattlesnake Venom (Crotalin).*
6. DAWBARN, R. H. M. *Ichthyol.*
7. WHITE, J. V. *A Few Facts Concerning the Causes of Failures in Adenoidectomies.*
8. *POTTENGER, F. M. *Some Practical Suggestions for the Facilitating of an Earlier Diagnosis of Tuberculosis.*
9. WILSON, G. *The Diagnosis of Tuberculosis in Doubtful Cases.*
10. YAWGER, N. S. *Alcoholic Amnesia, with the Clinical Report of a Case.*

8. Pottenger describes two physical signs, easily elicited, which he has found very valuable in the early diagnosis of small apical lesions. They are lagging of the apex and spasm of the adjacent muscles. Lagging of an apex means that it is the seat of a pathological process. In testing for this sign, the examiner stands behind the patient with his thumbs placed on the supraspinous fossæ and his fingers down over the anterior chest wall. Muscular spasm is easily demonstrated by palpation. The writer asserts that rigidity of the neck muscles, the intercostals and the pectorals is as constant in early phthisis as abdominal rigidity is in acute abdominal conditions. [L. D. C.]

SEPT. 10, 1910.

1. WILE, I. S. *The Social Plagues and the Public Schools.*
2. GRANGER, A. *The Author's Universal X-Ray Frame.*
3. EGGLESTON, C. *Pustula Typhoid Roseola.*
4. WILLIAMS, B. G. R. *Treatment of Phthisis by Immobilisation of Portions of the Trunk.*
5. AMBERG, E. *Osteomyelitis of the Temporal Bone.*
6. BURDICK, W. *A Study of Functional Exercises in Some Nervous Diseases.*
7. NEUHOF, S. *Report of a Fatal Case of Toxic Pyelitis in Infancy.*
8. HALL, T. Y. *The Treatment of Pulmonary Tuberculosis.* [L. D. C.]

THE LANCET.

AUG. 13, 1910.

1. *LOCKWOOD, C. B. *Fibroma, Sarcoma and Fibromyoma of the Abdominal Wall.*
2. BARWELL, H. *Acute Laryngeal Dyspnœa in Children.*
3. *ROYLE, E. M. *An Aid to Diagnosis in Malignant Disease.*
4. BONNEY, V. *An Occluding and Subocculding Ligature.*
5. BARKER, F., AND MACKEY, L. *A Case of Congenital Spastic Hypertrophy of the Pylorus.*
6. HOLMBE, W. *Note on a Case of Artificial Pneumothorax.*
7. BARRINGTON, F. J. F. *A Dermoid Cyst of the Testicle Associated with New Growth.*
8. STAINTHORPE, W. W. *A Case of Extra-uterine Pregnancy Occurring Twice in the Same Person.*
9. MILLS, G. P. *The Effect of Radium on the Healthy Tissue Cell.*
10. HORNE, W. E. *Public Health Administration.*

1. Lockwood briefly discusses the subject of fibroma, sarcoma and fibromyoma of the abdominal wall as to morbid anatomy, etiology, clinical history, diagnosis, surgical treatment and recurrence. He gives several short case histories.

3. Royle presents an elaborate paper endeavoring to show that in cases of cancer or blood disease there is, first, an abnormally large output of uric acid in the urine and an abnormally small amount of phosphates; second, that the uric acid phosphate ratio is always decreased in cancer, and that any ratio below 3 means that cancer is present. She presents this merely as a preliminary report.

AUG. 20, 1910.

1. BRUNTON, L. *Strain.*
2. BRADSHAW, T. R. *Ulcer and Dilatation of the Stomach.*
3. HIGGINS, H. *A Case of Migraine Associated with Chlorine Retention.*
4. PEARCE, G. H. *A Rough Bacteriological Examination of the Condition of Swimming-bath Water.*
5. PARKINSON, J. *A Case of Pernicious Anemia Terminating in Acute Diabetes.*
6. FRENCH, H. *A Note on the Abuse of Purgatives.*
7. STRONG, G. R. *A Case of Rheumatic Arthritis followed by Streptococcic Invasion.*
8. HORNE, W. E. *Public Health Administration.*
9. HIRSCH, C. T. W. *Motoring Notes.* [J. B. H.]

BRITISH MEDICAL JOURNAL.

AUG. 6, 1910.

1. GREENLEES, T. D. *The Ethics of Insanity.*
2. MACOLISTER, C. J. *Rheumatoid Arthritis.*
3. BUCHANAN, A. *Cats as Plague Preventers.*
4. HURRY, J. B. *Vicious Circles Associated with Disorders of the Urinary Organs.*
5. WÜRTZEN, C. H. *Treatment of Smallpox in Red Light and in the Dark; Some Practical Remarks.*
6. CROPTON, W. M. *Recovery from Apparent Arterial Sclerosis.*

Aug. 13, 1910.

BRITISH MEDICAL ASSOCIATION.

Section of State Medicine.

1. Ilkeston, *Lord. Introductory Remarks.*
2. Webb, S., *et al. Discussion on the Relation of Poor Law Reform to Public Health and the Medical Profession.*

Original Articles.

3. Doyne, R. W. *The Value and Misuse of Spectacles in the Treatment of Headache, Migraine and Other Functional Troubles of the Eyes.*
4. Dorrell, E. A. *Refraction of the Eye in School Children.*

Aug. 20, 1910.

1. Brown, D. *A Paper on Some Pharmacological Effects of the Strong Sulphur Water (Harrogate).*
2. *Short, A. R. *The After-History of Forty Cases of Epithelioma of the Lip.*
3. Parker, R. *Effect of a Denture after Excision of the Upper Jaw and Septum Nasi.*
4. Ord, G. W. *An Immense Renal Calculus.*
5. Freeth, H. *A Simple Method of Removing Sebaceous Cysts.*

BRITISH MEDICAL ASSOCIATION.

Section of Navy, Army and Ambulance.

6. Clark, A. *Introductory Remarks.*
7. Spencer, C. G. *Local and Spinal Analgesia in Relation to Active Service.*
8. Wildey, A. G. *Hypodermic Injections in "Action."*
9. Giles, P. B. *The Training of the Territorial Royal Army Medical Corps.*
10. Wilson, E. M. *Medical Requirements in War.*
11. Pryn, W. W. *Tests for Colour Vision.*
12. Cummins, S. L. *Isolation of Disease Carriers and Methods of Dealing with Them.*
13. Collingwood, G. T. *Naval Recruits.*
14. Cope, L. F. *Air and Ventilation in Modern Warships.*

Section on Medical Sociology.

15. Macdonald, J. A. *Introductory Remarks.*
16. Moore, B., *et al. Discussion on the Economic Basis of Hospital Management.*
17. Ballantine, J. W., *et al. Discussion on the Social Aspects of the Falling Birth-Rate.*

2. Short presents a review of 40 cases of epithelioma of the lip. Of 23 cases in which the glands were not removed and in which only one operation was done, 14 are well one to nine years afterwards; of 6 cases in which palpable glands were removed, 3 died of recurrence. To summarise, in 20 patients with a growth on the lip less than one third of the lip in size, with no glands palpable, treated by local removal, only 3 died of recurrence; of 6 patients in which the growth and the palpable glands were removed, 3 died of a recurrence. He presents his results in tabular form. In view of these results, he is strongly of the opinion that this radical dissection of the whole lymphatic area should be done whether or not there are palpable glands present.

[J. B. H.]

Edinburgh Medical Journal.

August, 1910.

1. Bier, A. *On Local Anesthesia with Special Reference to Vein Anesthesia.*
2. Mackay, G. *The Causes and Prevention of Blindness.*
3. Haultain, F. W. N. *Some Practial Points in the Life-History of Uterine Fibromyomata.*

1. Bier discusses the development of local anesthesia with cocain, with special reference to Schleich's infiltration method. He urges the need of waiting as an essential to success; also that considerable amounts of the anesthetic be used if need be, stating that 80 to 120 ccm. of 5% novocain solution can be injected into an adult without danger. He discusses Braun's method and the perineural method. The greater part of his paper he devotes to a description of what he calls vein anesthesia. Complete ischemia of the part injected is of the greatest importance. He usually injects 100 ccm. in the lower limbs, 50 to 80 ccm. in the upper limbs, of a .5% isotonic novocain solution. Any large subcutaneous vein can be used for the injection. He goes into the details of technic, illustrating by means of diagrams, etc., the placing of bandages, insertion of canulæ, etc. He has used this method in 244 cases with but 5 failures.

[J. B. H.]

Deutsche Medizinische Wochenschrift. No. 33.

Aug. 18, 1910.

1. Rosenbach, F. J. *A New Tuberculin.*
2. *Herxheimer, K. *Arsenobenzol and Syphilis.*
3. Einhorn, M. *Experiences with the Duodenal Contents.*
4. Frey, E. *Cause of Bromine Retention and the Transformation of Chlorine to Bromine in the Blood.*
5. Goldbladt, H. *Syringomyelia in Mother and Daughter. Also an Essay on the Pathology of the Sympathetic System.*
6. *Pelz, A. *A Case of Purely Sensory Alcoholic Polyneuritis.*
7. Otterhaus, H. K. *Painless Operations on the Face-Bones and Mouth under Local Anesthesia.*
8. Müller, A. *Primary Tubal Tuberculosis.*
9. Heermann, A. *Extension as a Treatment for Nerve Injuries.*
10. Berliner, B. *A New Hammer for Testing Reflexes.*
11. Schane, A. *Tincture of Iodine for Treatment of Small Wounds.*
12. Jacobsohn, L. *A Pepsin Composition of a Light Chrome Gelatin as the Background of a Biological Photographic Developing Media.*

2. Herxheimer reports on his results with Ehrlich's new arsenic compound in about 80 cases of syphilis. He compared the rapidity of the disappearance of symptoms and local reaction with calomel given subcutaneously or intramuscularly, and thinks that the arsenic compound acts better. He thinks it is contra-indicated in cases with cardiac weakness and any abnormality in sight and with purulent bronchitis; also in congenital syphilis of severe type. He does not use more than one injection, avoiding others, he says, for fear of anaphylaxis. It would seem that this is an important point in the advisability of using this drug, if it cannot be used more than once. This author, however, dismisses this phase of it with this single sentence.

6. Pels reports a case of alcoholic neuritis in which all the symptoms were on the sensory side. The differential diagnosis from tabes was extremely difficult. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 31.

Aug. 2, 1910.

1. *Bäumler, C. *Accidents to Apparently Healthy People, the Result of Latent Changes of the Internal Organs.*
2. *Curschmann, H. *Atypical Forms of Arteriosclerotic and Angiospastic Dysbasia.*
3. Biesalski. *Treatment of Little's Disease.*
4. *Debernardi, L. *Transplantability of Large Flaps of Mucous Membrane.*
5. Glück, A. *One Hundred and Nine Cases of Syphilis Treated with "606."*
6. *Koelsch. *Treatment of Anthrax.*
7. Dreyer, W. *Treatment of Variola.*
8. Gockel, M. *Ascaridiasis: Its Successful Treatment with Oleum Chenopodii Anthelminthici.*
9. Krecke. *The Cigarette Drain.*
10. Weitz, W. *A New Apparatus for Puncturing the Pleura.*
11. v. Bibra, R. *A Bath Chair.*

1. The writer reports several very unusual cases of arterial thrombosis due apparently to anomalies of the arteries rather than to any of the common causes of arterial thrombosis.

2. Curschmann reports some observations on circulatory conditions and suggests that there may be a relation between intermittent claudication and osteomalacia.

4. Experimenting upon dogs, the writer transplanted flaps of gastric mucous membrane six times with success in every case. Several attempts at grafting were entirely

unsuccessful. Debernardi hopes that the method may prove useful in cases of gastric ulcer.

6. Koelsch urges the further use of serumtherapy for anthrax. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 33.

AUG. 15, 1910.

1. v. OLSHAUSEN, R. *Farewell Address (Historical).*
2. *ISAAC, H. *Results with Ehrlich's Preparation 606, Dioxy-Diamido-Arseno-Benzol.*
3. MICHAELIS, L. *The Subcutaneous Application of the Ehrlich-Hata Antisyphilitic Preparation.*
4. KLOPSTOCK, F. *Cirrhosis of the Liver.*
5. SKALLER. *The Treatment of Diseases of the Large Intestine with Gaseous Drugs and by Means of Spraying.*
6. BARLOCCO, A. *Nitrogen Determination, with Formol, in the Gastric Contents, and its Diagnostic Importance.*
7. CARPI, N. *The Biological Analysis of the Chyle-forming Effusions.*
8. MÜLLER, R. *The Differentiation between Serum Containing Sublimate from the Serum of Syphilitics Treated with Mercury.*
9. IGERSHEIMER, J. *The Wassermann Reaction after Specific Treatment of Hereditary Syphilis.*
10. APELT, F. *Contribution to the Question of the Indications Warranting Spinal and Cerebral Puncture.*
11. FREUDENTHAL, W. *The Removal of Foreign Bodies from the Esophagus and Bronchi by the Help of the Fluoroscopic Screen.*
12. RIEBOLD, G. *Paradoxical Pulse without Intermittent Inspiration as a Result of Compression of the Subclavian between the Clavicle and the First Rib.*
13. SCHMINKE, R. *A Means of Recognizing Systole and Diastole in Auscultation.*

2. The author reports carefully 27 cases, and from these he draws conclusions testifying to his faith in Ehrlich's preparation and its immense value in the treatment of syphilis.

3. The author believes that the subcutaneous injection of "Preparation 606" gives quicker and better results than the usual method of giving the injection deep into muscle tissue. Cases are quoted. [J. L. H.]

ZEITSCHRIFT FÜR KLINISCHE MEDIZIN.

BD. 70. HFT. 5 AND 6.

1. LEUBE, W. *Tenacity of Cell Activity and its Relation to Pathology.*
2. *STIERLING, E. *Radiographic Investigation of the Peristalsis in the Colon.*
3. *CARO, A. *Digitalis and Hypertrophy of the Heart.*
4. LEVY, A. *Significance of the Dicrotic Pulse Following Experimental Administration of Amyl Nitrite.*
5. *FANTUS, B., AND STAEHELIN, R. *Behavior of Blood Pressure in Man during Recovery from Muscular Work, with Remarks on the Uskoff Sphygmotonometer.*
6. ASCHNER, B. *Concerning Cardiac Neurosis and Basedowoid Conditions, and their Varying Behavior during Function Tests with Adrenalin.*
7. DETERMANN AND WEIL, F. *On the Viscosity and Gas Content of Human Blood.*
8. BITTORF, A., AND FORSCHBACH, J. *On the Capacity of the Lungs in Various Diseases.*
9. MASUYAMA, M. *Clinical Knowledge of the Plague.*

2. Stierling examined the movement of ingesta in the large intestine of man by means of the x-ray, both in normal and pathological cases. He uses 20 gm. of the carbonate of bismuth in 400 ccm. of water, taking seven or eight exposures during the forty-eight hours subsequent at fifteen seconds. He finds most of the "food" has passed the small intestine in between two and three hours. After four hours it is seen in cecum, ascending and transverse colon, and after six hours in the descending colon and sigmoid; these times within considerable limits. But there are two peculiarities of its onward course in the large intestine, (1) a retention in the cecum and (2) an impeded movement just before the splenic flexure is reached, the former most marked; in fact, food persists in the cecum for twenty-four hours, at which time the rectum holds almost all the rest of the excrement. X-ray plates and autopsy findings agree on this retention of food in the cecum, a possible explanation being that relative to the rest of the colon the cecum is a thin-walled repository, perhaps of atavistic function, with slight motive force and possessing antiperistaltic motility, for which latter the author cites clinical evidence. In case of chronic constipation and enteroptosis, sluggishness at the two points mentioned is especially noticeable and must be of importance in explaining certain abdominal symptoms. The author has seen gas collected in front of the splenic flexure, the patient complaining of pain; then after the pain had passed off no gas was to be seen. He also points out the probable significance of this retention in connection with chronic appendicitis and the increasing number of disorders generally attributed to absorption of substances from the intestinaal tract.

Cannon's earlier and similar experiments on cats are carefully reviewed, and his observations largely corroborated and his theories generally accepted. Six plates appended.

3. Caro investigated experimentally the question of heart hypertrophy following prolonged administration of digitalis, and concludes that this drug causes from its selective action on the myocardium a true hypertrophy. He treated 7 rabbits and 4 dogs with moderate doses of digalen and digitalis subcutaneously over a period of two to three and one-half months, with occasional omissions by which cumulative effects were entirely avoided. The conditions of experiments were as good as possible, young animals being employed, and controls being of the same litter as animals experimented upon. His tables show, first, that heart hypertrophy regularly follows the prolonged use of digitalis preparations, and, second, that no other organ is similarly influenced. Changes in blood vessels were not constant and so could not be the primary cause of the cardiac hypertrophy.

He feels that possibly digitalis should be given in anticipation of great cardiac strain, as prophylactic.

A summary of other work on the same subject and a bibliography comprise more than one half of the paper.

5. The authors examined seven healthy persons and four cases of heart disease with the Uskoff tonometer to determine effects of work upon maximum, minimum and amplitude of blood pressure. No constant variations were obtained. The authors tested the instrument with others and found it essentially accurate. [J. B. A.]

Obituary.

FRANCIS COLLAMORE, M.D.

IN the death of Dr. Francis Collamore, which occurred Aug. 18 at Pembroke, Massachusetts loses a widely respected citizen and physician of the old school. Dr. Collamore was born Dec. 7, 1825, was graduated from Dartmouth Medical School in 1846, and after beginning practise in Braintree removed to Pembroke where the Collamores, father and son, have practised uninterruptedly for more than one hundred years. At the time of his death Dr. Collamore was the oldest member in point of time of The Massachusetts Medical Society and the last of the group of physicians who organized the Plymouth and Hatherly Medical Societies. In addition to his professional activities he was a representative to the General Court in 1881, a member of the school committee of this town and town treasurer for a long period. For fifty years he was justice of the peace and wrote a number of papers on the history of his native town. Dr. Collamore was the oldest subscriber of the BOSTON MEDICAL AND SURGICAL JOURNAL, which he took regularly for fifty-three years.

Correspondence.

SOUTHAMPTON AND THE ISLE OF WIGHT.

[*From Our Foreign Correspondent.*]

SOUTHAMPTON, Sept. 2, 1910.

Mr. Editor: Southampton is a city of many interesting associations, and preserves to this day numerous memorials and suggestions of its past. Along the shore of its beautiful bay still runs Canute Road, by the waters where King Canute is reputed to have given his famous rebuke to the flattering courtiers in the days of the Danish dominion over Britain; and the solid old Norman walls and gates and towers, still encircling half of the ancient town, recall the times of a later conquest. On the buttresses of the bar gate used to be the paintings, now removed to a museum for safety, representing the victory, in single combat with the giant Ascupart, of Sir Bevis, the half-legendary hero of Southampton, whose name, doubtless originally Beauvois, still persists in the form Beavis or Bevois as a local surname to be seen on shop-signs and door-plates. Near another of the gates, in Blue Anchor Lane, is preserved the palace of King John, which that monarch is said to have inhabited for a time after the departure of Richard, his lion-hearted brother, from the port of Southampton at the head of his Crusaders to the Holy Land. Southampton saw another royal embarkation, made much more familiar to us by Shakespeare, when in 1415 Henry V set sail here for the invasion of France. Henry stayed in Southampton for some days before his departure, and it was here that the conspiracy against his life, so graphically narrated in the play, was opportunely brought to light. In the dingy little *Domus Dei*, near the royal quay, is a tablet recording the burial there, after execution, of the three conspirators, —"Richard, Earl of Cambridge; Lord Scrope, of Masham; and Sir Thomas Gray, of Northumberland." This building, formerly a hospital or almshouse, has now been used for several centuries as a place of worship by the descendants of Huguenot refugees in Southampton, much as the crypt of Canterbury Cathedral is used by the French silk-weavers of that town.

One other historic embarkation from Southampton has especial interest for us. In the summer of 1620, just two hundred and ninety years ago, the *Speedwell* and the *Mayflower* sailed from this port to found a new nation beyond the seas. The unseaworthiness of the *Speedwell*, which had already brought the Pilgrim Fathers from Delfthaven in Holland, compelled them to stop at Plymouth, whence the *Mayflower* finally sailed alone on Sept. 6 of the same year. Southampton, however, was their original port of departure, and it seems appropriate that the beginnings of our own New England should be so linked with this ancient and historic maritime town. One is tempted to indulge in much speculation and revery, standing at sundown on a height overlooking Southampton Water, and in imagination to contrast those frail craft of momentous destiny with the huge American liners that now come wearing up the Solent, back from the great Republic of the West.

The interest and associations of Southampton, however, are not all within its walls. On the southeast shore of the harbor, secluded in a quiet wood, is Netley Abbey, whose ruin, like those of Tintern and Fountains, is far more beautiful than its original perfection could ever have been. Such a ruin is infinitely stimulative to the imagination, for it not only gives boundless opportunity to reconstruct the past but illustrates that shattered aspiration may be even greater than splendid achievement. Far more prosaic than the abbey, and doubtless far more useful than it was, is the Netley Military Hospital, which stretches its fine brick front conspicuously along the waterside. It has accommodation for over a thousand patients and is said to afford unusual opportunity for the study of tropical and cutaneous diseases. We did not visit it, however; as vacation shortens, abbeys grow more attractive than hospitals.

Over against Southampton Harbor, which it protects, as a gigantic breakwater, from the rage of the "merry channel chops," lies the Isle of Wight, sometimes called the island of centenarians, on account of the reputed salubriety of its climate. One would rather expect the climate to be particularly bad, yet it does not seem to be so, and the island is much resorted to by invalids, especially by patients with phthisis and other diseases of the lungs. Along the south coast of Wight, just west of Ventnor, is the Royal Victorian Hospital for Tuberculosis, consisting of a series of larger and smaller buildings extending for over a quarter of a mile along the shore. There were other things in the island, however, that interested us more and we spent a day very pleasantly coaching and traveling through its picturesque territory. Just beyond the Victorian Hospital is a ravine which rejoices in the magnificently swashbuckling name of Blackgang Chine. Visions of pirates and smugglers rose at once in our minds, but we were assured that the abyss harbored nothing more formidable than lizards. At the western extremity of the island are the so-called "Needles," two detached rather stumpy masses of chalk rock projecting above the waters of Alum Bay. They are very beautiful in the dazzling sunshine, but do not really look like needles at all, unless like the point of a cambric needle seen through a microscope. Carisbrooke Castle, near Newport, was interesting for its association with Charles I, who was imprisoned here before his execution. One is also shown here the old well, conveniently placed so as to receive all the drainage from the castle, but whose waters, once doubtless deemed delicious, are now considerately labelled "not fit to drink." Let our improvement in some of the details of life console us for the loss of its more romantic elements.

Our last day at Southampton was spent in an excursion to Chichester, a quaint old town in "sweet Sussex by the sea." It is of Roman origin, built along two main streets intersecting at right angles. In the square at this point of anastomosis is the "mercat-cross," like a crown built of stone, indicating the site of the old market-place, and large enough to afford shelter to a number of marketers in inclement weather. The cathedral is hard by, surrounded by a modest close, in which stands its unique detached bell-tower. Within the church are many monuments, one of them to the poet Collins, who was born and who died in Chichester. One of the most interesting tablets was that recording the life and virtues of "John Arundel, M.D., Fellow of Exeter Coll., Oxon., and in 1420 Proctor of the University. He afterwards took his doctor's degree in Physick." He also took orders and held many ecclesiastical offices, finally becoming Bishop of Chichester. "He was Chaplain and first Physician to King Henry VI, being allways in great favour with that Prince." In 1459 he was promoted to the see of Chichester, and, concludes the inscription, "he satt heere about 19 yeares, and dying ye 18th of October, 1477, was Buried under this Great Tomb." After more than four hundred years, let us hope that our brother physician, who healed souls as well as bodies, sleeps well in his great tomb, and that after our brief labors we may find as pleasant a resting-place as his, surrounded still by the successors of those to whom he ministered.

Not far from the cathedral is the Hospital of Saint Mary, another one of the many almshouses surviving out of the Middle Ages. This particular institution, still persisting on its ancient foundation, accommodates under its roof eight old women, each in a separate cubicle with sitting room. Each of these poor beneficiaries receives, besides her board and lodging, a dole of tenpence a week, and in addition "ten shillings every other year in lieu of a new gown." It would seem that most of the fallacious vanities of life must be abrogated under such a regimen. After all, the essentials of existence, like those of happiness, can be comprised within a very small compass.

Perhaps it is hardly fair to put down all our pleasures of the past few days to the credit of Southampton. Nevertheless, the charm of the town seems to extend over all the country round about; and we shall not soon forget our stay here since the welcome night when we put in as returning pilgrims, and heard our own tongue spoken once more, and set foot again on the homelike shores of merry England.

MEDICUS PEREGRINUS.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 3, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	7	1
Chicago	—	—	Pittsfield	9	2
Philadelphia	—	—	Brookline	3	—
St. Louis	—	—	Gloucester	14	3
Baltimore	—	—	North Adams	5	3
Cleveland	—	—	Northampton	8	3
Buffalo	—	—	Chicopee	—	—
Pittsburg	—	—	Medford	3	1
Cincinnati	—	—	Beverly	4	0
Milwaukee	—	—	Leominster	3	—
Washington	—	—	Hyde Park	4	3
Providence	—	—	Melrose	6	2
Boston	188	71	Newburyport	3	2
Worcester	42	10	Revere	6	2
Fall River	36	21	Westfield	7	3
Cambridge	26	9	Woburn	3	1
Lowell	33	19	Peabody	—	—
New Bedford	35	18	Marlboro	4	3
Lynn	19	97	Attleboro	2	1
Springfield	24	13	Adams	1	1
Lawrence	31	15	Clinton	0	—
Somerville	14	6	Gardner	4	4
Brockton	14	2	Milford	4	3
Holyoke	9	3	Watertown	0	—
Malden	8	2	Plymouth	—	—
Chelsea	23	6	Southbridge	2	1
Newton	9	4	Weymouth	5	2
Salem	8	3	Framingham	—	—
Haverhill	13	7	Wakefield	—	—
Fitchburg	—	—	Webster	2	—
Everett	7	2	Arlington	—	—
Quincy	—	—	Greenfield	2	1
Taunton	16	6			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 7, 1910.

PETTUS, W. J., assistant surgeon-general. While on leave in England, directed to proceed to Southampton, Liverpool and Glasgow upon special temporary duty relative to measures for the prevention of the introduction of Asiatic cholera into the United States, and then resume leave status. Sept. 2, 1910.

KERR, J. W., assistant surgeon-general. Detailed to represent the Service at the annual meeting of the American Public Health Association, to be held in Milwaukee, Wis., Sept. 5-9, 1910. Aug. 30, 1910.

CARTER, H. R., surgeon. Detailed to proceed to certain ports in Europe upon special temporary duty relative to measures for the prevention of the introduction of Asiatic cholera into the United States. Sept. 2, 1910.

WASDIN, EUGENE, surgeon. Granted one month's leave of absence from Aug. 22, 1910, on account of sickness.

COBB, J. O., surgeon. Directed to proceed to Manitowoc, Wis., upon special temporary duty. Sept. 1, 1910. Detailed to represent the Service at the annual meeting of the American Public Health Association, to be held in Milwaukee, Wis., Sept. 5-9, 1910. Sept. 2, 1910.

GEDDINGS, H. D., surgeon. Directed to proceed to Marseilles, France, and Genoa, Italy, upon special temporary duty relative to measures for the prevention of the introduction of Asiatic cholera into the United States, and then rejoin station at Naples, Italy. Sept. 1, 1910.

MCMULLEN, JOHN, passed assistant surgeon. Granted twenty-one days' leave of absence from Sept. 3, 1910.

ANDERSON, JOHN F., passed assistant surgeon. Granted one day's leave of absence, Sept. 2, 1910, under paragraph 189, Service Regulations.

WILLE, C. W., passed assistant surgeon. Directed to proceed to Ashtabula, O., upon special temporary duty. Sept 1, 1910.

LLOYD, BOLIVAR J., passed assistant surgeon. Granted twenty-nine days' leave of absence from Aug. 20, 1910.

SPRATT, R. D., passed assistant surgeon. Granted one day's leave of absence, Aug. 27, 1910, on account of sickness.

FROST, W. H., passed assistant surgeon. Directed to proceed to Grundy Center, Ia., upon special temporary duty. Aug. 29, 1910.

MULLAN, E. H., passed assistant surgeon. Granted five days' leave of absence from Aug. 1, 1910, under paragraph 191, Service Regulations.

ASHFORD, F. A., passed assistant surgeon. Granted one month's leave of absence from Aug. 30, 1910.

KOLB, LAWRENCE, assistant surgeon. Granted seven days' leave of absence from Aug. 28, 1910, under paragraph 191, Service Regulations.

DREW, A. D., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 15, 1910.

MARR, H., acting assistant surgeon. Granted fifteen days' leave of absence from Sept. 5, 1910.

MOORER, M. P., acting assistant surgeon. Granted six days' leave of absence from Aug. 14, 1910.

O'NEILL, ARTHUR A., acting assistant surgeon. Granted ten days' extension of leave of absence from Aug. 9, 1910, on account of sickness.

RANSOM, S. W., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 1, 1910.

SCHUSTER, B. L., acting assistant surgeon. Granted three days' leave of absence from Sept. 7, 1910.

WALKER, T. D., acting assistant surgeon. Granted one day's leave of absence, Sept. 8, 1910.

WETMORE, W. O., acting assistant surgeon. Granted three days' leave of absence from Aug. 11, 1910, under paragraph 210, Service Regulations.

STEARNS, WILLIAM L., pharmacist. Granted twenty-one days' leave of absence from Sept. 6, 1910.

STIER, CARL, pharmacist. Granted one day's leave of absence, Aug. 27, 1910, under paragraph 210, Service Regulations.

OTT, C. R., pharmacist. Granted one day's leave of absence, Aug. 25, 1910, under paragraph 210, Service Regulations.

CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING SEPT. 17, 1910.

LONGAUGH, R. I., passed assistant surgeon. Commissioned passed assistant surgeon from May 4, 1910. Sept. 9.

DONELSON, M., passed assistant surgeon. Detached from the Naval Hospital, Naval Home, Philadelphia, Pa., and ordered to duty at the Naval Hospital, Newport, R. I. Sept. 13.

REED, E. U., passed assistant surgeon. Detached from the "Philadelphia" and ordered to the "Princeton." Sept. 13.

MILLER, J. T., passed assistant surgeon. Commissioned passed assistant surgeon from June 27, 1910. Sept. 13.

CASTO, D. H., assistant surgeon. Detached from the "Princeton" and ordered to the "Philadelphia." Sept. 13.

HERMESCH, H. R., passed assistant surgeon. Commissioned passed assistant surgeon from July 12, 1910. Sept. 14.

MCDOWELL, R. W., assistant surgeon. Discharged from treatment at the Naval Hospital, Norfolk, Va., and ordered to the Naval Medical School Hospital, Washington, D. C., for treatment. Sept. 14.

RECENT DEATHS.

DR. J. FRANK GILLESPIE, of the Borough of the Bronx, New York City, died on Sept. 14, in the forty-second year of his age. He was born at Parrsborough, Nova Scotia, and was graduated from the Baltimore Medical College in 1897. At the time of his death he was physician for diseases of the eye ear, nose and throat to the out-patient department of the Lebanon Hospital.

DR. CHARLES COOKE RANSOM, of New York, died on Sept. 13, at the Faxton Hospital, Utica, shortly after an operation for the relief of intestinal obstruction. He was a native of Richfield Springs, N. Y., and fifty years of age. He was graduated from the University of Buffalo Medical College in 1883 and was a visiting physician to the City Hospital on Blackwell's Island. For many years he had practised during the summer at Richfield Springs, and had devoted special attention to the study of gout and rheumatism.

Original Articles.

THE PLASTIC SURGERY OF THE OVARIES AND TUBES.

BY WALTER C. SEELYE, M.D., WORCESTER, MASS.

In dealing with the surgical treatment of ovaries, it is necessary to bear in mind the effect of these organs, both in their normal and pathological conditions, upon the organs correlated with them. In the past few years much work of interest and importance has been done by physiologists on the subject of hormones (ὁρμάω, to arouse, excite) or the active principle of the internal secretion of glands. In experimental work on animals, Bayliss and Starling obtained an explicit example of how one organ controls the activity of another organ by means of a specific chemical substance given off to the blood. Edkins states that this effect is not a nervous reflex, but a stimulation of one organ by chemical products formed in another. Howell says: "We might modify the definition so far as to designate as hormones those substances in solution which, conveyed from one organ to another through any of the liquid media of the body, effect a correlation between the activities of the organ of origin and the organ on which they exert their specific effect." Among the hormones of the various glands of the body that are either proved or assumed to exist, and which are held responsible for certain well-known correlation of functions, are mentioned a hormone in the ovary which controls the growth of the uterus and the processes of menstruation, and a hormone which controls the implantation of the fertilized ovum and growth of placental tissue.

In "The Making of Species," by Dewar and Finn, it is shown that the development of secondary sexual characteristics is dependent on the secretion of these hormones. These secondary sexual characteristics usually affect the skin, especially epidermic appendages and the superficial parts of the skeleton, or whole limbs and appendages. Experiments of injecting the extract of the testes of a cock into the hen bird have produced wattles and tail feathers in the latter similar to those of the cock. Many birds in captivity lose some of the beauty of their plumage, and another curious fact is that the male plumage sometimes appears pathologically in the hen birds, more especially in those that have become sterile from age or disease. Such phenomena as these suggest that in some cases the bright colors of the male may be pathological and that the hormones secreted by the male sexual cells may exercise an injurious effect on the body tissue. Further investigation may prove, what at present may be reasonably assumed, that more of the functional disorders of the uterus have their origin in pathological conditions of the ovaries.

In dysmenorrhea, the prevailing opinion at present is that mechanical obstruction, such as by membranes or by flexions of the uterus, are not possible causes of this condition. It has been many times proven that obstruction is not absolutely present in these cases, that probes of small caliber can invariably be passed into the uterine cavity, and that the flow of blood is so slow that any patency whatever of the uterine canal would allow the blood to pass, even if violent spasmodic contractions should momentarily shut off the canal. There is every reason to believe, therefore, that the pain is due to the abnormal spasm rather than to any obstruction to the flow. It has, on the contrary, also been well shown that where there was from some cause complete obstruction, pain has been absent. Spasmodic contractions of the uterus are generally acknowledged to be the cause of pain in dysmenorrhea, and only about one third of women menstruate without pain. But it is the cause of this abnormal spasmodic contraction that has given rise to so much perplexity in the question. Some writers have attributed it to a cervicismus, or hyperesthesia of the mucous lining of the cervical and uterine canal with a tight contracted cervix. The least touch of a probe on this sensitive tissue may cause great pain, and the natural conclusion is that the flow of blood and membranes over this surface causes pain, and thence the spasm of the uterus. But the fundamental cause must lie deeper, and if the perfectly normal functions and painless contractions of the uterus during menstruation, in the fortunate one third of menstruating women, are regulated by the properly balanced hormones from the ovaries, it seems reasonable to suppose that any slight abnormality in the ovaries may upset that balance and so produce the condition of contracted cervix and spasm of the uterus in dysmenorrhea.

The experimental work on this subject is still open for further investigation. It is evident, however, in the limited field of observation, that dysmenorrhea and often other irregularities of menstruation are invariably associated with pathological ovaries, with or without abnormalities in the tubes. Gibbons, of London, says: "When the amount of properties of the ovarian secretion are absolutely normal, no alteration takes place in the regular menstruation, but where it contains some abnormal constituent, or its elements are not duly proportioned, then the action of the blood causes the secretion preceding menstruation to irritate the uterine mucous membrance and give rise to the reflex action leading to painful contractions." With perfectly normal acting ovaries, then, may be associated a normal menstrual life, which is in turn associated with normal sexual instincts and fertility. For these reasons it is desirable to do all that is possible toward preserving or restoring these important functions by reparative operations on the ovaries and tubes.

Surgical treatment of ovaries and tubes has passed through several periods of development, from extreme radicalism to extreme conservatism, till now, in the light of the history of experience, it is possible to formulate a little more closely the present attitude lying somewhere between these two extremes. No general rule can be applied for all cases, but each must be a study by itself and judged according to age, domestic conditions of life, number of children, miscarriages, menstrual

* Read before The Massachusetts Medical Society, June 7, 1910.

history past and present, inflammation past or present, acute or chronic, and neurasthenic conditions.

With these points in view I will attempt a classification of cases as a guide to the mode of procedure in any given case.

1. Young, unmarried women, or women in early married life, with no pregnancies, who have had continual and severe dysmenorrhea, constitute the first class in which the very history demands a pelvic operation.

The findings are almost invariably unicystic or polycystic ovaries, often bound down by adhesions into the posterior cul-de-sac, or to the sides of the pelvis, varying in size from ovaries slightly larger than normal to those four or five times that size. Considering that such a woman has the best part of her life before her, she represents the class for maximum conservatism.

If both ovaries are only slightly enlarged and finely polycystic throughout, they are better left and not resected, but must be carefully freed from any abnormal positions and adhesions that they have usually acquired. They must be then brought high up in the pelvis, taking care at the same time that the tubes are free. The ovaries in this case may be gently suspended or hitched over to a higher position on the broad ligament, or even, in some cases, passed through the broad ligament and fastened to the anterior surface.

If one ovary of this class is as above described, and the other greatly increased with one or a few cysts, the latter may be resected if the main body of the ovary is normal; but if there is a mere shell of normal tissue left, total extirpation is the safer method, leaving the other ovary whole. If both ovaries have undergone serious cystic degeneration and there is any normal tissue left, it seems reasonable in this particular class to preserve part of one ovary at least. It seems more reasonable to preserve the function of menstruation, and the effect of properly balanced hormones, if possible, in a woman of this class, in spite of the chance of a subsequent operation, than to sacrifice all at the first blow.

In resection of ovaries in such cases, there must be great care to preserve the normal circulation and avoid constriction, which leaves the ovary prone to further cystic degeneration. A maintenance high in the pelvis is generally recognized as an important step after any cutting operation on the ovary. By so doing the return circulation may be made, if possible, more free than before, and thus help in naturally reducing the ovary to a normal condition. In all my cases of resection of ovaries, plain catgut, No. 1 or 2, is used in an over-and-over suture, care being taken to have good approximation of the edges to avoid adhesions, and also to leave no dead spaces for a chance of hematoma.

2. Married women between thirty and forty years of age, with one or more children, form the second class.

Here the point of view changes somewhat. There is less of the woman's menstrual life to be conserved at this point, and certain sacrifices of ovaries may be made that would be unwise in the first class.

Where both ovaries are badly involved in cystic degeneration, and evidently undermining the health, the point of conserving the woman's condition may outweigh that of conserving the ovary, with all its possibilities of future return of trouble. In such a case the patient's attitude of mind must be carefully considered, and unless she insists on ovarian tissue being left, and bearing the responsibility herself, such ovaries should be removed *in toto*.

J. O. Polak believes the field of ovarian resection a very limited one. In 300 cases thus operated he found that 41, or 12%, returned for further operation, requiring ablation of the remaining ovary or of the remaining portion of a resected ovary that had been left at the primary operation.

In cases of cystic degeneration of this class, careful judgment is necessary as to the proper procedure. This, it seems to me, depends upon how completely the ovary is involved. If the cyst formations are large and confined pretty well to one end of the ovary, it is reasonable to believe that resection may be done with good results, but if there is no considerable part of the ovary free from degeneration it is doubtless best to remove the entire ovary. On the other hand, the ovaries that are only slightly larger than normal, and involved in the tiniest cystic formations, are best let alone and secured in a high position.

Cysts of the corpus luteum sometimes grow to considerable size and can be shelled out of their capsule, leaving normal ovarian tissue behind. In all forms of large tumor growths of the ovaries, whether benign or malignant, there is no justification in leaving any portion of the ovary. But a difference of opinion arises in the condition where one ovary is perfectly normal and the other malignant, whether to remove the normal ovary also. No less an authority than H. A. Kelly says: "If malignant disease exists on one side, it is safer to remove the opposite side also." Other writers do not favor such a procedure, and the individual case must be judged according to circumstances.

3. Women on a near approach to the menopause form a third class in which the minimum of conservatism is reasonable.

Abnormal ovaries with any probability of causing future disturbance should unhesitatingly be removed. Any attempt at resection or transplantation of ovaries, combined with plastic operations on the tubes, either to preserve the effect of hormones, menstrual life or possibility of pregnancy, seem unreasonable in this class of cases. A rare exception, however, may occur in a woman who is anxious to risk everything for the remote chance of a first pregnancy.

4. The fourth class comprises cases of acute or chronic inflammation, and those that have completely subsided from the same.

In cases of acute inflammation of tubes and ovaries it is the generally recognized attitude, both abroad and in America, to wait, if possible, till the acute symptoms have subsided. If this is not possible, a fact to be determined by the run of the

patient's condition, open drainage must be obtained either by vaginal puncture or median incision into the pelvis from above, and any more extensive operation deferred till a later date. Any plastic operations in the acute stage can be nothing but dangerous and are not to be considered.

In chronic inflammation there must be a careful consideration of the woman's condition, taking into account the duration of the inflammation. In those cases of long standing, where the woman's health is at stake, total extirpation of tubes and ovaries may be necessary, but many of them offer favorable conditions for plastic work. If the ovaries are normal and the inflammatory area or pus sac is definitely confined to a small portion of the tube, this may be excised without contaminating the surrounding area, and the proximal end of the tube left patent by sewing the mucous membrane to the peritoneal surface.

J. Clarence Webster resected the fimbriated end of a tube, and at a later date found, on opening the abdomen, that fimbriæ had formed at the resected end of the tube.

Plastic work on the tubes has been unsatisfactory to a large degree, and Polak has abandoned the practice altogether, as he found the results disappointing; but if such work is to be done at all, the most favorable class for its practice is that which has gained complete recovery from the inflammation of the tubes. Here the tubes will almost invariably be occluded by adhesions and cicatrization. Pregnancy is the only consideration for plastic operations on such tubes, for menstruation will usually continue normally provided the ovaries are left. Even though such operations are discredited by some, if, from the woman's standpoint, a possibility of pregnancy is the greatest thing at stake, it seems reasonable to take advantage of every measure that may restore such a function. Plastic operations on the tubes of these cases can do no harm and may bring untold happiness to a family by making possible the birth of a child, as has been the case in a few instances, even where the tubes were partially destroyed and a resected ovary was transplanted to the uterine portion of the tube.

F. H. Martin has obtained pregnancy by this procedure, which he calls homotransplantation. Kelly reports a case where but one tube was left and one ovary on the opposite side, in which pregnancy followed.

5. The fifth class of cases is represented by young women in early life who have had total extirpation of both ovaries and are contemplating marriage.

These are open to a last resort, namely, transplantation. The earlier it is performed, the more likelihood there is of any success. Martin, in his interesting experiments of heterotransplantation, or the transplantation of a portion of an ovary from one woman to another, cites a few cases in which menstrual life was partially restored, and states the report of another case in which conception followed.

6. The last class, that of neurasthenic cases, must always be judged most guardedly.

Whether their symptoms are from causes of a pathological or functional nature must be absolutely determined, if possible. The old saying, "Never operate on a neurasthenic," is perhaps only too true when bearing upon the sexual organs. It is safe to say that these patients belong in the first place in the hands of a neurologist, and only as a last consideration should any attempt be made in reparative operations in such cases.

The 35 cases on which I have operated in the past two years, 9 single and 12 married, or 21 in all, represent classes 1 and 2, with dysmenorrhea and irregularities in catamenia; 10 had resection of one ovary; 5 had double resection of ovaries; 6 had resection of one and extirpation of the other ovary.

Of these, all but one had marked immediate relief from dysmonorrhea, and the relief has held to the present time.

In two of these cases dysmenorrhea was of much severity, so that the patients had to go to bed for several days at each period. The intervals were shortened, and the patients had only about one week free from pain between periods. These were not only relieved of dysmenorrhea, but the periods became normal in time.

The one case unrelieved was of the first ten and was one in which resection or extirpation of the untouched ovary ought to have been done, for it was large and cystic. She will probably return for secondary operation.

Of the remaining 14 cases, 4 were over forty years of age and had chronic inflammation of both tubes and ovaries. Total extirpation was performed in each. One was a large cyst of one ovary, which was removed; another was a cyst combined with a pus tube on one side, and was removed with the tube. Eight had resection of one or both tubes on account of occlusion from past inflammation. The lumen was left patent, and the ovary brought into close contact with the proximal end of the tube. In these 14 cases, the late results of 4 are unknown; the rest have been in good health with no symptoms. No pregnancies have yet been reported.

In conclusion, I would emphasize, first, the plea for more abdominal operations on the pelvic organs in cases of severe dysmenorrhea, and, second, the importance of a classification as an aid in determining the mode of procedure in a given case for operation on the ovaries and tubes.

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DISCUSSION.

DR. ERNEST B. YOUNG, of Boston: We have listened to a very interesting paper upon an important subject. A great deal of our pelvic surgery in the hospitals, on account of the condition of the patients and their social station, has to be of a radical nature, and it is a good thing to occasionally consider the more conservative methods of treatment.

All the principal points have been well touched upon by the speaker. There is one point concerning which I would like to say a word, and that is in relation to operations upon the tubes after inflammatory conditions in the pelvis. If we are to obtain favorable results we must proceed cautiously, and allow time for as complete a resolution as possible before beginning. Some German investigated these cases of tubal infection, made cultures, and found it was nine months on the average before the various cocci in the tubes became harmless. So a considerable time must be allowed to elapse after infection before we can hope to operate with good results or with safety to the patient.

Then, in the next place, various investigations have shown that operations of a conservative nature upon the tubes are much less successful than upon the ovaries. Dr. W. L. Burrage published two interesting papers upon this subject some years ago. He divided the cases into gonorrheal infections and those which arise from pelvic infection after miscarriage; or rather, I should say, from the infections with the more common pus cocci after miscarriage and full-term labor.

The conditions in these two classes are entirely different. In gonorrhea we find large tubes with heavy walls, thickened and intimately and broadly adherent to the bottom of the pelvis and to surrounding structures — often filled with pus. Thus we are working, as a rule, with hopelessly diseased tissues which are unable, I believe, to perform their functions under any conditions. If we destroy adhesions, large raw surfaces are left to contract new adhesions, and the conditions at the end are apt to be no better than when we began. However, we need not entirely despair, for I know of a case where one ovary and tube were removed and the other ovary left with a resected tube. This woman became pregnant four times after the operation and gave birth to four living children. But this is the exception, not the rule. I have personally never seen a successful plastic upon the tubes after gonorrheal infection, and where cases have apparently recovered perfectly, and the abdomen has been opened subsequently, the abdominal extremities of the tubes have been always closed.

In the septic infections after miscarriage and labor, due to the more common cocci, the conditions found are entirely different. The brunt of the inflammation in this class falls upon the cellular tissues of the pelvis, and the tubes are frequently little affected. When the abdomen is opened at the height of the process the tubes are often perfectly free and their ostia patulous. Then, again, they less often contract the deep, broad pelvic adhesions which we find in the gonorrheal cases; for the infiltrated broad ligaments lift the tubes out of the pelvis and the adhesions are of an entirely different character. In the gonorrheal cases, as I have said before, the adhesions are very dense, and when broken they bleed. In the other class they are long, diaphanous, and have a very poor blood supply. They do not bleed when broken, and no large raw surfaces are left for future peritoneal adhesions. After the worst cases of puerperal sepsis, even with the streptococcus, the tubes are frequently open, the walls are thin and the feel is that of normal tissues. In the post-puerperal cases it may be possible to do something to aid pregnancy by breaking up such adhesions as constrict or displace the fimbriated extremity of the tube; but I do not believe, except where the tubes are absolutely closed, that we can do much to help pregnancy by operation, for if the tubes are patulous they are in condition to fulfill their purpose as well before as after any plastic.

Thus it appears to me that the prognosis in all cases of conservative operation upon the tubes must depend primarily upon the physiological condition of the tube itself and upon the extent and nature of the adhesions. After gonorrheal infection the chance of success is very slight. On the other hand, after puerperal infection with the ordinary pus organisms, the opportunity for success is vastly greater.

DR. MALCOLM STORER, of Boston: I have been much interested in the various ingenious theories advanced by Dr. Seelye to account for ovarian dysmenorrhea. In the cases of pain preceding menstruation, however, I cannot but feel that a quite sufficient explanation is to be found in the fact that it may be painful for an ovary to enlarge with the congestion coincident with menstruation if it is buried in a mass of adhesions.

I have for years been strongly in favor of the utmost conservatism that is consistent with good work, in cases when a child is desired, and should even go so far as to say that while, of course, the woman's life is the first consideration, we should have the greatest possible hesitation before performing an operation that will render further childbearing impossible. The reproach is sometimes brought against these conservative operations that often a secondary operation is needed. That, doubtless, is so; but if, between the two operations, a previously sterile woman gives birth to a child, I think in most cases she would regard the second operation as a very slight price to pay.

I agree thoroughly with what Dr. Seelye has said about avoiding operation, other than vaginal drainage, in the presence of acute inflammation. One can, however, generally operate with impunity long before the nine months some writers have mentioned as necessary to elapse after the acute stage. I regard two or three weeks quite long enough to wait in most cases.

I do not at all agree with the writers Dr. Seelye has quoted who are so skeptical as to the benefit of plastic operations upon the tubes. One is apt to be influenced by one's personal experience, and the happiness of several mothers upon whom I have performed plastic tubal work has not served to mitigate my enthusiasm at all. In one case I removed an ovarian tumor on each side, each containing some two quarts, and left on one side a tiny fragment of an ovary. At the same time I built a new ostium in a hydrosalpinx on one side and resected the middle third of the other tube, anastomosing the healthy fimbriated end with the uterine stump of the tube, and the woman got pregnant within a year and has had another child subsequently.

Dr. Seelye has spoken of ovarian transplantation. I can contribute a case.

Some years ago a woman who had had one ovary and both tubes removed told me that she wished to marry again, but her proposed husband insisted that first something be done that should render pregnancy at least a possibility. I accordingly split the fundus uteri and sewed one half of her ovary into the uterine wall so that its surface projected into the uterine cavity. Two years later the woman had all the symptoms of pregnancy, but at three months gave birth to a fleshy mole, evidently a very early pregnancy gone wrong. I feel that this subject of ovarian transplantation is one of great promise.

I have enjoyed Dr. Seelye's highly suggestive paper very much.

Dr. E. W. Cushing, of Boston: I do not know whether I understood the reader correctly as saying that the common dysmenorrhea of young women was to be attributed largely to disease of the ovaries. If I did so understand correctly, I beg leave to differ with that view, for it is evident that the simple dilatation of, and putting a stem in, the uterus will in the great majority of cases cure that dysmenorrhea without opening the pelvis. Where there are adhesions following inflammation, it is a very different class of cases. In regard to the removal of cystic ovaries, not ovaries with a cystoma, but with many little cysts in them, I should be very loath certainly to remove both. We have found good — in fact, excellent — results by resecting, but the old method of simply opening the cysts — letting the fluid out by puncture with a needle — is often all that is required. These little cysts are caused presumably by a thickenng of the outer wall of the ovary, which does not allow the exit of the ovum and the fluid which accompanies it.

It is a sad and serious thing to remove both ovaries in a young woman. "*Crede experto.*" Menstruation is to her the sign of her womanhood. She soon forgets the pains which seemed to justify the operation, and she grieves over the loss of potential motherhood, and yearns for the baby which she cannot ever have, and often refuses the offer of marriage she would otherwise gladly accept.

I have been through the different stages of which the writer speaks — of the removal of ovaries that should be saved, of the saving of ovaries that should be removed, until I have got to the middle course. But I am persuaded that at present there is a vast number of ovaries removed unnecessarily, a vast number of operations done which do not need to be done, where there is dysmenorrhea. With a heavy subinvoluted uterus and all the suffering that goes with it, the tendency now is to lay the blame immediately to the ovary, and, instead of curing the subinvolution and endometritis, and supporting the ovaries, many enthusiasts remove the ovaries and are as proud as Jack Horner of their deed.

In regard to surgery of the tubes, I believe in it. I believe in opening the tubes where there are adhesions around the end of the tube, sometimes removing the end of the tube and splitting it open in order to form a new ampulla and provide for conception. In repairing tubes in that way I have had a number of cases where conception has occurred, although in one or two cases I have been given to understand that the patients wished I had not opened the tube, as conception was unwelcome.

POST-OPERATIVE PNEUMONIA WITHOUT MORTALITY IN TWO THOUSAND CONSECUTIVE SURGICAL OPERATIONS AT THE FREE HOSPITAL FOR WOMEN.

BY W. P. GRAVES, M.D., BOSTON.

Recent reports by Risley and Munro on the frequency of post-operative pulmonary complications at the Massachusetts General and Carney hospitals respectively has suggested a compilation of the following statistics from the Free Hospital for Women, partly for the sake of comparison, and partly to make some further inquiry into the possible factors that may enter into the causation of these complications. The present series of cases dates from a time when accurate anesthesia records were instituted, and the number 2,000 was chosen for the sake of convenient comparison with the two reports mentioned above. Of these cases, 550 were uncombined laparotomies, 539 were laparotomies combined with vaginal and plastic operations, 65 were breast operations and the remainder were mostly plastic. This gives, therefore, a total of 1,089 laparotomies to serve as a basis of comparison with the statistics of Risley and Munro, each of whom analyzes 1,000 laparotomies; while it gives 911 cases not laparotomies as a basis of comparison with 920 cases not laparotomies reported by Risley.

The methods of administration of the anesthesia were as follows:

Gas and ether with the Bennett inhaler 259 times, anesthol with the open cone 6 times, ether by the drop method 124 times, ether with the open cone 1,591 times. The anesthetic, though for the most part given by medical students, who had short terms of service, was in every case under constant skillful supervision, so that in a partial sense its administration may be regarded as expert. Malinckrodt's ether was used in all cases. Of the 1,089 laparotomies, 20 developed pulmonary complications, of which 8 were bronchopneumonia, 3 were pleurisy and 9 were bronchitis. Of the 911 cases not laparotomies, 2 developed pulmonary complications, 1 being a pleurisy and 1 a bronchitis. The following is an analysis of the Free Hospital cases.

BRONCHITIS.

1. Resection of ovaries. Open cone. Bronchitis beginning third day after operation and lasting twenty-four hours.

2. Curettage, myomectomy, ventral suspension. Bennett inhaler. Bronchitis beginning second day after operation and lasting five days.

3. Amputation of cervix, vaginapexy, appendix. Open cone. Bronchitis beginning day following operation, lasting three days.

4. Appendectomy and internal shortening of round ligaments. Open cone. Bronchial cough starting immediately on recovery from ether and lasting through convalescence. (This patient had a small area in the right apex on entrance which indicated an old tuberculosis.)

5. Anterior and posterior colporrhaphy, ventral hernia. Open cone. Bronchial cough started four days after operation, lasting through convalescence, with slight evening temperature. (This patient had evidence of an old tubercular process of the right apex.)

6. Ventral and left inguinal hernias, appendectomy, Whitehead's operation. Open cone. Bronchitis starting three days after operation, cough lasting ten days. Stitch abscess in abdominal wound.

7. Internal shortening of round ligaments, appendectomy. Open cone. Bronchitis starting day following operation, lasting four days.

8. Fistula in ano. Open cone. Bronchitis beginning day following operation, lasting two days. Sepsis in wound.

9. Double salpingectomy, appendectomy, myomectomy, ventral fixation. Bronchial cough

beginning day following operation, lasting four days. Open cone.

10. Inguinal hernia, appendectomy, ventral suspension. Open cone. Bronchitis starting up on ninth day. (Previous tubercular history.)

BRONCHOPNEUMONIA.

1. Hysterectomy for pelvic inflammation. Bennett inhaler. Poor recovery from ether. Bronchopneumonia starting fourth day following operation lasting ten days. Sepsis of wound.

2. Hysterectomy and perineorrhaphy. Open cone. (Patient cyanotic and vomiting during operation.) Bronchopneumonia starting on third day and lasting two weeks.

3. High amputation of the cervix, ovariotomy, vaginapexy. Open cone. Bronchopneumonia beginning seven days following operation and lasting eighteen days. (Patient sixty-eight years old.)

4. Appendectomy, Gilliam's operation. Open cone. Bronchopneumonia started day following operation, lasting seventeen days. Sepsis of wound eleven days after operation.

5. Hysterectomy and appendectomy. Open cone. Bronchopneumonia beginning day following operation, lasting five days.

6. Inguinal hernia, myomectomy, salpingectomy. Open cone. Bronchopneumonia beginning day following operation, lasting thirteen days.

7. Anterior and posterior colporrhaphy, appendectomy, ventral fixation. Open cone. Cyanotic and vomiting during operation. Bronchopneumonia beginning three days after operation, lasting six days. Parotiditis on seventh day after operation.

8. Amputation of cervix, resection of ovaries, appendectomy, vaginapexy, perineorrhaphy. Open cone. Bronchopneumonia beginning two days after operation, developing into empyema. (Patient very sick.) Operation for empyema. Eventual recovery.

PLEURISY.

1. Double salpingo-oöphorectomy. Open cone. Pleurisy beginning day following operation, lasting two days.

2. Ovariotomy, myomectomy, appendectomy. Open cone. Pleurisy beginning day following operation and lasting four days.

3. Internal shortening of round ligaments, appendectomy. Open cone. Pleurisy beginning six days after operation, lasting three days.

4. Cervical operation for anteflexion. Open cone. Pleurisy beginning four days after operation, lasting three days.

A comparative table of figures from the three reports follows.

In the Massachusetts General and Free Hospital series each includes 3 previously tubercular cases which had post-operative flare-ups. In the Carney Hospital series, previously tubercular cases are excluded. It will thus be seen that the actual percentage of occurrence of post-operative lung complications does not differ very greatly in the three reports, although the Carney and Free hospitals appear to have some advantage over the Massachusetts General. This shade of difference is undoubtedly accounted for by the fact that in the Massachusetts General series a considerably larger number of cases were operated on in the presence of pus, or were desperately ill before operation. The higher percentage of mortality in the Massachusetts General may also be accounted for in the same way. A comparative study of the three series cannot but convince one that cases previously septic or desperately ill before operation are somewhat more susceptible to pulmonary complications, and, in case they do contract such complications, are decidedly more subject to a fatal termination. The absence of mortality in the Free Hospital cases confirms Risley's observation that post-operative pneumonia or bronchitis in clean cases is of shorter duration and of a less serious nature than in septic cases, the majority of the Free Hospital cases being clean cases.

	No. Cases.	Total Pulmonary Complications.	Pneumonia.	Bronchitis.	Deaths.
Massachusetts General:					
Laparotomies,	1,000	22	15	7	9
Not laparotomies,	920	5	Not stated		2
Carney:					
Laparotomies,	1,000	15	11	4	4
Free Hospital:					
Laparotomies,	1,089	20	8	12	0
Not laparotomies,	911	2	0	2	0

In order to compare the results of the three Boston hospitals mentioned in this report with the results in some of the foreign clinics, I have extracted some figures collected by Dr. John Homans and published in an article by him in the *Johns Hopkins Bulletin*, April, 1909.

Reference.	No. of Laparotomies.	Mortality Due to Lung Complications. Per Cent.
Korte (Bibergeil),	3,909	3.5
Czerny,	1,302	3.9
Von Angerer (Gebele),	1,196	6.43
Kümell (Grimm),	1,754	2.5
Von Mikulicz (Henle),	1,787	8.0
Von Mikulicz (Kausch),	1,881	2.4
Krönlein,	1,409	0.56
Trendelenberg (Läwen),	1,829	5.4
Lexer (Wolff),	976	12.5

It will thus be seen that the figures of the three Boston clinics have a decided advantage over those of the foreign clinics with the exception of Krönlein's. As Homans points out, Krönlein took extraordinary precautions of all kinds to avoid post-operative complications. The ether in all his cases was given by an expert anesthetist by the open method. Another set of figures also taken from Homans's article, the source of which is not stated, is shown in the table on the following page.

The last item in this table quotes 3,280 gynecological cases, and presumably represents in general the class of cases reported in the present article from the Free Hospital for Women. It, therefore, presents an opportunity to compare the Free Hospital cases with at least one other clinic of a similar nature.

Operations.	No. of Cases.	Died.	Died of Lung Complications.	Percentage of All Deaths Due to Lung Complications.
Stomach,	2,176	623 (28.63%)	181 (8.31%)	29.05
Bile passages,	1,042	132 (12.66%)	20 (1.92%)	15.15
Hernia,	1,601	60 (3.74%)	15 (0.93%)	25.00
Goiter,	3,526	34 (0.96%)	15 (0.42%)	44.00
Gynecological,	3,280	257 (7.83%)	50 (1.53%)	19.45

In order to make a more specific comparison between the Free Hospital cases and the cases designated as "gynecological" in the last item of the above table, I have analyzed 2,000 other cases from the Free Hospital for Women operated on consecutively before the beginning of the series which forms the subject of this paper. I find in this set of 2,000 cases that post-operative pulmonary complications occurred 15 times, of which 6 were pneumonia, 2 were pleurisy and 7 were bronchitis, figures which show a percentage of occurrence very similar to that of the other series of 2,000. In this second series, however, there were 2 deaths from pneumonia. One of the cases which had a pleurisy following the operation is reported in the records to have died some time after of tuberculosis of the lungs. Although I have not included this in the number of deaths, as the patient's physical examination was negative when she left the hospital, yet there is certainly some reason to suppose that the operation might have had some influence on the process. If we combine the two Free Hospital series, we will find that, out of 4,000 consecutive cases, 37 contracted post-operative pulmonary complications, from which 2 died, giving a 0.05% mortality from lung complications in the entire series. It is also of interest to note that the total mortality from all causes in the 4,000 cases, over half of which were laparotomies, is 0.97%. A comparison, then, with the gynecological cases quoted from Homan's article is as follows:

	No. of Cases.	Died.	Died of Lung Complications.	Percentage of All Deaths Due to Lung Complications.
Gynecological cases quoted by Homans,	3,280	257 (7.83%)	50 (1.53%)	19.45
Free Hospital cases,	4,000	39 (0.97)%	2 (0.05%)	5.4

It is of interest to study the present series of cases with reference to some of the more commonly assigned predisposing causes of pulmonary complications.

Operative shock has been suggested as a predisposing cause of post-operative pneumonia. A glance at the list of operations in the present series shows that few of them were of a very serious nature; in fact, only one of the cases (No. 1, bronchopneumonia) suffered shock from the operation. The operations of extreme gravity and those in which profound shock took place were singularly free from lung complications.

The method of administration of ether is claimed to have an important bearing on the occurrence of post-operative complications, many writers, among them Munro, claiming great advantages for the drop method. By far the greater majority of the cases in the Free Hospital series were anesthetized by the open-cone method, and the resultant figures of occurrence and absence of mortality go to show that the method of administration is not an important factor in causation.

The length of time of anesthesia administrations does not seem from this series of cases to be an important causative element. The majority of the 2,000 operations were long cases involving, usually, several operations under each anesthesia, 539 of them being combined abdominal and vaginal operations.

The average length of time per operation would undoubtedly exceed that of a large general surgical hospital; nevertheless, the occurrence of lung complications is not greater.

The age of the patient apparently is of little importance in calculating the chances of post-operative pneumonia, unless the age be considerably advanced, in which case the patient, of course, would be more susceptible to whatever may be the real causative element. Of the 22 cases, one patient was sixty-seven years old and one was sixty-eight. As the total number of operations on patients of this approximate age was not great, the occurrence of the two lung complications constitute a fairly high percentage and confirms the obvious apprehension that in operating on elderly people the danger of post-operative pneumonia must always be considered. On the other hand, there was no case of lung complication between the ages of forty-nine and sixty-seven, although a large number of patients of that period of life are included in the series. Fifteen of the cases suffering lung complications were under forty, while the average age was thirty-seven, which is approximately the average age of the entire series of the 2,000 cases.

The physical type of the patient is something which every surgeon naturally takes into consideration. The stout, short-necked patient, who is difficult to etherize, inspires a certain amount of apprehension as to post-operative pneumonia. An analysis of the 22 cases gives the following: Only 6 were large and fat, 8 were of medium physique, and 8 were small and thin, thus leaving the fat cases considerably in the minority.

Bad behavior under ether, such as cyanosis and vomiting, which depends sometimes on the physical characteristic of the patient, but more often on an unskillful administration of the anesthetic, does not seem to play an important part. Only 2 of the 22 cases are recorded as having taken ether badly.

Risley lays considerable stress on the preparation of the mouth as a preventive measure. Prac-

tically all of the 2,000 cases in this report had a thorough preparation of the mouth before operation. This fact may possibly account to some extent for the less severity of the lung complications in this series.

Wound sepsis in conjunction with post-operative lung complications is sufficiently common to attract serious attention. Of the 22 cases, 4 had sepsis in the wound, while one had parotiditis. This gives a 20% occurrence of wound sepsis. As the percentage of wound sepsis in the entire 2,000 cases is approximately 5%, some definite relationship between lung complications and wound sepsis is at least suggested. Septic embolism from infected wounds to parts of the body other than the lungs is occasionally seen where there is no doubt as to the process, the most striking example being the occasional occurrence of acute endocarditis following local sepsis. It seems, therefore, probable that some of the cases of post-operative pneumonia are caused by the lodging of septic emboli in the capillaries of the lungs, starting from a local sepsis of the wound. This theory, however, can account for only a small number, as in the majority of cases of lung complications there was no local sepsis, while in most of the cases of sepsis in this report the pulmonary complications antedated the appearance of the local wound infection; moreover, post-operative pneumonia is rare during the summer months, while wound sepsis is more apt to occur in hot weather than in cold.

Homans, in his article cited above, classifies pulmonary complications in three groups, namely: Ether pneumonias, hypostatic pneumonias and embolic pneumonias. All of the 22 cases of pulmonary complications reported in the present article were examined by me personally, and I was able to make no distinguishing classification between the various forms that appeared; in fact, the process seemed to me similar in every one of the cases, the more severe cases going on to a bronchopneumonia, the less severe stopping with a temporary bronchitis or pleurisy. The onset was similar in all the cases. The average time of onset was three days, whether all the cases be taken collectively or each of the three separate types individually. There was no case which resembled an infarction, and I did not observe the close resemblance to thrombosis and embolism pointed out by Homans in some of his cases.

One of the cases which died of pneumonia in the series of 2,000 cases cited above taken from the Free Hospital records previous to the present series closely resembled the type of case described by Homans as embolic. I did not see the case personally, but from the history I should unquestionably classify it thus. An additional reason for this case to be regarded as of the embolic type is that pneumonia occurred in a very septic patient during the month of June at a time when post-operative pneumonia of the ordinary type is comparatively rare.

One of the most striking factors that appears in the study of these cases, and one that is observed by all writers of the subject, is the occurrence with rare exception of post-operative pneumonia only in the cold weather months, that is, from November to April. The possible bearing of this factor on the causation will be referred to later. Another constant observation in the study of post-operative pneumonia is that, in patients having a tubercular or bronchitic focus in the lungs, the process is almost invariably lighted up. This is a most important fact and is at once suggestive of the possibility that the irritative action of ether on the normal respiratory tract has little, if any, deleterious effect, but that where there exists at the time of operation an inflammatory focus in some portion of the bronchi or lung, the irritative action of the ether may be sufficient to light it up into a more extensive and serious process. This theory has considerable support in the fact that post-operative lung complications occur almost universally in the cold weather months at a time when non-operative bronchitis and pneumonia are most common. Dr. Munro states in his article that the post-operative lung complications may be merely a matter of chance. Is it not reasonable to agree with him that it is a matter of chance, and that this chance is a pre-existing focus of infection, which might or might not have developed into a more extensive process, but which receives an added stimulus from the irritative effect of the ether? It is not unlikely that many of the cases of post-operative pneumonia had local foci, which might have been detected by expert examination before operation. It must be conceded that the physical examination of the lungs in public hospitals made as a routine before surgical operations is not usually of the expert or even of the careful type. The number of hospital cases who during the winter months develop bronchial colds while waiting for operation supports also to some extent the reasonableness of this theory. These cases, if operated on immediately on entrance to the hospital, before the bronchial affection had made itself evident, would be recorded as cases of post-operative lung complication when the bronchial cold did develop. Considering the effect which ether has on a previously tubercular or bronchitic process, it may well be conceded that in a case like the one just cited, especially if the patient were septic or old and feeble or desperately sick from some other cause, with a resultant lowering of resistance, ether might stimulate to a serious condition of bronchopneumonia a local focus of infection which might under other circumstances terminate only in a bronchial cold.

The theory that post-operative lung complications are commonly caused by the stimulation of pre-existing foci of infection in the lungs is well illustrated by two cases taken from the series of 2,000 cases preceding the series which forms the subject of this paper. The first case is one whose entrance examination of the lungs is recorded as negative. This patient developed a pleurisy soon after the operation. Several months later she died of tuberculosis of the lungs, though apparently well when she left the hospital. One is

inclined to believe that this patient's death was ultimately due to the lighting up of a pre-existing tubercular focus, which might possibly have been detected before the operation. The second case was one who on entrance to the hospital had a well-marked bronchitis. Operation was deferred until it was supposed that she had recovered. A lobular pneumonia developed two days after the operation, from which the patient recovered. This is a most striking example of the way in which an ether anesthesia may light up a pre-existing bronchitic infection, for it is perfectly obvious that the patient had not completely recovered from the bronchial cold from which she was suffering on entrance to the hospital.

There is still one other important factor which appears in all reports on this subject, namely, the greater occurrence of post-operative complications in abdominal operations. The Free Hospital series shows a difference of 10 to 1 in frequency over non-abdominal operations, while Risley's report shows a difference of more than 4 to 1. Operations which require considerable handling of the gut figure prominently in all the post-operative pneumonia reports, especially in that of Risley. This greater frequency of post-operative pneumonia in cases of abdominal section may be used as a further argument in our theory of causation. It is sufficiently well known that the reflex respiratory irritation from ether is much greater during laparotomies than during other operations not laparotomies, and especially in cases where there is considerable handling of the gut or injury to the peritoneum. Abdominal cases not only require more ether, but a more forced administration. In a case, therefore, of a pre-existing focal infection in some part of the bronchial tract, a greater irritative effect by the ether on this infected focus would be exerted during a laparotomy than during an operation elsewhere.

A comparison of the Free Hospital cases with the classified cases taken from Homans's article would show that post-operative pneumonia is less frequent following pelvic operations than it is after operations performed higher in the abdomen. The highest percentage of occurrence seems to be following operations that are performed near the diaphragm. The theory has been advanced that the greater occurrence of pneumonia after these operations is due to an infection which takes place directly through a system of lymphatics which has been demonstrated as existing between the abdominal and pleural cavities. It seems to me more reasonable to assume that in operations near the diaphragm there is greater irritation of the respiratory tract.

It is possible that the excellence of the Free Hospital figures may partly be due to the extremely careful preparation which all laparotomies receive before operation. By this preparation, which begins two days before the operation, every patient, unless an emergency case, comes to the operating table with the intestines almost completely collapsed, and the packing off of the intestines necessary for pelvic operations is comparatively simple and can be done with a minimum amount of gauze. In this way there is no forcible handling of the intestines, and only a small part of the intestinal peritoneum comes in contact with the irritating surface of the gauze sponges. Etherizers are instructed to have their patients deeply anesthetized immediately before the packing off of the intestines, a process which, if done with the patient partially anesthetized, causes a great amount of reflex irritation and much violent handling and pushing of the intestines. In order to insure the perfect anesthesia of the patient before the surgeon makes his incision, all the table preparation is done with the patient in the Trendelenberg position. If this is not done, the sudden turning of the patient into the Trendelenberg position is liable to start up an irritating reflex of the respiratory tract.

CONCLUSIONS.

1. Post-operative lung complications occur somewhat more frequently and are more fatal in cases previously septic or desperately sick or in the aged and feeble.

2. Operative shock, method of administration, length of time of the anesthesia, age of the patient unless extreme, physical type of the patient, bad behavior under ether, wound sepsis, pulmonary embolism, do not seem to bear any constant relationship to the causation of post-operative pneumonia.

3. Post-operative pneumonia and bronchitis occur with great constancy during the cold weather months, and are rare during the summer months.

4. Pre-existing foci of infection in the lungs are almost invariably lighted up or aggravated by operations under ether anesthesia.

5. The following theory of causation is suggested by the writer. Most of the cases of post-operative lung complications are caused by the lighting up or the aggravation of pre-existing focal infection.

6. Many post-operative pneumonias might be avoided by a more careful and more expert pre-operative examination of the respiratory tract.

AN ANALYSIS OF SEVENTY-TWO CASES OF PNEUMOTHORAX.

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In 1900 the cases found in the medical catalogue of the Boston City Hospital for the previous eighteen years were analyzed,[1] and it is instructive to compare these cases with similar cases from the same services during the succeeding ten years, from which I have collected in a similar manner 55 cases, and have added 17 others from the surgical, x-ray, contagious and autopsy records.

As the services are not greatly larger now than when Dr. Morse's statistics were collected (averaging about 150 on the medical services), it is evident either that the condition of pneumothorax occurs

[1] John L. Morse: An Analysis of Fifty-One Cases of Pneumothorax. Am. Jour. Med. Sci., May, 1900.

more frequently, or that the diagnosis is more often made; as tubercular cases in which pneumothorax especially occurs are now *non grata* at this institution, it would seem that the increased number of such cases is probably due to their more frequent recognition; and in the detection of them, the x-ray examinations have played a considerable part, as will be seen.

The cases of pneumothorax naturally fall, according to etiology, into two large classes, which may be tabulated as follows:

I. Tubercular cases,		41
II. Non-tubercular:		
Empyema,	10	
Pneumonia,	4	
Pleurisy with effusion,	3	
Pleurisy ?,	1	
Diphtheria, subcutaneous emphysema, pneumonia and pneumothorax,	1	
Echinococcus disease,	1	
Subphrenic-intrathoracic abscess,	1	
Traumatic,	8	
Unknown cause,	2	
		31
		72

TUBERCULAR CASES.

Of 41 cases here classed, 30 were proved either by finding bacilli or at autopsy; 11 seem almost certainly to have been tubercular from onset, symptoms, course or signs. Of these 41 cases, however, we must for a time dispense with 12, as these either had been aspirated before admission or showed no signs of pneumothorax until after tapping.

Sex. — Of these 29 cases of spontaneous pneumothorax in tubercular or presumably tubercular subjects, all except 2 were men.

Age. — The average age was thirty and one-half years, the two women being slightly younger. The youngest was two years; the oldest, sixty-three; but both of these stand at their respective ends of life; nearly half were in the twenties.

Nativity. — As would be expected, the majority of these patients were born in New England or in Ireland, though six other countries are represented.

Occupation. — Many occupations are represented. Sixteen may be said to have been engaged in indoor pursuits, 13 outdoors, at the time of onset.

Location. — As in other series, we find a considerable majority of left-sided cases, 18 being on the left, 9 on the right, 2 not stated.

Prodromal symptoms. — The majority give a history of less than six months' illness. This may be of importance in view of the fact very frequently noted by others, and found in all of these autopsies, that pneumothorax occurs where there are few adhesions. In 3 cases there had been so little constitutional disturbance that they claimed to have been " always well " prior to the onset of pneumothorax.

Onset. — Though in some cases it is impossible to distinguish symptoms of pneumothorax from symptoms of associated pleurisy, in most it is fairly evident. In 5 cases pneumothorax came on insidiously without marked symptoms, or onset was masked by the chronic tubercular process, In the other 24, onset was sudden. The records do not go into what the patients were doing when the pneumothorax occurred, but as the great majority were sick at the time, most were doubtless doing little muscular work; it is specifically stated that in 3 cases the patient was waked from sleep by dyspnea and pain. *Intense pain* and *dyspnea* are by far the most common symptoms, the two appearing together, singly or in combination with other symptoms given below, and in almost all cases associated with the ordinary symptoms of pulmonary tuberculosis.

These prime symptoms as recorded occurred in the following frequency in the 29 cases:

I. Acute symptoms: Pain, 17; dyspnea, 16; weakness, 4; chill, chilly, followed or not by fever, 4; expectoration of large amount of pus, 2; palpitation, 1; dizziness, 1; diarrhea, 1; vomiting, 1.

II. Insidious onset. Symptoms of advancing tuberculosis. It is especially noted that 3 patients had no pain at onset.

Physical signs. — The hospital records, written by so many men, and of so varying quality and fullness, do not allow of an analysis of the signs; such would only add confusion to the paper. In reviewing the records, all diagnoses have been rigidly questioned and several cases omitted in which the possibility of cavity could not be excluded, most emphasis being placed upon succussion, dislocation of heart incommensurate with the amount of fluid present, x-ray, paracentesis and autopsy findings, together with, of course, the less dependable points, — hyperresonance, diminished and absent fremitus and breath sounds, amphoric breathing and metallic tinkle.

The treatment and outcome of the cases will be taken up together with the next group.

TUBERCULAR CASES IN WHICH PNEUMOTHORAX WAS OR MAY HAVE BEEN ARTIFICIAL.

Age. — Average, thirty-eight (twenty-two to sixty-five years).

Sex. — Nine males, 3 females.

Location. — Contrary to the usual rule, the right side predominates with 7, against 5 on the left.

Prodromal symptoms are very similar to the rest of the tubercular group: Seven had had cough for six months or less; 2, cough for a year; 1 had not been well since " grippe " sixteen months before; 1 had a tubercular testicle; 1 had had no prodromal symptoms.

On close examination of the records it was found that 5 of these cases certainly did not have pneumothorax until after tapping. One case had signs of either cavity or pneumothorax before, definite signs of free air after, tapping. The other 6 cases entered the hospital after tapping outside and showing at entrance free air in the chest. In one of these cases the patient felt succussion immediately after aspiration. So that, of these 12 cases, in at least 6 of them pneumothorax was associated with tapping. We shall deal with this subject later in the paper.

Treatment and outcome of 41 tubercular cases. —

In order to intelligently analyze the treatment and results thereof, we must classify them.

Serous cases treated by paracentesis. — Of 5 such cases, 4 were discharged relieved. The other died of pulmonary hemorrhage. One of the discharged cases is known to have died since.

Pus cases. — Eight treated by paracentesis; 4 died within five weeks of admission to hospital; another is known to be dead five years later; 2 were discharged relieved and 1 much improved.

Thirteen were operated upon, by either incision, resection or excision of rib. Of these, 1 died on the table, 5 died within five months and 1 in a year; 3 others were discharged in a very serious condition. The other 3 were discharged relieved, with some hope of improvement; unfortunately, we have not been able to trace them since.

Air case. — Died within a few hours of the onset of pneumothorax in spite of insertion of needle twice.

Physical signs of air and fluid not aspirated. — Of 11 cases, 3 died soon after entrance; 3 were discharged not relieved and must have died soon; another is known to have died two years later; 4 were discharged relieved.

Three cases, not stated.

One may ask what the pneumothorax had to do with the deaths. In only one case — from the hospital records and from return letters — can we definitely charge pneumothorax with the immediate cause of death; this was a man who died a few hours after its onset and who never recovered from the sudden onslaught. How much deleterious effect pneumothorax has is a matter for individual opinion in each individual case.

One might think that in those cases where air was supposed to have been artificially introduced the outcome might be brighter. Not so; of the 7 cases most suspicious in this respect, 2 died, 1 was discharged moribund; only 4 were sent out relieved. In only 1 case was the air found to have disappeared before discharge from the hospital.

From the above results of treatment, and from records of other observers, it is difficult to speak dogmatically concerning the treatment of tubercular pneumothorax. The best rule seems to be: If there is fluid, draw it off; if clear, repeat as often as necessary, and if purulent, drainage offers the best chance.

AUTOPSIES: TUBERCULAR CASES.

Several important points were noted in the 6 cases which came to autopsy:

(1) In every case pneumothorax was associated with cavity-formation in the lung of the same side.

(2) In 3 of these was a communication found between cavity and pleura.

(3) In 5 cases there was tuberculosis of both lungs, and in 4 of these was there evidence of an older process or denser pleural adhesions on the opposite side, i. e., pneumothorax occurred on the side where the process had evidently advanced most rapidly. This is confirmatory of others' observations.

(4) In 3 of the cases there was tuberculosis elsewhere: in one case in the bones of the fingers, in another in adrenals and prostate, and in a third, general miliary tuberculosis.

NON-TUBERCULAR CASES.

Empyema Following Pneumonia.

Ten cases of pneumonia developed pyo-pneumothorax; of these, 8 were certainly not artificially produced and will first be considered.

Six were men, 2 women; the average age was twenty-six years, varying from eleven to thirty-seven. Of 5 cases where there is good history of an attack of pneumonia, the complication of pyo-pneumothorax was probably first recognized on an average only after fourteen weeks from the date of pneumonia, as these cases came to the hospital untapped. No symptoms suggesting the onset of pneumothorax was given in 4 of these, but the fifth developed it during a severe coughing spell in the hospital, during which he raised a "half basin" full of pus; one of the others came to the hospital coughing large amounts of dark foul pus, evidently from a lung abscess.

Beside the 5 cases with evident history of recent pneumonia, are here grouped 3 others: 1 gave indefinite history of pneumonia twelve days before; another had fallen into the water, — at first seemingly well, he had later come to the hospital with pneumonia, after which signs of fluid developed and later still air, death occurring one month after immersion.

The eighth case of this series was a striking one. Though "well at the time," he had six days previous to admission become suddenly completely exhausted and unconscious. On recovering consciousness he complained of right-sided pain and dyspnea. At entrance there were signs of pneumothorax only, but a week later pus was found on tapping, containing pneumococci, and a few days later still thoracostomy was performed. At first the case went well, then irregular temperature for a week, when suddenly a second attack of dyspnea and cyanosis supervened and examination showed air in the left chest also. In spite of a discharging empyema on the right, and pneumothorax on the left, the patient lived twelve hours. Post-mortem section showed double empyema, but on neither side could a pleuro-pulmonic fistula be demonstrated even on filling the lungs with air under water.

Besides the 8 cases above were 2 others, one of whom had been tapped three times before admission and showed pyo-pneumothorax at entrance, dying soon after; the other showed typical signs of empyema on admission, but immediately after tapping, air was found also. This case died shortly after resection of a rib.

To sum up. — The symptoms at onset in these 10 cases were not acute in 3, but were part of the picture of neglected empyema. Of the 3 with acute onset, 2 consisted of the raising of a large amount of pus, evidently by establishing a broncho-pleural fistula. Only one exhibited acute dyspnea and pain so characteristic of the tubercular series. The explanation seems at hand: Doubtless in the majority of cases empyema alone

had rendered the lung on that side practically useless and had gradually pushed the heart to the other side of the chest. Pneumothorax in this case would be more likely to relieve than aggravate pressure; in the sudden pneumothorax from rupture of a tubercular cavity, however, respiratory and circulatory equilibrium are suddenly changed to the disadvantage of both heart and lungs.

Result of treatment. — Operative procedures were undertaken in 9 cases, resection of a rib under ether being the favorite. Four died directly, 3 being very sick at the time of operation, the fourth dying as described above from development of double pyo-pneumothorax. The other 6 were discharged relieved. In 3 the discharge was noted to be nearly stopped within two months; in 1 it continued at nine months; 2 cases have replied to inquiry that they are well after five and seven years respectively.

Pneumothorax, then, supervening in empyema following pneumonia, we cannot look upon as an evil except rarely, and it seems at times beneficial; its treatment is that of the accompanying empyema.

What the cause of pneumothorax in empyema is aside from the cases where a connection has been made with the lung is hard to say; some have attributed it to gas-producing organisms.

PNEUMONIA.

Four cases, but 3 of them surely followed tapping. In one case after the second tapping for hydrothorax, succussion was heard, no serious symptoms intervened and when the patient left the hospital two weeks later neither fluid nor air was demonstrated. A second case was aspirated, a sterile bloody fluid withdrawn and pneumothorax appeared; at discharge three weeks later there were signs of fluid, but the air was thought to be slight in amount.

In a third case paracentesis had been performed on two occasions and nothing obtained at either time; nine days after the last tapping the fluoroscope showed localized, probably encapsulated, pneumothorax. Before discharge there is a note that the pneumothorax had decreased. The fourth case was operated upon for appendicitis, after which pneumonia declared itself and also pneumothorax. At autopsy twenty or thirty bubbles of air escaped from the right pleural cavity, but its origin could not be explained. It is interesting to note that in this last case the pneumothorax though so slight in amount was diagnosticated before death.

Pleurisy with Effusion.

Three cases, the air following tapping in the hospital in 2; the third had been aspirated before admission and showed pneumothorax when first seen. In 2 air had disappeared after six weeks; all were discharged relieved, one, however, succumbing three months after leaving the hospital.

The two following cases seem designed to show us two methods of artificial pneumothorax:

Pleurisy?

A man twenty-five years of age complained two days before of sudden pain over his entire abdomen and especially the right lung. At entrance the lungs were found normal; later, however, a small patch of dullness was found near the right base and a needle was twice inserted, whereat signs of pneumothorax appeared. Both taps were "dry." For three weeks the signs of air persisted and then disappeared; no fluid was at any time demonstrated. The patient was discharged absolutely well with lungs normal. The course was not that of pneumonia.

Diphtheria, Subcutaneous Emphysema, Pneumonia, Pneumothorax.

A boy of ten developed severe laryngeal diphtheria with subcutaneous emphysema of neck and back, and was intubed. Pneumonia set in on the right and the emphysema became constantly more marked; exploratory puncture brought away no fluid, but immediately after tapping pneumothorax appeared. Two more tappings brought away 23 and 19 oz. of air respectively, but death occurred eight days after the first paracentesis. Autopsy in this case showed broncho-pneumonia in both lungs, and on opening the right pleural cavity much air escaped. There was no mention of the origin of the pneumothorax at autopsy, which probably was introduced from without, though the possibility of its coming from the subcutaneous emphysema must be kept in mind.

In reading over the case reports of the above 9 cases it is difficult not to believe that the air was introduced into the chest in some way during the process of tapping in 8 of them; if not, it is very hard to explain its presence. Moreover, in 7 of these we are struck with the fact of its disappearance in a moderate length of time, in spite of the fact that the pleura must have been anything but normal in any of them.

We now have to report 2 rare cases of pyo-pneumothorax, though the first one may possibly be of artificial origin:

Echinococcus Disease.

A carpenter, born in Italy, age not given, had been "feeling badly" for some time. Two weeks before admission he had severe pain in the back of his chest, but no cough. Examination showed signs of fluid in the right chest, but aspiration was unsuccessful and the patient asked for his discharge, signs in the chest remaining as at entrance. On his return to the hospital two weeks later he stated that he had been tapped a few days after leaving the hospital and that a half pint of clear fluid had been withdrawn. Signs now were typical of fluid and air. Paracentesis this time was successful, drawing off 5 ccm. of thick bloody pus. He was immediately turned over to the surgeons, who excised a rib and drained; soon after they were surprised to see in the pus and in the sputum also echinococcus cysts. Convalescence was extremely slow and he was at last discharged a chronic invalid to another institution.

Emerson [2] was able to find reference to pneumothorax in hydatid disease in the case of only three authors representing four cases. Unfortunately, we cannot here be sure that pneumothorax was not an accessory condition.

Subphrenic-Intrathoracic Abscess.

A man of thirty-six, with no previous history given, complained of a sharp pain in the epigastrium the day before admission, for which morphine was required. At entrance there were contradictory signs of fluid at the base of the right lung. In six days, however, there was undoubted fluid at this point, shifting readily with change of position, x-ray showing air and fluid. On the tenth day from the first symptom he was tapped and air and over a pint of pus withdrawn; later resection was performed; a finger introduced could feel a perforation in the diaphragm. The pus showed a variety of organisms.

The patient died the day of operation and no post-mortem examination was allowed; the etiological diagnosis is, therefore, not certain, but it would seem to be due to perforation of a hollow viscus as the lung was not demonstrably affected; gastric ulcer with perforation and extension of accompanying abscess is the author's first choice in this case.

Traumatic Cases.

There were 8 such patients, 5 being run over by teams, 3 from stab wounds, and withal only one death. In 4 of the 5 crush cases (the fact is not mentioned in the fifth), though it is difficult to think that the team did not run over both sides of the chest, pneumothorax appeared on the left, a fact of possible significance.

The signs can hardly be summarized from the records, but a number of data are significant. Concerning the onset of fluid, one man whose chest had been tapped with a hatpin four hours previously already showed signs of air and fluid; this rapidity of fluid accumulation was not duplicated by any other case and perhaps was aided by the alcoholic state of the patient. In two days the fluid was largely gone, and this in spite of the fact that the man developed delirium tremens.

Another case showed air the day of accident, and fluid and air by x-ray in two days. But other cases gave evidence of fluid only after a week as a rule. As for the duration of pneumothorax and complications, several patients were discharged almost immediately, with air present. In 2 women who developed pyo-pneumothorax, thoracostomy was performed, the discharge in each case having almost ceased in seven weeks, when released from the hospital.

In 2 of the crush cases it is stated that no evidence of fracture could be found, one four and one-half, the other twenty-seven years of age.

Subcutaneous emphysema occurred in 1 case, but apparently was not a troublesome complication.

[2] Emerson, C. P.: Johns Hopkins Hosp. Rep., 1903.

Cases of Unknown Origin.

One, a man seventy-four years of age, with indefinite signs of pulmonary disease, developed pneumothorax under observation, but without accompanying symptoms of any consequence. He died the same day as operation.

A second man, thirty-nine years of age, came to the hospital with signs of air and fluid in the right chest. On aspiration no fluid was obtained, but subcutaneous emphysema developed. Before a positive etiological dignosis could be made he left against advice.

PNEUMOTHORAX ARTIFICIALLY PRODUCED.

What is now said may seem to some to throw discredit on the institution, the records of which are here published. After a careful reading, however, we feel that the very considerable number of cases placed under this heading is correct. The fact that most authors omit discussion of artificially produced pneumothorax is no argument that it did not exist in their series. In Emerson's series, 20% were considered as in this category, which corresponds fairly with our 19% of certain and 32% of possible artificial origin.

From the above records the following are considered as artificially produced:

	Surely.	Possibly.
Of 41 tubercular cases,	6	6
Of 10 empyema cases,	1	1
Of 4 pneumonia cases,	3	
Of 3 pleurisy with effusion cases,	2	1
Of 1 pleurisy ? case,	1	
Of 1 diphtheria with subcutaneous emphysema case,	1	
Of 1 echinococcus case,		1
	14	9
Total,		23

In most cases our criterion consists in finding signs of pneumothorax after tapping in the hospital, where had been no signs before, examination being frequently supported by x-ray findings; occasionally the x-ray alone was relied upon. In one case were taken the symptoms of the patient who felt succussion immediately after paracentesis.

It is noticeable that in no case of pneumothorax were symptoms urgent, as was so frequently the case in spontaneous pneumothorax. This may be due to the fact that the act of paracentesis was itself an annoying performance and so extra discomfort passed unnoticed.

Nor was artificial pneumothorax the immediate cause of death in a single case. In one, however, it doubtless had some influence. Only one such case came to autopsy, and in this the record does not explain the cause.

This leads us to the method of causation of pneumothorax in these cases. The usual method of tapping in this hospital has been with the ordinary aspirating bottle, with suction pump, connected with a needle by a "push" joint; occasionally, however, a one-piece apparatus with gravity suction has been employed, and for diagnostic purposes at times a syringe with needle attached. We have not seen a needle or trochar

employed without some suction contrivance. With the above forms of apparatus it is conceivable that air may be pumped in, though this would probably give much more acute symptoms than any of our cases admit; also air may be introduced if the connections are broken or are insecure, and this seems a very likely method; also undue or even slight suction might well cause rupture of a superficial cavity, especially if associated with cough, as is frequently the case near the end of tapping. Then again the chance of introducing air into the pleural cavity from subcutaneous emphysema is a possibility which the case of diphtheria with this complication suggests, and of course we must always bear in mind the possibility of scratching the visceral pleura.

Although we cannot accuse artifical pneumothorax of immediately fatal results, or even be sure of its remote ill-effects in more than one or two cases, yet we cannot feel that it is a desirable thing to let non-sterilized air into the pleural cavity from without, or cause an internal open or closed pneumothorax by connection with a cavity or even with healthy lung.

The greatest care, then, should be taken in aspirating, first, that neither too great nor too sudden negative pressure be produced; second, that the apparatus be not disconnected during the process of tapping, without suitable stopcocks.

To this end an instrument devised by Dr. Francis H. Williams some twenty-five years ago appeals to the writer as simpler and safer than the ordinary aspirating set, with its uncertainty of connection and amount of suction; to which advantages may be added those of greater compactness and cheapness. This apparatus consists of three pieces of stiff rubber tubing, one end bearing the hollow needle, another leading to a small reservoir above to be filled with sterile water, and the third falling almost to the floor, the three attached in the center to a stopcock capable of uniting any two of the tubes. Thus by proper manipulation a chest may be aspirated by the constant suction of syphonage; by improper handling, harm would be unlikely to result.

Where a very little fluid is required for diagnostic purposes only a needle already attached to a 1- or 2-oz. syringe may be even simpler than the above.

X-RAY EXAMINATION IN PNEUMOTHORAX.

It is not my intention to speak at length on the value of x-ray examinations in pneumothorax, but merely to report in a general way its bearing upon the above cases (for technical considerations see Williams: The Roentgen Rays in Medicine and Surgery).

We have at hand 51 records of x-ray examinations in pneumothorax, representing 34 cases (of these 31 fall in this series, 3 are of previous date). The examinations are mostly fluoroscopic, some are radiographic. These examinations represent the work of Drs. Francis H. Williams and S. W. Ellsworth.

A summary of the service done by the x-ray in the 34 cases may be presented as follows:

	Cases.
Diagnosis of pneumothorax established first by x-ray examination,	12
Diagnosis of pneumothorax confirmed by x-ray examination,	19
Pneumothorax denied by x-ray, found on tapping,	1
Agrees with physical examination showing no air (pneumothorax appeared later),	1
No diagnosis made,	1
	34

In 3 examinations unsuspected fluid was found accompanying pneumothorax. In at least 2 cases the localized or encapsulated character of the pneumothorax was determined. In several cases it was useful in determining the amount of expansion of the lung on the affected side after operation.

A word as to the signs considered most reliable in x-ray diagnosis of pneumothorax: (1) Heart displacement, present in every case except 2 of 25 cases where the point is noted; (2) increased radiability of lung, to be distinguished from emphysema and cavity, especially significant when associated with readily changing surface of fluid if present; (3) visual fluid wave, either on shaking or with the heart beat; (4) diminished or absent diaphragm movement on the affected side and a low position of the same.

Doubtless in this series of cases the x-ray has been of valuable diagnostic and prognostic service, in leading either to an earlier or a more accurate understanding of a given case. The number of cases determined first by x-ray seems large; doubtless many of these were considered probably pneumothorax from physical examination, but it was just this doubt between pneumothorax and cavity, between increased pulmonary resonance above fluid and pneumothorax, which the x-ray examination was at times able promptly and decisively to dispel.

TOTAL NUMBER OF CASES OF PNEUMOTHORAX AT THE BOSTON CITY HOSPITAL IN TWENTY-EIGHT YEARS.

For the sake of completeness, let us add Dr. Morse's cases to ours with reference simply to etiology. The table stands as shown on the following page.

This table represents all classes of hospital records as far as could be determined in the past twenty-eight years. Doubtless a number of cases have escaped the cataloguer, as frequently only one diagnosis is indexed and pneumothorax is often not of the greatest importance.

SUMMARY AND CONCLUSIONS.

Tubercular cases comprised 69% of all cases of pneumothorax at the Boston City Hospital in twenty-eight years. Most were young or middle-aged men, and most had a recent history of less than six months' illness. The left side was most often affected.

Pain and dyspnea were by far the most common symptoms at onset, as also in Dr. Morse's series.

	Dr. Morse.	Author's.		
Tubercular cases,	36 8(?)	41		85, or 69%
Non-tubercular cases:				
Empyema or abscess following pneumonia,	4	9	13	
Immersion,	1	1	2	
Pneumonia,		4	4	
Pleurisy with effusion,		3	3	
Pleurisy ?,		1	1	
Diphtheria, subcutaneous emphysema and pneumonia,		1	1	
Echinococcus disease,		1	1	
Subphrenic-intrathoracic abscess,		1	1	
Traumatic,	1	8	9	
Unknown,	1	2	3	38, or 31%
				123 cases

A number of acute symptoms were less frequently of prime importance.

The treatment in these cases was for the most part essentially that of the fluid present; the prognosis was anything but encouraging.

Autopsy showed cavities in all 6 of our cases, and 8 out of 10 of the older series. Of the 16 autopsies the perforation was found in only 9, good evidence that the opening is apt to be very small, as, in fact, it almost always was when found. Pneumothorax seems most frequently to occur on the side of a rapidly advancing process where adhesions are either absent or friable. The other lung and other parts of the body are apt to show long-standing tuberculosis.

Pneumothorax may follow a long-standing empyema (of three months or more duration), by establishing a pleuro-pulmonic fistula or other means as yet not understood. The onset in these cases does not usually show the acute symptoms so characteristic of the tubercular cases, but may even cause temporary relief. Operative treatment in these cases is frequently permanently successful.

Two rare cases are here reported, that from subphrenic-intrathoracic abscess and that due to echinococcus, if the latter was not artificial in origin.

In traumatic cases we see fluid developing rapidly; the air does not, as a rule, last long and is probably of no serious import.

Artificial pneumothorax occurred in 19% and possibly in 32% of our cases. Though agreeing with some other series, this is altogether too high a percentage. By use of a simpler and safer instrument than that commonly employed, we feel that artificial pneumothorax, although its occurrence is in many cases probably of no ill consequence, could be largely avoided.

X-ray examination has frequently made difficult cases clear, rendered diagnoses more exact, qualified prognosis and explained the effect of treatment. Since this form of examination has come into more constant use in this hospital, pneumothorax has been more frequently diagnosticated.

I wish to thank all of the physicians and surgeons under whom these cases occurred for their kindness in allowing of their publication.

In particular thanks are due Dr. Francis H. Williams, at whose suggestion and by whose helpfulness the above statistics were compiled.

Clinical Department.

APPENDICITIS DURING THE YEAR 1908–1909 AT THE MASSACHUSETTS GENERAL HOSPITAL.

BY G. G. SMITH, M.D., BOSTON,
Assistant in Anatomy, Harvard Medical School.

Professor Kümmell's article on appendicitis in the *Archiv für Klinische Chirurgie* for June, 1910, reviewed in this Journal for Aug. 11, 1910, aroused my interest in the statistics of appendicitis. I looked up, therefore, all cases of appendicitis which were operated upon at the Massachusetts General Hospital, Boston, during the year beginning Nov. 1, 1908. This period was selected because the cases were fully catalogued only up to December, 1909.

There were in all 513 cases, divided into three groups — acute, subacute and chronic. The acute cases included all those requiring prompt operation, and usually presented those symptoms of pain, local tenderness, fever and leucocytosis which form the picture of "acute appendicitis." The subacute cases were, in the main, cases which had entered the hospital because of continued mild disease of the appendix, but were in no sense emergencies. The chronic cases were partly also of this type, and partly were discovered during operations upon the pelvic organs, especially in women.

In the subacute and chronic classes, appendectomy was done two hundred and sixty-eight times. The only death was in the case of an injured man who had sustained rupture of the small intestine, followed by peritonitis. At operation, the appendix was found to be coated with fibrin and was removed before the rupture was discovered. Since death in this case was in no sense due to the removal of the appendix, we are justified in saying that in 267 simple appendectomies there was no death. This was in spite of the fact that, in February, 1909, 3 cases contracted post-operative pneumonia. Of the 268 cases, 114 were in males, 154 in females. Only a few cases were drained, and those because of leakage from broken adhesions.

There were 246 acute cases, of which only 30 were treated without drainage. Only 76 of this class were in women; 170 in men. Twenty-eight cases were below ten years of age, the youngest

being two; 124 were between ten and twenty-five; 55 were between twenty-five and forty; over forty were 39, the oldest being seventy-three. This group has been rather arbitrarily divided into cases with peritonitis, cases with abscess, and simple acute appendicitis. Cases with peritonitis were those in which there were no walling-off adhesions, and in which the pus appeared to be spread over at least a third of the abdominal cavity. No case was considered to have an abscess unless a definite pocket of pus had been found. If the main process had been walled off, but a cloudy serum appeared on opening the peritoneum, the case was put into the abscess class.

Many of the simple cases presented fibrin upon the appendix, and free fluid, but they were not classed as peritonitis or abscess. Their usually speedy recovery (twelve to eighteen days) proved the absence of a more severe infection.

Of 246 cases of acute appendicitis, 66 were of the simple type. Of these, 36 were drained; there were 3 deaths (4.5%). One death followed pneumonia; one, pylephlebitis, and the third was in a case in which the colon had been resected at the same time the appendix was removed. One hundred and thirty-five cases showed frank, walled-off pus at the time of operation, and of these 10 died, a mortality of 7.4%. All but one of these died as a result of some complication. One had pneumonia; one, a probable pulmonary embolus; one, a hemorrhage from the wound; two, intestinal obstruction; and four, general peritonitis.

There were 45 cases in which, at operation, peritonitis, more or less general, was found. Of these, 10, or 22%, died. One had obstruction, 1 erysipelas, 2 pneumonia; the remaining 6 died apparently from the toxemia of their peritonitis.

Of the 23 deaths from acute appendicitis and its complications, 1 was in a child of eight, 7 were in people of from ten to twenty-five years, 4 in those of twenty-five to forty, and 11 in those above forty years. When arranged to show the relative mortality of the different ages, these figures are as follows:

	Cases.	Deaths.	Per Cent.
Below 10 years,	28	1	3.5
Between 10–25 years,	124	7	5.6
Between 25–40 years,	55	4	7.2
Between 40–73 years,	39	11	28.

From the above figures it is seen that acute appendicitis is more than twice as prevalent in men as in women; that between the ages of ten and twenty-five as many have the disease as in all other ages put together. It seems allowable to predict that, barring complications, there may be no fatal results following appendicitis without abscess or peritonitis; and to say that youth is a definite factor in recovery.

THE SHOOTING OF SALVATORE MIRANDO.*

BY J. WINTHROP SPOONER, M.D.,

Late Medical Examiner, Hingham, Mass.

SALVATORE MIRANDO was an Italian, aged about twenty-one, and had lived in Hingham for several years. On Sunday morning, Aug. 22, 1909, he visited a settlement of Italians on the estate of Thomas W. Lawson, of Scituate. The object of his visit was said to be to raise money to aid another Italian who had got into trouble and was under arrest. Mirando was engaged in conversation with one of Mr. Lawson's men, whose name could not be ascertained. The two men very soon were quarreling, and a hand-to-hand scuffle ensued, in which Mirando threw the other man into the bushes. The latter immediately rose and, drawing a revolver, shot Mirando in the upper anterior portion of the left chest. Mirando turned at once and ran a distance of sixty feet when he fell forward on the ground dead.

Autopsy, twenty-four hours later, at place of death.

Young man, well dressed, front of shirt and undershirt saturated with blood. Rigor mortis well marked. Lividity of dependent parts. Two fingers' breadth below the middle of the left clavicle, slightly inside the nipple line, is a perforating wound ½ inch in diameter, surrounded by a black lacerated area, the whole being ¾ inch in diameter and surrounded by a red areola. The wound penetrated the chest in the first intercostal space. On opening the thorax it was found full of liquid blood and currant jelly clots.

On the anterior aspect of the upper lobe of the left lung, midway between the apex and its lower border, near the internal edge, was a lacerated wound surrounded by a hemorrhagic area, the whole being ¾ inch in diameter. The mediastinal tissues in the neighborhood were blood-stained and boggy. The wound passed through these and through the ascending aorta just below the arch. Thence the wound is traced through the right lung, entering on the internal surface one third of the distance from the apex to the lower border of the upper lobe, passing out of the posterior surface of the lung, and out of the thorax between the fourth and fifth ribs. Here was found blood-stained tissue and fragments of the fourth rib. Thence backwards and upwards the wound is still traced through the blade of the right scapula, and among the fibers of the infraspinatus muscle is found a flattened bullet. With the exception of an old inflammation about the appendix, the abdominal organs were in a healthy condition. The heart and lungs were free from signs of disease.

The only noteworthy point which has led me to report this case is that a man who had been shot through the ascending aorta, receiving a wound large enough to cut one third of the vessel, should be able to run a distance of sixty feet.

The shooting took place early on a Sunday morning, in a very secluded spot, a long distance from the highway or from any human habitation, so that it was several hours before the police had notice of the case. The officers of Scituate began a diligent search for the perpetrator of the deed. Authorities of Boston as well as those of the towns adjoining Scituate were notified, but in spite of their efforts the person who shot Salvatore Mirando has never been apprehended.

* Read before the Massachusetts Medico-Legal Society, Feb. 2, 1910.

Medical Progress.

REPORT ON PROGRESS IN OTOLOGY.*

BY HARRIS PEYTON MOSHER, M.D., BOSTON.

(Concluded from No. 12, p. 477.)

OTITIS MEDIA AND THE GENERAL PRACTITIONER.

SCHWARTZE [16] relates unfavorable experiences with constriction hyperemia in suppurative disease of the middle ear. Notwithstanding the relief of pain after the application of the elastic band

[16] H. Schwartze: Münch. Med. Wochenschr., May 25, 1909.

to the neck, the work of destruction still goes on, and a sudden chill and fever may reveal the development of thrombophlebitis. The hyperemia treatment is permissible only in the mildest cases, which are free from suspicion of intracranial complications.

In the treatment of otosclerosis he has never witnessed striking benefit from potassium iodide, but in cases of syphilitic labyrinthitis of less than six weeks' duration prompt recovery follows mercurial inunctions. Labyrinthine deafness of longer standing is generally incurable. He has frequently obtained good temporary effects in otosclerosis, especially with simultaneous hyperemia of the labyrinth wall, by systematic sweating by means of hot-air baths. This relieves the congestion in the temporal bone, and the inflammation is favorably influenced. He has never witnessed any harm from the superheated air applied to the patient in bed; the effect on the heart, of course, is watched. Little is to be hoped from mechanical and operative measures in otosclerosis, but there is a broad field for rational internal treatment of the true cause — the dyscrasia — by general treatment, — by general treatment meaning tonic, revulsive, soothing, anti-rheumatic treatment. The frequently accompanying neurasthenia should not be forgotten. Warm saline baths and courses of mineral waters are also useful. Cold water treatment should be avoided. Sea bathing is to be avoided.

THE GENERAL PRACTITIONER AND THE TREATMENT OF THE EARS.

Every year, according to Schwartze,[17] a not inconsiderable number of persons lose their lives in consequence of foreign bodies in the ears, but not so much from the foreign bodies themselves as from the attempts to extricate them. Syringing with warm water is all that should be done to dislodge them. Never, he adds, should the physician allow himself to seek to extract a foreign body with an instrument. An insect in the ear may be killed by cigar smoke or a little warm water, or, better still, by the fumes of chloroform; maggots may be expelled by pouring sterilized oil into the ear; they come to the surface of the oil as they begin to suffocate. The dreaded "earwig" very seldom gets into the ear, but the writer has known many instances of fleas, bedbugs, small beetles and mites entering the ear. Numerous cases have come under his notice in which injury resulted from attempts at extraction of a foreign body when there was none present, or where it was in the other ear. In a case of recent trauma, instruments should be avoided as much as possible. The correct treatment is an aseptic protecting dressing and rest in bed.

TWO CASES OF CHOLESTEATOMA OF THE MIDDLE EAR. RADICAL OPERATION WITHOUT REMOVAL OF THE CHOLESTEATOMA MATRIX (SIEBENMANN'S METHOD).[18]

Siebenmann holds the theory that the matrix of a cholesteatoma is not an invasive or pathologic epithelial growth, but a natural attempt at repair and that the destruction of the bone about these cavities is due solely to increased pressure during periods of retention. He proposes to treat these cases by a free exposure of the middle-ear spaces by the radical operation without disturbing the matrix. The advantages claimed for the method are: Epidermization is complete in three to four weeks; there is less tendency to exuberant granulation and narrowing of the cavity; there is less danger of lessened hearing after operation. A supposed tendency to exfoliation and relapse is not the experience in Siebenmann's clinic. Two cases operated upon by this method are cited from the writer's practice. In the first, a boy of fifteen years, the epidermization was complete in six weeks, and whispered speech was heard at 40 inches, while in the second case, a girl of seventeen years, the epidermization occurred in three weeks, with a whisper hearing of over 9 feet.

THE PATHOGENIC INFLUENCE OF THE EYE ON THE EAR.

Referring to the observation of Rollet, that under the irritation of eye disease, such as disease of the cornea, iris and choroid, the phenomena of tinnitus may be produced, the writer[19] details two cases where this symptom was present. In one with extensive choroidal changes, the tinnitus recurred only when the eyes and head ached. In the other the tinnitus corresponded to the eye chiefly affected.

INFLUENCE OF OTITIS MEDIA ON OLFACTORY PERCEPTION.

Many authorities have noted in abscess of the temporal lobe consequent to otitis media a disturbance of the olfactory sense perception. Urbantschitsch[20] found, in one case, that the olfactory disturbance remained after complete healing of the cerebral abscess, and investigated as to how far aural inflammations alone imply olfactory disturbances. Out of 30 cases of unilateral otitis media, 22 (over two thirds) showed this symptom on the respective side of the nose; in 16 cases the perceptive power was decreased and in 6 cases increased in respect to the other nostril.

TREATMENT OF FACIAL PARALYSIS DUE TO DIVISION OF THE FACIAL NERVE IN THE MASTOID OPERATION.

Marsh[21] reports two cases in which the facial nerve was divided during a mastoid operation. In one case the facial nerve was completely divided, and the proximal end frayed and everted by the gauze packing. The proximal end was teased into its normal position, — coming almost in contact with the distal end; two or three strands of fine chromic gut were placed around the nerve, the ends being inserted into the bony canal and the parts protected for a short time by gutta percha tissue in the manner described by Sydenham.

[17] H. Schwartze: Münch. Med. Wochenschr., June 8, 1909.
[18] E. Hamilton White: Montreal Med. Jour., December, 1909.
[19] G. Sterling Ryerson: Canad. Pract. and Rev., July, 1909.
[20] V. Urbantschitsch: Monatsschr. für Ohrenh., No. 3, 1910.
[21] F. Marsh: Brit. Med. Jour., June 5, 1909.

As no sign of regeneration appeared in a month (Feb. 13), it was decided to reopen the cavity and examine the nerve ends. The ends were readjusted and a strand of fine chromic gut was with difficulty inserted in each of the aqueduct openings. The post-aural wound was closed and the cavity rapidly healed. Gentle galvanism was continued, but it was not until the end of June — four months later — that signs of power commenced in the mouth muscles; the improvement steadily extended to the other muscles, and the power had by May 7 returned to all except the corrugators of the brow.

EINE NEUE BEHANDLUNGSWEISE DES MENIÈRE-SCHEN SYMPTOMEN-KOMPLEXES. (VIBRATION MASSAGE FOR THE MENIÈRE SYNDROME.)

Herzer [22] found vibration massage so effectual in migraine, chronic rhinitis and connected conjunctivitis, and in neuralgia of the cranial nerves, that he applied it in a rebellious case of Menière's disease. The vibration massage was applied to the nasal mucosa, and the active hyperemia in the head induced by reflex action had a favorable influence on the inflammatory process and congestion in the semicircular canals. The case described in detail was that of a man of forty; no benefit had been derived from the usual drug treatment. The massage was applied to the nose every second day at first for twelve days; then three, then two times a week for about ten weeks, and there has been no recurrence during the two years since.

REFLEX AURAL NEUROSES FROM EYE STRAIN.

Of tinnitus due to eye strain, Theobold [23] has observed three distinct varieties, the more usual or vascular type, the relatively low-pitched whirling or fluttering sound caused by irregular contractions of the tensor tympani, and the high-pitched, almost musical, intermittent tinkling produced by contractions of the stapedius muscle. The evidence in favor of the ocular origin of the aural sensations mentioned is in their disappearance after the relief of the eye strain, their greater intensity when the eye strain is most troublesome, or their appearance or aggravation by use of the eyes. The ocular fault most often present is astigmatism. The tinnitus is, in all probability, best explained by a vasomotor disturbance of the intralabyrinthine vessels.

THE OCULAR MANIFESTATIONS ASSOCIATED WITH INTRACRANIAL LESIONS COMPLICATING AURAL DISEASE.[24]

"The eye symptoms of reflex origin are influenced through the eighth or auditory nerve. The simultaneous supply of the ear and the eye by fibers of the trigeminal nerve explains why, in purulent middle-ear disease, there is irradiating, boring pain in the orbital cavity, as well as supra-orbital and infra-orbital neuralgia. Associated with this condition there are often conjunctivitis and lacrimation. Reflex blepharospasms have been observed.

"In brain abscess, ocular symptoms may be absolutely lacking, or they may occur so late as to make it impossible to wait for their appearance. In meningitis ocular symptoms are frequently present, but are variable. In extradural abscess and sinus thrombosis there are no eye symptoms unless the condition is extremely far advanced. Labyrinthitis usually has nystagmus as a constant symptom from the beginning of the inflammation."

A PLASTIC MASTOID OPERATION. A NEW OPERATION FOR ACUTE MASTOIDITIS.[25]

The method described by Hopkins consists in making a meatal opening through the concha and posterior canal wall, the complete closure of the posterior or initial incision, and the cicatrization of the excavated mastoid surface; in other words, the application to acute cases of the plastic methods now used in the radical operations. The advantages claimed for this method are its simplicity, the ease of handling, the better appearance, the rapid healing, combined with perfect safety and the better hearing.

ANESTHESIA OF THE EXTERNAL AURICULAR CANAL AND OF THE TYMPANIC MEMBRANE BY ETHYLIC CHLORIDE. A NEW SPECULUM ALLOWING THE INSTANTANEOUS EVAPORATION OF THE ETHYLIC CHLORIDE.

Koenig [26] has modified the method suggested by Dr. Ed. H. Schild of applying ethylic chloride anesthesia to the membrane tympani and the external auditory canal. For this purpose he has devised an ear speculum furnished with a small tube passing along its whole length and ending with an olive to which a rubber tube is attached so that it may be operated by the mouth of the operator. This tube is so arranged that a jet of chloride may be directed against the membrane. This evaporates immediately, producing an immediate freezing of the drum. There is no need of an assistant. The anesthesia is complete and a paracentesis may be performed in ten seconds.

THE CYTOLOGY OF CHRONIC MIDDLE-EAR DISCHARGES.[27]

The claim has been made by Dr. Milligan [28] in an address before Otological Section of the British Medical Association that by determining the cytology of the middle-ear discharges he could differentiate various types of otitis and fix indications for radical operative interference. A criticism of his paper by one of the writers,[29] called forth a reply from Dr. Milligan [30] defending his views as originally expressed. It was of interest to find in this reply that his claim to have found giant

[22] G. Herzer: Münch. Med. Wochenschr., May 18, 1909.
[23] S. Theobold: Jour. Am. Med. Asso., July 10, 1909.
[24] S. MacCuen Smith: Penn. State Med. Jour., December, 1909.
[25] Frank T. Hopkins: Ann. Otol., Rhinol. and Laryngol., December, 1909.
[26] J. C. Koenig: Rev. hebd. de laryngol., d'otol. et de rhinol., Nov. 6, 1909.
[27] E. Hamilton White and Oskar Klotz, Montreal (from the Pathological Department, Royal Victoria Hospital, Montreal): Laryngoscope, vol. xx, no. 5, May, 1910.
[28] Brit. Med. Jour., Oct. 12, 1907, p. 792.
[29] Klotz: Brit. Med. Jour., Feb. 29, 1908.
[30] Brit. Med. Jour., March 28, 1908.

cells in the "exudate" of cases of tuberculous otitis was based on the examination of material collected by a curette, in other words, tissue definitely not in the exudate. As the writers are unable to agree with Dr. Milligan either on pathological or clinical grounds, they submit the results of examined cases where careful percentage counts of cells present were made.

From the results of these cases the writers believe, therefore, that the cytological examination of chronic middle-ear discharges cannot be regarded as having any value as a means of classifying or selecting cases for any particular form of treatment or in making a prognosis.

RADIOGRAPHY OF THE MASTOID REGION.

After employing radiography for diagnostic purposes in the mastoid region Iglauer[31] publishes brief notes of a number of cases thus examined. His conclusions are stated in substance as follows: The most satisfactory Röntgen pictures can be obtained in profile, the rays centering just below the parietal eminence on one side of the skull and directed through the cranium toward the temporal bone on the opposite side. The internal anatomy of the ear can be thus determined prior to operation, to the great assistance of the surgeon. Osteosclerosis of the mastoid secondary to chronic suppuration can usually be diagnosticated in this way, and it is likely the defects in the limits of the temporal bone will appear in the radiogram. Cases failing to heal after operation should be controlled by skiagraphy, as this may reveal the seat of the trouble. The value of the Röntgen examination in cases of acute mastoiditis remains to be determined.

STEREOSCOPIC MASTOID RADIOGRAMS.

The valuable information which the x-ray examination of the mastoid has yielded, prompted Lange[32] to devise certain improvements in the technic.

In the early report of this work it was stated that its usefulness lay chiefly in the examination of the chronic cases where the bone changes were appreciable. But more recent work has shown that acute cases yield just as satisfactory results. Indeed, it seems probable that in any acute case in which the inflammation in the mastoid has advanced beyond the possibility of spontaneous recovery, that is, in which the bone has softened or broken down, a properly made skiagram will reveal the bone change. Conversely, if the skiagram shows little or no bone change, spontaneous recovery may be considered possible, whereas if appreciable bone change is evident on the x-ray plate an operation is usually inevitable. Thus the skiagram may in doubtful cases be the deciding factor for or against operation.

In order to bring out the anatomic and pathologic relations of the mastoid region more clearly, especially the relation of the lateral sinus to the external auditory canal and mastoid cells, stereoscopic skiagrams should be made.

[31] S. Iglauer: Jour. Am. Med. Asso., Sept. 25, 1909.
[32] Sidney Lange: Laryngoscope, vol. xx, no. 4, April, 1910, p. 37.

MASTOID OPERATION, SIMPLE AND RADICAL, UNDER LOCAL ANESTHESIA.

In patients in whom an acute or chronic disease contra-indicated general anesthesia, it was formerly his custom, writes Day,[33] to instruct the anesthetist to give as little of the anesthetic as necessary to control the patient. He noticed that these partially anesthetized patients undergoing the mastoid operation gave no evidence of pain while the bone work is in progress, but would immediately struggle or moan or cry out when the soft parts were being cut or operated upon. The problem of local anesthesia in the mastoid operation, therefore, narrowed itself down to anesthesia of the soft parts, including the periosteum.

After using the local anesthesia in a number of this class of cases, Day found it to possess so many advantages that he was led to apply it to many cases in which there is no contra-indication to general anesthesia. There is a great saving of time, fully ten minutes in acute cases and twenty minutes in radical operations, in the actual performance of the operation, not including the time saved in the anesthesia itself. The economy of time in the execution of the operation itself is owing to freedom from hemorrhage and the fact that the facial ridge in a radical can be much more rapidly worked down upon. Warning is given in twitching of the face much earlier in local than in general anesthesia.

He always has black coffee given the patient just as he goes upon the table.

The technic which Day has followed, with slight modification, is that of Neumann. The solution used is a 1% cocaine solution, with the addition of about a dram of adrenalin solution to the ounce, the quantity used being 1 to 2 dr. For the skin surface an ordinary hypodermic syringe is best, while for the subperiosteal work a heavier one, such as an antitoxin syringe, is used.

It is essential that all preparation of the field of operation be made beforehand, as scrubbing and pressure after the injection has been made are objectionable.

The points of superficial injection are along the line of incision. After this the antitoxin syringe is used to inject under the periosteum, three quarters of an inch behind the auricle and then into the tendon of the sternomastoid muscle. Then an injection is made under the periosteum of the canal, though here it is sometimes impossible to get anesthesia because the fluid escapes from under periosteum at the inner end of the canal. This is especially likely to happen if the periosteum has been raised by the burrowing of pus or cholesteatoma. In about five to ten minutes after the injection the parts should be sufficiently anesthetized to begin.

In all, forty-four mastoidectomies were performed under local anesthesia in thirty-nine individuals; thirty-five for simple mastoiditis, two being double; nine radical operations, including

[33] E. W. Day, Pittsburgh: Laryngoscope, vol. xx, no. 2, February, 1910.

three double radicals. The sinus was explored twice and the cerebellum once. These cases include patients of all ages from five years up, all conditions of life, and many different nationalities.

OTOSCLEROSIS: TREATMENT.

In 1892, while the author [34] was connected with the Massachusetts Charitable Eye and Ear Infirmary, Dr. E. D. Spear demonstrated to him the relation between what was then called otitis media catarrhalis insidiosa — now called otosclerosis — and the nasopharynx, and showed how the otosclerosis could be controlled by applications made to the upper air tract. The applications had the effect of irritating the mucous membrane, and so producing a counter-irritating effect on the ear. Their chief effect, however, was to restore the mucous membrane to a normal condition.

For a counter-irritant the author uses a solution of nitrate of silver from 5 to 10% strength, or a saturated aqueous solution of ammonio-ferric sulphate, taking the precaution not to push the effect to much local reaction. The applications are made through the inferior nasal fossæ to the back and side walls of the nasopharynx. At first the treatment is repeated every day, for three to seven days, and then at gradually lengthening intervals. It is discontinued when the mucosa and ear seem to have ceased improving. Should the exigencies of the case demand it, general constitutional treatment, and local ear treatment, such as inflation, should be instituted in addition to this measure of counter-irritation. The beneficial effects of the treatment are soon apparent in the improvement in the hearing, which improvement generally lasts for a long time.

EXHIBITION OF CASES, ILLUSTRATING THE RESULTS OF THE SO-CALLED HEATH OPERATION.[35]

On general principles it is difficult to accept as a good surgical procedure one that advocates the non-disturbance of necrotic tissues, be it either diseased ossicles or carious bone. This is precisely what the Heath operation does. In other words, the aim is to perform a radical operation, which includes the complete exenteration of the cells comprising the temporal bone, with the exception of the tympanic ring and the fragment of ossicles and membrana tympani which are left undisturbed, as the extent of their necrotic involvement seems to make but little difference in the final result. In the experience of Smith, some of the more extensive necrotic cases have made the very best recoveries, both in the way of entire cessation of discharge and in more or less complete regeneration of the membrana tympani, while the ultimate restoration of hearing power has been carried to almost normal. On the other hand, in some cases of shorter standing, where the necrosis seemed to be limited, he was unable to arrest the otorrhea, nevertheless, the hearing distance was greatly increased. The writer's more recent experience, therefore, teaches him that the Heath operation, for the reasons above mentioned, will largely supplant that of the excision of the ossicles for the cure of an otorrhea.

In another class of cases Smith believes this operation to be of the greatest importance. We all see cases of chronic otorrhea in children involving both ears where the hearing is practically normal. Some of these cases are persistently unyielding to any line of treatment other than operative. The simple mastoid operation does not relieve the discharge, and in performing the radical operation there is great danger of interfering with audition. If such a condition were present in only one ear in a young child, the gravity of one-sided deafness would not be so great, but suppose we should perform a radical operation on both ears of a child for the relief of an otorrhea. There is almost a certainty that the hearing will be greatly interfered with, which condition is likely to grow worse. In this event the child, if young, will in all probability become dumb as well as deaf. Even though the aural disease may endanger the child's life, the responsibility of advising a double radical mastoid operation, in view of possible danger to the hearing power and the consequent loss of speech that may follow, should not be lightly assumed by any surgeon.

In concluding, Smith says that he feels inclined to advise the operation in appropriate cases, from the fact that it does not interfere with the membrana tympani and ossicles, thereby not jeopardizing the power of hearing. It would seem best, as a rule, for this reason, that the operation be performed early, before the disease has caused much destruction of the conducting apparatus. Some other points in its favor are that the danger of injury to the facial nerve is very much reduced; the shock from the surgical procedure is considerably lessened; and the recovery is notably quick, while at the same time it corrects the pathologic process within the danger zone, the antrum.

This procedure, furthermore, not only preserves the hearing present at the time of operation, but in the majority of cases actually improves it to a noticeable degree. Then, again, it is suitable in both the acute and chronic variety of cases, and will probably supplant the operation known as ossiculectomy for the cure of an otorrhea.

A THEORY ON THE FUNCTION OF THE MIDDLE-EAR MUSCLES, RESULTING IN A MODIFICATION OF THE THEORY OF HEARING.[36]

The atmospheric pressure presses on the membrana tympani constantly by way of the external auditory canal; it presses from within on the membrana tympani by way of the Eustachian tube only when the tube is opened. The tube is opened during the act of deglutition by the action of the levator and tensor palati (dilator tubæ). At the same time the soft palate is forced upward, compressing the air in the nasopharynx. This compression plus the existing atmospheric pressure

[34] W. Sohier Bryant, A.M., M.D., New York: Ann. Otol., Rhinol. and Laryngol., vol. xviii, No. 4, p. 807, December, 1909.
[35] S. MacCuen Smith: Ann. Otol., Rhinol. and Laryngol., vol. xviii, No. 1, March, 1909.
[36] Ernest de Wolfe Wales, B.S., M.D.: Ann. Otol., Rhinol. and Laryngol., vol. xviii, No. 1, p. 156, March, 1909.

and the increase in volume by heat and moisture sends the air into the anatomic middle ear, that is, the Eustachian tube, the tympanic cavity, the mastoid antrum and the pneumatic cells of the mastoid. What happens when this bolus of air is forced into the middle ear? The pressure in the middle ear becomes greater than the extratympanic (atmospheric) pressure, hence the head of the malleus is separated from the head of the incus, the liquid in the manometer of Politzer rises; then the tensor tympani muscle slowly contracts, due to the stretch of its tendon, and the head of the malleus again locks with the head of the incus; the fluid of the manometer falls. During this adjustment vibratory pressures (sounds) are poorly transmitted. Meanwhile the air in the middle ear is being absorbed, while the work of the tensor tympani is growing less, due to the lessened intratympanic pressure. The absorption of air in the middle ear causes a continuous variation of pressure. As the intratympanic pressure lessens, the tensor tympani muscle gradually relaxes till the intratympanic pressure equalizes the extratympanic pressure when both tensor tympani and stapedius muscles are at rest. Now the absorption of air continues and the intratympanic pressure becomes less than the extratympanic pressure. The stapedius muscle begins its work to keep the foot plate from being pushed into the vestibular window, and again to establish the equilibrium of the ossicular chain. Soon, due to reflex action, another swallow takes place and the tensor tympani begins its work again while the stapedius muscle rests. At the time of deglutition the stapedius muscle relaxes and the tensor tympani muscle contracts.

What are the advantages of this theory? They are many. It gives a rational physiologic action of muscles. These muscles do not act primarily to keep certain membranes tense or to adapt them to certain sounds, but to equalize constant pressures, and this adaptation to constant pressures brings about an ideal tension of the whole drum ossicular apparatus, causing this apparatus to be in a state of equilibrium, the best possible condition to conduct any and all sounds. What would result if the Eustachian tube remained open? If we had patent tubes we would hear our own voices, as if we talked in a barrel; besides, the tensor tympani and stapedius muscles would soon cease to act, for the tensor tympani would have to be in a state of constant contraction to overcome the slightly increased intratympanic pressure over the extratympanic pressure due to the increased volume by heat and moisture. Without contraction of the tensor there would be no tension and no equilibrium. The muscle would become hypertrophied, and then degenerate, while the fate of the stapedius muscle would be atrophy from no work to do. Muscles must have their periods of rest. Thus the muscles are accomodative to intra- and extra-tympanic pressures and only indirectly subserve sound or vibratory pressures. Physiology teaches that it takes time for a muscle to contract. We know that after swallowing it takes a short time to hear plainly again, and also after a patient's ears are inflated the tensor tympani may be some minutes or hours before it is able to overcome the intratympanic pressure and keep the head of the malleus in locked apposition with the head of the incus. Sounds do not wait. It is difficult to think of muscles accommodating themselves to sounds. We hear immediately. These muscles are too slow to accommodate our middle-ear apparatus to the sounds of an orchestra, but rather they keep the apparatus in an ideal state of equilibrium. While the tensor tympanic muscle was adjusting itself to the bass violin, the piccolo would be lost, according to the old theories. An explosion has no consideration for the intrinsic muscles; it ruptures the drum membrane or wrecks the labyrinth if we are close enough. Even the ciliary muscle of the eye does not act immediately to a strong light; we may watch it contract. The function of the intrinsic muscles is to keep the middle-ear apparatus in equilibrium so that the vibratory pressures may be conveyed to the perilymph. It is ready at all times to receive the simplest to the most complex combinations of sound.

Reports of Societies.

AMERICAN UROLOGICAL ASSOCIATION.

WINTER MEETING OF THE NEW ENGLAND BRANCH, BOSTON, MARCH 8, 1910.

President, F. S. WATSON, M.D., BOSTON.
Secretary, R. F. O'NEIL, M.D., BOSTON.

REPORTS OF CASES AND DEMONSTRATION OF SPECIMENS.

By A. L. CHUTE, M.D.

A CASE OF HEMORRHAGE FROM THE PROSTATIC URETHRA.

I SHOULD like to report briefly the case of a man thirty-six years old whose left kidney I removed for tuberculosis nearly two and one-half years ago. Because of a marked tuberculous involvement of the bladder he required after-care for a long time, but for some time he had been perfectly well, passing a clear urine every two or three hours during the day.

On Feb. 4, 1910, he noticed that his stream was suddenly shut off during urination; then that he passed a clot of blood. When I saw him in the afternoon his bladder contained 8 or 10 oz. of very bloody urine, but it could be drawn through a catheter easily. It was the same in the evening when I advised him to enter a hospital.

On the morning of Feb. 5 I pumped out of his bladder a handful of clots and a lot of bloody urine, and sent him into a hospital for observation. During the forenoon I removed a double handful of clots and examined his bladder as well as I could. I could not make out that his bleeding was from his remaining kidney, though the view was not very satisfactory. I tied a large-eyed catheter into his bladder. In the late afternoon I again pumped from his bladder a small basin full of blood and clots. His bleeding was by this time beginning to affect his general condition.

On opening his bladder that evening, and turning out the clots, I was unable after the most careful search to find any cause for his bleeding within his bladder. There

were several little rough places on and near the trigone, probably healed ulcers, but no bleeding points. I could not determine that blood came from either ureter. There was, however, a steady trickle of blood from the urethral outlet of the bladder. Gauze was packed into the outlet and a tube placed in the bladder. There was practically no bleeding after operation, and he has made a good recovery.

The case seems to be one of spontaneous bleeding from the posterior segment of the urethra. I have no knowledge as to its etiology, but suppose that it depends upon a tuberculous ulceration.

TWO PROSTATIC SPECIMENS.

These are two prostates that I removed within a few days of one another, about a month ago. The patient with the large mass had had an acute retention three weeks before and was dependent upon a catheter. The man with the smaller mass had a residual of about 8 oz. His urine was light in gravity and infected; he had been having chills, doubtless due to back pressure upon his kidneys. His prostate was of the small fibrous type, and what I was able to remove weighed but 1¼ dr. Though the younger man by some years, yet his condition was the more serious since he had begun to show secondary renal involvement.

My object in showing this prostate is to protest against the routine use of the term "prostatic hypertrophy" when we really mean "prostatic obstruction." There are enlarged prostates that are not obstructive, and small ones that are. I believe that the seriousness of a prostate *per se* depends almost wholly upon the extent to which the kidneys are embarrassed or involved and that this is not at all in proportion to the size of the prostate. I am convinced that our routine use of the term "hypertrophied prostate," in connection with cases of urinary obstruction, leads those who are less familiar with this condition to overlook cases of serious obstruction, simply because there is no hypertrophy of the gland. I have seen a number of such cases. We could make this less likely to happen if we commonly accentuated in these cases the obstructive element, which is the important one, rather than the hypertrophic element, which is not necessarily important.

URETERAL CALCULUS.

This stone is from the ureter of a young woman, twenty-eight years old, whom Drs. Blake and Gay were good enough to transfer to me at St. Elizabeth's Hospital. She had had attacks of pain in her right kidney region for four years. These attacks would last from one to two weeks at a time, and would be attended with tenderness. She had had negative radiographs. Her urine, which was usually about 1,015, showed a good trace of albumen and contained pus, blood, an occasional cast and calcic oxalate crystals. She had no symptoms referable to her bladder.

I found that several ureter catheters of different sizes and shapes were held up, in her right ureter, at a point 10 cm. from the bladder.

Dr. Percy Brown then took his radiograph after I had passed into the ureter a catheter with a metal stylet. You will see the shadow that Dr. Brown pronounced to be that of a stone just to the outside of where the catheter was stopped. An extraperitoneal exposure of the ureter showed this stone about ¾ in. below the pelvic brim. It was easily removed and the patient made a good recovery.

A CASE OF DIVERTICULUM OF THE BLADDER.

Here is another plate Dr. Brown made for me last week. The patient was a man thirty-four years old, whom I saw with Dr. A. C. Pearce. This man had had several attacks of urethritis and had what was practically a colon bacteruria that Dr. Pearce had treated by vaccines for a considerable time without being able to clear up. On examining his bladder I was able to find and catheterize his right ureter. This showed a normal, uninfected urine. On his left a little above the normal position of the ureter I saw an opening that might have been a dilated ureteric orifice or the opening of a congenital diverticulum. A catheter could be passed into it for an indefinite length, but gave fluid that was the same as the distending medium. The question as to whether this was a dilated ureter or a diverticulum was very definitely settled by Dr. Brown's radiograph, after I had passed a catheter with a stylet. The septum that divides the bladder from the diverticulum is, of course, not shown, but the curve of the catheter gives a good idea of the size of the diverticulum.

END RESULTS IN A CASE OF RENAL CALCULUS.

By DR. E. A. CODMAN.

I want to take this opportunity to put on record the final result of a case which I reported with others (Case xvi) in the BOSTON MEDICAL AND SURGICAL JOURNAL for Aug. 5, 1909. At the time of my first operation, Jan. 23, 1909, this patient presented the problem of a choice between single and double nephrotomy. This x-ray, which was published in the paper referred to, indicated that the stones in the left kidney were far larger than those in the right. Cystoscopy showed that a large amount of pus was pouring from both ureters at infrequent intervals. The indigo-carmine test was delayed so that, after watching for an hour or more, I sent the patient back to the ward without knowing which ureter secreted the pigment first.

The relative sizes of the stones decided me in attempting to remove the left first. To my surprise I found an almost normal-appearing kidney substance, the large stone occupying a dilated thickened pelvis and the smaller one about half in the calyces. Extreme shock prevented any thought of removing the other stones on the right at the same sitting. The patient's condition was very bad for several days, but he soon began to progress favorably. I thought it best to put off a second operation for another year.

He re-entered the hospital in November, 1909, considerably weaker and having suffered several attacks of pain in the meantime. In one of these the symptoms were on the left and there was discomfort on that side much of the time between the attacks. Cystoscopy gave the same result as before and the indigo-carmine was again delayed several hours.

On Nov. 19, 1909, I operated on the right kidney, which I found in very poor condition compared to the left. The stone, though much smaller than the other, was harder to remove and the branches in the calyces apparently were imbedded in the kidney substance. They broke off and had to be removed singly.

The patient bore the operation well, but the wound became badly septic and he died in a uremic and septic state in about ten days. At the autopsy perinephritic sepsis was found on the right, and numerous small abscesses were present in the substance of the kidney. The left kidney from which the large stone had been removed in January presented an interesting condition, showing that the removal of the gigantic stone had actually done more harm than good. The kidney substance was in fair condition, but the pelvis was full of pus and was almost as large and thickened as when it contained the stone. The upper opening of the ureter was minute; evidently the contraction incident to removal of the stone had resulted in stenosis and the over-stretched pelvis had filled with pus. Enough urine had seeped through the minute opening to prevent

suppression, but this necessitated a considerable intrapelvic pressure.

I am convinced the patient would have lived had I known enough to drain the left kidney at the time of my second operation. Possibly a right nephrectomy at the first operation would also have saved him. It certainly would have, could he have stood the shock of a double nephrotomy or right nephrectomy and left nephrotomy.

Dr. Lincoln Davis, Boston, showed

A PROSTATIC SPECIMEN.

I wish to show this specimen of an enlarged prostate on account of its unusual size; as you see, the fragments fill a pint jar; it weighs 275 gm. — about 9 oz. It was removed by the suprapubic route. The operation was somewhat of an emergency on account of severe hematuria. On this account, and as there had been no preliminary study of the case, I chose this route, although as a rule I greatly prefer the perineal. I should think that a prostate of this size would offer great difficulties in removal through the perineum.

The operation was performed Jan. 14, 1910; the patient has made a complete recovery. He had led a catheter life for fourteen years previously.

Dr. R. F. O'Neil showed

A PROSTATIC SPECIMEN.

I wish to show this post-mortem specimen from a patient who died about four months after a prostatectomy. You will notice the bladder is very large and the kidneys are in an advanced pyelonephrotic state, the right one being occluded. Clinically there were several features in this case which made it one of interest and difficult to deal with.

The patient was a man of sixty-four with urinary symptoms extending over a number of years; the urinary frequency became so marked that he was unable to continue his occupation, that of a letter carrier.

Examination showed an active, rather spare man, apparently in fair condition. The reflexes were normal. He presented an abdominal tumor in the median line, extending above the umbilicus. By rectum the prostate was moderately enlarged. By catheter I drew off 16 oz. of clear urine, which flattened out the tumor somewhat. The urine was clear, acid, specific gravity 1,005, albumen slight trace. I then put him on constant drainage, not caring to empty the bladder at once. I had a clamp on the catheter and had at first 6, then 10 oz. an hour drawn off. The bladder seemed to contract down fairly well. On one occasion the clamp slipped and the bladder became empty, causing intense vesical spasm and hematuria. This was relieved by morphia and replacing 16 oz. of salt solution in the bladder. After a couple of days the bladder remained empty. I never knew the capacity of the bladder, but it was enormous.

A cystoscopy showed a large intravesical growth, both laterals and a median lobe. In order to further rest the muscularis of the bladder and explore digitally the bladder, I did a suprapubic cystotomy under cocaine. This was followed in a few days by a suprapubic prostatectomy. He did well for ten days and was up. He then began to vomit and hiccough and became very ill. He remained in a desperate condition for a couple of weeks, but finally recovered and left the hospital. He was on constant drainage while he was so very ill. The urine was turbid and the specific gravity about 1,008. At the time of his leaving he had a residual of 12 oz. at the end of twenty-four hours. I understand this amount increased after he got home, and until the time of his death, from renal insufficiency, about four months after his operation, he used a catheter once a day.

The points of interest in this case are the enormous over-distention of the bladder, of which the patient was ignorant, and the fact that a man can go as long as he did and through a severe illness with so very little renal tissue.

I believe the outlook, where there is much bladder distention, is poor. In this case the organ was unable to take up its work entirely.

Demonstration of Patients.

Dr. G. P. Sanborn showed

A CASE OF TUBERCULOSIS OF THE TESTICLE.

The case shown is one of tuberculous cystitis extending over from five to ten years. Five years ago, Dr. J. H. Cunningham made the diagnosis by cystoscopic examination. Four years after this, the patient developed a swollen testicle which I later proved to be tuberculous. I have given tuberculin for about eighteen months. The testicle is now approximately normal in size, the epididymis hard and somewhat enlarged. Symptoms of cystitis have disappeared.

Demonstration of Instruments.

STEREO-CYSTOSCOPE.

Dr. H. W. Beal, Worcester: I wish to show one of Jacobi's stereo-cystoscopes. I have not had a chance to use it. It has an adjustable eye-piece, two objectives and two series of lenses with an irrigating attachment.

Dr. Geo. P. Sanborn read a paper by invitation entitled

THE PLACE OF TUBERCULIN IN THE IMMUNIZATION OF URO-GENITAL TUBERCULOSIS.[1]

Dr. Hugh Cabot read a paper entitled

THE VALUE OF TUBERCULIN IN TUBERCULOSIS OF THE URINARY TRACT.[2]

Dr. H. H. Hartwell read a paper entitled

BACTERIAL VACCINES IN BIOGENIC INFECTIONS OF THE URINARY TRACT.[3]

DISCUSSION.

Dr. Cleaveland Floyd, Boston: In regard to tuberculosis of the kidney, it should not be forgotten that this organ is in some degree at least a filter, and the excretions of the tubercle bacillus may be intermittent. On this account frequent animal inoculation may be necessary in order to detect an existing tubercular lesion. It must be remembered that tuberculosis in one part of the genito-urinary tract may be associated with the same disease in other parts which give no symptoms. Recently a case of epididymitis was given a tuberculin test to determine whether the lesion was tubercular or not. No other part of the genito-urinary tract was thought to be diseased. A typical tuberculin reaction was obtained, followed by pain referred to the right kidney, and albumen and pus in the urine. Animal inoculation gave positive tubercular lesions. The use of tuberculin still has a definite place in diagnosis in spite of the use of the cystoscope. When a correct diagnosis is so important as in tuberculosis of the kidney, the subcutaneous tuberculin test should be used in preference to other tuberculin tests, which are often misleading. Furthermore, only the subcutaneous test gives local symptoms which are all important in locating the lesion. In the early cases of genito-urinary tuberculosis it remains to be proven whether we can get along without operation, relying upon tuberculin. It would seem best for the present that the patient should first have the benefit of an operation, and if that is refused,

[1] Journal, p. 455.
[2] Journal, p. 471.
[3] Journal, p. 472.

then fall back upon tuberculin. In this connection the following case is of interest. A woman of thirty was found to have tuberculosis of the right kidney, as shown by cytoscopic examination, the presence of tubercle bacilli in the urine and positive animal experiments. The symptoms of painful and frequent micturition were very troublesome. Operation was refused and she has been under tuberculin treatment for some ten months. During this time the urine has cleared up, all symptoms have disappeared and her general condition is excellent. She is now pregnant and a second cystoscopic examination has been deferred on that account. I agree with Dr. Cabot that tuberculin may have a large field in preventing the recurrence of foci of tuberculosis, or at least of preventing the lighting up of those that remain behind following operation. Tuberculosis of the kidney generally being a hematogeneous infection denotes, when it is present, the entrance of the tubercle bacilli into the circulation from some source, and the second kidney as a filter is, therefore, always exposed to infection in such instances. The use of tuberculin may materially lessen this danger by increasing the general resistance and controlling the primary infection. In advanced cases of genito-urinary tuberculosis, troublesome symptoms may be controlled and considerable comfort be maintained with small frequently repeated injections of tuberculin. When there is a pyogenic infection superimposed upon a tubercular process, tuberculin should be used systematically first, and later other bacterial vaccines added as required.

DR. A. L. CHUTE: My personal use of tuberculin in urinary tuberculosis has been limited. In 1905 I brought some tuberculin from Europe and used it in a few cases, some of which I recall. This was the old tuberculin and the doses were much larger than those used now. I began with 1-400 mgm. and increased to ½ mgm.

One patient, with what was clinically urinary tuberculosis, but what was never definitely demonstrated to be tuberculosis, improved very much. He became practically well, having no symptoms and a clear urine. Some two years later this man died of another cause, and at autopsy no signs of tuberculosis were found, though they were especially looked for because of his previous trouble. I saw this man but once and had no opportunity to re-examine him after the disappearance of his symptoms, but I do not believe that he had tuberculosis.

In another case there was no apparent result, and after a time this man disappeared without any improvement in his symptoms.

Two years ago, at my suggestion, a patient with tuberculosis of his prostate, and probably kidneys, was given a very long treatment with the smaller doses of tuberculin that are now used. At times this man felt that he was better, but the disease made steady progress and he has recently died.

It is my feeling that few of the results reported from the use of tuberculin are absolutely definite or convincing. In many cases the examination both before and after treatment leaves much to be desired. We require greater accuracy of observation in order to be able to draw definite conclusions.

Some instances have been reported in which tuberculin has been used with good result in cases where, after nephrectomy, tubercle bacilli have been found in the urine. Such cases mean little unless the bacilli have been demonstrated by ureter catheter to be coming from the ureter of the remaining kidney. Otherwise the bacilli may have come from the stump of a thickened tuberculous ureter, or from a tuberculous involvement of the bladder. Both these conditions, in my experience, get well of themselves after the removal of the diseased kidney, though the process of cure may be slow. From the cases of demonstrated renal tuberculosis that simply show improvement under the use of tuberculin, I feel that we can draw no definite conclusions as to its value. I have watched several unoperated patients with renal tuberculosis over a number of years. In them there has been almost without exception times when they have had marked relief from their symptoms. The apparent improvement under the use of tuberculin may simply be one of these fluctuations that occur in the course of the disease.

Finally, in the cases of known renal tuberculosis in which with no other treatment than tuberculin, the tubercle bacilli have disappeared from the urine, it does not necessarily follow that the process has been arrested or cured. Unless we demonstrate by catheterization of the ureters that both kidneys are functioning and secreting non-tuberculous urine, I believe it is much more probable that the diseased kidney has become a small fibrous mass, or that the ureter has become thickened to the point where the kidney is entirely shut off from the bladder. We have had at least two such cases reported before the Society within the past two years. I am convinced that in some instances results that are attributed to the use of tuberculin are the same as those that occur without its use; that in order to really test the value of tuberculin we must have a large number of accurate observations made both before and after its use.

I do not believe that to-day we are justified in advising the use of tuberculin in cases of unilateral renal tuberculosis. In these cases the efficacy of nephrectomy has been proven over and over again. To postpone nephrectomy for any considerable time in a unilateral case, as would be necessary to give the tuberculin treatment a fair trial, would mean running a chance of the second kidney becoming infected by means of the tuberculous process from the diseased side crossing the trigone, causing a stenosis about the well ureter and then ascending that ureter. Rovsing has, I believe, clearly demonstrated the possibility of this. I have seen one specimen and one clinical case in which this seemed to have happened. It seems to me that at present we are chiefly justified in advising the use of tuberculin in bilateral cases, which are for the most part unsuited for any surgical intervention.

Dr. Floyd has raised what I believe to be an important point: that it is not enough to find tubercle bacilli in the urine to make a diagnosis of renal tuberculosis — we must find pus as well. The kidneys are filters, and there is a definite probability that tubercle bacilli originating in other foci may at times pass through them in sufficient numbers to give a positive test in guinea pigs without there being any involvement of the kidney itself.

I trust that in tuberculin we have a remedy that will justify the hopes we have put in it. I believe that as yet little has been actually demonstrated as regards its efficiency; that we should limit its use to double renal infections or to post-operative cases; that it should not be used until a most careful examination of the patient has been made in order that we may know just the extent of the disease, and, therefore, have definite data by which to determine just what has been accomplished.

Dr. Hartwell's conclusions regarding the efficacy of vaccines in the treatment of infections of the urinary tract with the common pyogenic bacteria quite agree with my own observations on this subject. The course in these pyogenic infections is wholly different from that in the tuberculous infections, and cure, I believe, depends about wholly on efficient drainage. The acute cases in which both the kidney pelvis and bladder drain perfectly get well under the use of vaccines, but they

also get well under the use of internal medication alone or with the addition of a little local treatment. When these cases become chronic, and resist the usual method of treatment, it will be found that in a very large proportion of them there is faulty drainage. In cases of this sort I have found the use of vaccines wholly without result. In not a single case that I have found difficult to treat has the vaccine treatment shown any effect. These cases have comprised infections with the colon, staphylococcus, pyocyaneus, proteus and some of the urea-splitting organisms.

It is my belief that the favorable results come from the use of vaccines in the acute and largely self-limited cases, and that these results occur largely in the hands of men who do not appreciate that many of these cases get well under most simple treatment. In this type of infection also it is most important that an accurate examination precede the treatment by means of vaccines. Not long ago I saw a man with a thoroughly disorganized kidney, who had submitted to months of vaccine treatment. It is needless to say that there had been no result, and that his treatment would not have been undertaken, even by the most enthusiastic, had his local condition been known. I am convinced that only such pyogenic urinary infections recover under the use of vaccines as would get well under simple means; that the specific action of vaccines in this class of infections is practically nil.

Dr. R. F. O'Neil: In regard to the use of vaccines in the chronic colon infections, in my experience they have been unavailing. They do not prevent the exacerbations so often seen in this condition, nor do they clear the urine of bacteria.

The sudden remissions of temperature and relief of symptoms referred to their action are seen just as often in cases when vaccines are not employed, and may be put down to the re-establishment of the temporarily shut-off drainage. I have had occasion to look up the literature of late and find that the most favorable results have been reported in the acute and subacute cases which, as has been stated, tend towards recovery under other methods of treatment when there is no obstruction or abnormalitity present.

Dr. C. M. Whitney: In reference to the vaccine treatment, I am entirely in accord with the conclusions expressed here in regard to the drainage. In these cases of bacteriuria which have been due to a secondary cause, either a prostate or a stricture, it has been my custom after removing the cause, if they did not yield to the oxy-cyanide of mercury aided by the improvement in drainage, to have them receive the vaccine treatment.

I am sorry to say that some of these cases have been treated with vaccines for from six to eight months, with absolute failure. One of these has been shown by Dr. Chute to-night, the anatomical lesions for failure being plain.

Dr. S. P. Sanborn: The giving of tuberculin in cases of genito-urinary tuberculosis requires careful attention to the matter of dosage. This applies particularly to the cases having ureteral involvement in which it is conceivable that swelling of the mucous membrane, associated with the focal reaction resulting from excessive dose, might result in occlusion of the duct, accumulation of pus and immediate surgical indication. We must recognize the association of the focal and general reaction produced by large dosage of tuberculin with a lowered phagocytic resistance. We, therefore, have reason for using such initial dose and increments to dosage as shall guard against any prolonged reduction in the phagocytic power of the blood. We can achieve this by starting with a dose small enough not to produce any clinical symptoms, and follow it by weekly dosage, increasing in such a manner that no symptoms are at any time produced. At the end of six months' treatment dosage may have increased from 1-20,000 to 1-5,000 mgm. The giving of tuberculin by the so-called clinical method takes as its guide the production of symptoms of intolerance. When general reaction is produced, the dosage is made smaller. In every case, therefore, general reaction is necessarily produced at times. The maximum dosage finally arrived at is considerably larger in the same period than that reached by the use of the opsonic method. The improvement of the patient appears in some cases to be more rapid. Such a method, however, cannot be devoid of danger. Wright's method, which endeavors to avoid constitutional reaction, is much more conservative and safe, and if the same dosage is finally reached, that is, attained by the clinical method, it would seem that quite as satisfactory degree of immunity should be obtained.

In order that the dosage of tuberculin as given by different workers may be readily compared, it should be based upon the amount of bacillary substance used in each case. The bacillus emulsion, as sent out by certain manufacturers, contains 5 mgm. of bacillary substance for each cubic centimeter of the original fluid, while that of others is said to contain 1 mgm. for each cubic centimeter. Hence 1 mgm. of the original fluid would in the former case contain five times the amount of tuberculin substance that the latter would contain. To secure uniformity, it would seem desirable in all cases to designate the dose of actual bacillary substance given.

Dr. Hugh Cabot: I want to make my position clear about tuberculin. It is still under discussion, but I have seen so many cases in which the improvement was so prompt that I cannot help thinking it was due to the tuberculin and not to an act of God, as Dr. Chute thinks.

Book Reviews.

Diseases of the Eye. A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. de Schweinitz, A.M., M.D. Sixth edition, thoroughly revised. W. B. Saunders Company. 1910.

The sixth edition of this standard textbook has been revised and much new material added. It has now 945 pages, but is not an unwieldy volume. Paper and print are excellent and the illustrations, in number and execution, leave little to be desired. The book is completely up to date. Vaccine and serum therapy and the importance of tuberculin in eye diseases have received attention. The chapter on movements of the eyeball and their anomalies is a very clear exposition of this complicated subject. Sweet's method of localizing foreign bodies in the globe by the Roentgen rays is given in the appendix.

Aids to Microscopic Diagnosis (Bacterial and Parasitic Diseases). By Ernest Blake Knox, B.A., M D. (Dubl. Univ.). New York: William Wood & Co. 1910.

This small book of 156 pages epitomizes in condensed form the more important microscopic methods of diagnosis. It should be of special use not only on account of the subject-matter, but also because of its convenient size.

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MEDICAL CARE OF DEEP-SEA FISHERMEN.

THERE is no dangerous trade which exacts a greater toll of human life than that of the deep-sea fisherman. At the memorial service held in Gloucester each year the names are read of from fifty to sixty fishermen who have perished at sea. About six thousand men are engaged in deep-sea fishing "out of Gloucester," and so in ten years the loss is one in ten — an appalling rate, but one apparently inseparable from this hazardous calling. The courage of men who are willing to accept such odds as these is not without its recognition, for the well-drawn pictures of their life which James B. Connolly, and Kipling, in "Captains Courageous," have given us have drawn attention to them, and there is a widespread admiration for the type of men who show in such remarkable degree the fine virtue of "everyday heroism." Interest in any movement for their welfare is, therefore, assured.

In a recent report to the Surgeon-General of the United States Public Health and Marine-Hospital Service, Dr. L. L. Williams, surgeon in command of the United States Marine Hospital at Chelsea, has shown that the deep-sea fisherman faces dangers at sea only slightly less formidable than those of the stray dory, the winter gale or the speeding transatlantic liner which brings swift death to many in the fogs of the Banks. The work of the deep-sea fisherman is carried on in small vessels far from shore, and days and even weeks must elapse before medical or surgical help can be secured for men seized suddenly with dangerous illness or injured in their work. This is the only country, as Dr. Williams has pointed out in his report, which has not made an effort to provide medical and surgical care at sea for its deep-sea fishermen. In the North Sea, where there are about ten thousand British fishermen, whose work is done under much less dangerous conditions than those met by the American "Banker," the Royal National Mission to the Deep-Sea Fishermen has provided three hospital ships and four dispensary ships which follow the fleets and render an enormous amount of relief which otherwise would be unobtainable. Dr. Grenfell's work among the fishermen of northern Newfoundland and the poor "liveyere" of Labrador has awakened the greatest interest in this country. The French send a fully equipped hospital ship across the Atlantic each year to the fishing grounds in the vicinity of the islands of Saint Pierre and Miquelon. Through the summer this vessel is constantly on the Banks, giving medical and surgical aid to all who need it without regard to nationality. During the last twelve years, more than five thousand men have received treatment aboard this ship, and in nearly every case it would have been impossible, but for the humanity of those who have provided the vessel, for any medical care to have been received for a number of days. Infected wounds of the hands are particularly common among fishermen and, according to Dr. Williams's report, the most disastrous results have been seen in the wards of the Marine Hospital from failure to secure treatment earlier. Fractures and frost bites are often met with and, in spite of the hardiness of the men, many cases of the acute illnesses which would be expected ashore.

For many years this government has assumed the responsibility for the medical care ashore of American merchant seamen, including deep-sea fishermen, and it would be but a simple and a very natural extension of such relief to provide a hospital ship to carry the benefits of medical and surgical relief to the place where they are so urgently needed. It is this that Dr. Williams has recommended, and all that is needed is for Congress to provide funds to build or buy a suitable vessel and to provide for the cost of its maintenance. It is believed that a schooner following closely the lines of the best type of fishing vessel, provided with ample auxiliary power, would be the most suitable kind of vessel to meet the rather unusual requirements of this work. The cost of such a vessel would probably not exceed $25,000, and the annual expense of maintenance would not be more than $10,000 or $12,000. This would be a very small expenditure for the relief of suffering and the saving of life which would result.

In the recent growth of interest in the con-

servation of our national resources, the conservation of human life has come to have an important part. We have, in the deep-sea fishermen of the North Atlantic, a group in which the apparently inevitable loss of life is very great. If for no other reason than admiration of those who, in their humble daily tasks, face the dangers of the soldier in time of war, any movement to prevent further and needless loss of life should appeal powerfully to all who are concerned with the welfare of their fellow-men. The great need for a hospital ship and the entire feasibility of the plan suggested are vouched for by those who are in the best position to know the facts. It requires only an expression of public opinion to secure it and to carry, under the American flag, the resources of modern medicine to the distant Banks where the deep-sea fishermen of Gloucester and Boston are gathering the harvest of the sea at the expense of far too many valuable lives.

MODERN METHODS IN CLINICAL PSYCHIATRY.

The medical profession in general has only the vaguest conception of the high order of clinical and pathological work that nowadays is being done by its members in many hospitals for the insane. This is nowhere better exemplified than in the report of Dr. Kirby, the "director of psychiatry" (a recently made position) of the Manhattan State Hospital. It appears with much heterogeneous matter in the last annual report of that institution, and should have wider recognition than is possible in a publication of that nature.

In his analysis of 1,152 new admissions it is especially pleasing to note the progressive tendency toward intelligent study of the case as a whole, toward placing more and more emphasis upon both the disturbing causes directly responsible for the initial outbreak and upon the natural make-up and normal tendencies of the individual, thereby obtaining an insight into the real nature of the condition which could never be attained by the closest study and observation of the clinical symptoms alone. Following upon the general adoption of Kraepelin's classification, many cases were, with surprising ease and nonchalance on the part of the diagnostician, at once labelled dementia precox because of catatonic symptoms, conduct disorders and the like which are now being given more serious study, especially as to the evolution and general setting of the symptoms, and are classified more intelligently. As a result there has been a progressive shrinkage in the adoption of the unqualified diagnosis of dementia precox as appears in the following table:

	1904. Per cent.	1905. Per cent.	1906. Per cent.	1907. Per cent.	1908. Per cent.	1909. Per cent.
Women,	31.8	28.6	23.3	20.7	15.3	12.9
Men,	—	—	24.7	17.4	18.1	17.5

That is to say, in 1906 24% of new admissions were diagnosed dementia precox, whereas in 1909 15.2% were definitely classified as such. While awaiting developments of diagnostic importance, 4.3% of admissions were classed as "allied to dementia precox," with 65% of recoveries. These for the most part were made up of patients who, because of negativistic or catatonic tendencies, were inaccessible to satisfactory examination or about whom nothing was known relating to the development of the signs and symptoms of mental aberration. In support of this temporary grouping is the fact that in certain instances definite manifestations occurred later on during the disease which denoted that the case properly belonged in the manic-depressive group.

3.4% of cases were appropriately classified under the heading of "paranoic conditions." In such patients the mental symptoms developed at about the fortieth year of life and were characterized both by systematized and dementia precox-like delusions, having in most cases a fairly definite factor, in the shape of some special troublesome experience, for the instigation of suspicious ideas, faulty reasoning power and errors in judgment, eventually leading to delusion-formation. Because of the frequency with which such cases are met, a special classification seems expedient. Althought they develop later than does dementia precox of the paranoid form, and deteriorate slowly or not at all, they nevertheless do not progress to a definite, expansive system of delusions as in true paranoia.

Fourteen cases (or 1.3%) were classed as "depressive hallucinosis," the clinical picture of which is acute depression, prominent hallucinations (especially auditory) with clear sensorium. Thirty-eight cases (3.5%) of admissions were placed in the group of "depressions undifferentiated," inasmuch as certain features were lacking which would allow their identification with any of the better known forms. This practice of withholding a definite diagnosis in certain cases which do not conform to a special clinical type, meanwhile giving such case a term somewhat descriptive, for example, "depressive hallucinosis," "allied to dementia precox," etc., should lead eventually to a more perfect classification of mental diseases.

In the report of the pathologist, Dr. Rusk, a noticeable feature is the striking predominance of bronchopneumonia as the terminal infection in general paralysis. It is not recognized clinically in most instances because of the difficulty experienced in making a thorough physical examination in the end-stage. Of thirty cases autopsied, as many as 93.3% showed fatal lung involvement. In the 1906 report of the Massachusetts State Board of Insanity only 14% of paretics in our state hospitals were said to have died from this complication and other pulmonary lesions. A comparison of the two percentages tends to substantiate the claim of general difficulty and error in determining clinically the exact cause of death in such cases.

In addition to the daily staff meeting, a weekly conference is held at the Manhattan State Hospital for review of all cases coming to autopsy, at which time anatomical material of interest is displayed. This must be of great value to the clinical staff and, as it tends to associate more closely the clinical and pathological departments, might advantageously become a custom in all institutions for the insane.

THE DUSTLESS AGE.

IN hygiene of the schoolroom no subject has been given more attention than the prevention of dust. The dustless eraser, the dustless floor dressing and dustless heating and ventilation have accomplished much. Dustless streets, not only for the preservation of health, but of the streets themselves, are now the only streets tolerated where good roads are known. In the home the dustless cleaner reigns, and the broom, historic emblem of general cleaning, lives as a memory of the time when witches rode in air and housecleaning meant the vigorous awakening and thorough dissemination of every possible carrier of every troublesome germ. Cold air enters the house heater through a muslin screen. Ashes from the kitchen range go directly by metal pipe to metal container in cellar below. Smooth floors with rugs easily kept clean have banished the tacked-down carpet of our forebears. Verily this is progress. No more the stuffy, heavily draped room. The day of fresh, clean air has come. In prevention of dust through smoke we are yet, however, sadly negligent. In spite of efforts to prevent dust and to be well rid of it we pollute all outdoors, that is, city outdoors, with tons of it in clouds of slowly rising and as inevitably settling smoke. From our office window we see dozens of belching chimneys. Within upon our writing table are countless black particles of no uncertain origin. We visit other cities and are glad that ours is no worse, but this grain of Pharisaical short-lived content makes our own no better. We are inclined to think of two efficient remedies, — the enforcement of existing law and the creation of any new law needed. Then, as a result, will come public awakening and public indignation, and naturally in this, as in all matters of preservation of health and comfort, the medical profession must lead.

MEDICAL NOTES.

SUICIDE IN RUSSIA. — Returns indicate that upwards of 625 attempts at suicide were made in Russia during the month from Aug. 14 to Sept. 13. Over 300 attempts were successful, and between one half and one third of this number were persons living in small towns.

CAUSES OF DEATH. — According to the most recent Census Bureau's mortality report, influenza was held responsible in 1909 for one third less deaths than in 1908. A striking feature of the report is the definite increase of deaths due to pneumonia, nearly 9,000 more in an area covered by about half the United States than in 1908, being an increase of more than 9 to each 100,000 persons. The total number of deaths from pneumonia was only seven less than those from tuberculosis. Certain children's diseases showed an improvement, but there was an increased number of deaths in 1909 from diseases of the circulatory, genito-urinary and nervous systems.

RECENT DEATHS ABROAD. — There have recently been a number of deaths of prominent continental physicians. Prof. Eduard Henoch, distinguished for his work on diseases of children, died Aug. 26 at the age of ninety. He was born in 1820 in Berlin and studied there under Romberg and Schönlein. He later served as an assistant to Romberg, and in 1858 was appointed extraordinary professor at Berlin, where he had the unique distinction of passing his entire career. For twenty-one years he was the head of the clinic for children's diseases in the Charité. He had not practised since 1894.

Prof. Friedreich D. von Recklinghausen, distinguished as a pathologist, has also recently died. He was born in 1833, was a pupil of Virchow and was later his assistant. He was appointed professor of pathological anatomy at the Univer-

sity of Königsberg in 1865, later went to Würzburg, and in 1872 became professor at the University of Strassburg, a position which he resigned in 1906.

The Cost of Progress. — In humanitarian circles it is customary to speak of civilization as a disease, and to compare the noble savage and the effete citizen in a manner greatly to the latter's disadvantage from the point of view of health and constitution. Facts do not lend unqualified support to this kind of idealism, yet it must be confessed that the list of industrial diseases, already formidable, is a constantly growing one, and that every new invention carries attendant evils in its train. Among distinctively modern diseases may be instanced the poisoning produced by the fumes of calcium carbide or acetylene; the headache, dyspepsia, cardiac failure and sensory disturbances traceable to the manufacture and use of aniline dyes; the frothing of the blood, known as caisson disease, which follows too rapid decompression in workers at the foundations of bridges; the functional neurosis known as telegraphists' cramp, resulting from the use of the Morse key; and the numerous affections of the skin, lungs, digestive tract and eyes due to irritation by organic or inorganic dusts of industrial origin. Among the last-named, special mention may be made of "shoddy fever," caused by the dust arising from pulverization of wool-containing rags. A modern danger *par excellence* is that of electrocution by contact with live wires, to which innumerable workers are daily and hourly exposed. Direct currents of 700 volts pressure and upwards, and alternating currents of half that amount, are officially recognized as dangerous to life, but even lower charges have produced fatal results. With the sad cases of Dr. Hall-Edwards and Dr. Kassabian fresh in their minds, medical readers do not need reminding of the terrible potentialities of the Roentgen ray. The conquest of the air is proving so costly to life that there is a growing feeling that its commercial exploitation by health and pleasure resorts in the form of "flying weeks" has been altogether premature, and should for the present be stopped. If, therefore, we cannot admit that civilization is itself in essence pathological, neither can we deny the costliness of its benefits or the pathogenetic associations of its every forward step.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Sept. 27, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 11, typhoid fever 26, measles 4, smallpox 0, tuberculosis 43.

The death-rate of the reported deaths for the week ending Sept. 27, 1910, was 17.42.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Sept. 24, 1910, was 227, against 205 the corresponding week of last year, showing an increase of 22 deaths, and making the death-rate for the week, 17.65. Of this number 125 were males and 102 were females; 220 were white and 7 colored; 143 were born in the United States, 78 in foreign countries and 6 unknown; 48 were of American parentage, 148 of foreign parentage and 31 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 40 cases and 4 deaths; scarlatina, 11 cases and 0 deaths; typhoid fever, 22 cases and 2 deaths; measles, 6 cases and 0 deaths; tuberculosis, 47 cases and 19 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 18, whooping cough 1, heart disease 21, bronchitis 2. There were 18 deaths from violent causes. The number of children who died under one year was 68; the number under five years, 101. The number of persons who died over sixty years of age was 66. The deaths in public institutions were 86. Cerebrospinal meningitis, 2 cases.

Of the above infectious diseases the following were non-residents: Consumption, 4 cases and 2 deaths. Scarlet fever, 1 case. Typhoid fever, 1 death.

Deducting deaths of non-residents, the total is 199 and the death-rate is then 15.47.

New Hampshire Surgical Club. —The New Hampshire Surgical Club will hold its fifteenth annual meeting at Hanover, N. H. Among the papers to be presented is one by Dr. Harvey Cushing on "Brain Tumors and their Surgical Treatment." In the course of the meeting a surgical clinic will be held in the Mary Hitchcock Hospital.

Deaths from Drowning in Maine. — It is stated that during the past summer sixty-one persons, nearly all of them residents of Maine, have been drowned in that state. Nineteen were drowned in June, twenty-four in July and eighteen in August, most of them due to accidents in canoes or other boats, or while bathing.

"Hospital Day" in Lynn. — Money was raised for the Lynn Hospital on Sept. 24 and

25, as has been the custom for some years past. Collections in the churches and money given by individuals, and through the sale of various objects, it is expected will amount to $25,000.

NEW DEAN OF DARTMOUTH MEDICAL SCHOOL.— Dr. John M. Gile, Professor of the Science and Practice of Medicine at the Dartmouth Medical School has been appointed Dean of the Medical Faculty to fill the vacancy caused by the death of the late Dr. William T. Smith. Dr. Gile is forty-six years old and was graduated from Dartmouth College in 1887 and from its medical school in 1891. He has for many years been instructor in the department of medicine and was appointed professor of medicine in 1896. He is surgeon to the Mary Hitchcock Memorial Hospital.

NEW YORK.

BEQUESTS. — By the will of the late John E. Schoenberg, of New York, $60,000 is left to charitable and benevolent objects. It is stated that the larger part of the amount goes to the National Jewish Hospital in Denver, in the management of which the deceased was personally interested, and that the remainder is distributed among New York and Cleveland charities. Among other charitable bequests in the will of the late Miss Elizabeth Dunleary, of New York, are $1,000 each to St. Vincent's Hospital and the Home for the Aged of the Little Sisters of the Poor.

TRACHOMA. — On the Greek steamship *Athenai* which arrived from Europe on Sept. 21 the examining physicians of the United States Marine-Hospital Corps were surprised to find eight cases of trachoma. Five of these were so well developed that it was considered impossible that a medical examination of the passengers upon embarkation should not have detected them, and this caused the officials to make an inquiry. They found that it was believed on the vessel that it was sometimes the practice of aliens suffering with diseases to hire substitutes to take the necessary medical examination for them. The place where these examinations are made is some distance from the places of embarkation, and it is possible for a person to get a substitute to pass the examination in his name, and then, having his card stamped "O. K.," with this in his possession to walk on board and trust to luck to get past the examiners on this side. As the steamship companies are liable to a fine of $100 for every such affected passenger brought to port, it is probable that prompt measures will be taken to put an end to this practice, should it be proved to have been resorted to.

STRAUSS MILK DEPOTS. — A letter containing a copy of a set of resolutions passed at a recent meeting of social and philanthropic workers, held at the Colony Club at the call of Mrs. J. Borden Harriman, has been sent to Nathan Strauss, in which the decision of Mr. Strauss to close the infants' milk depots is deplored and he is urged to continue the work. In the letter warm appreciation is expressed of his "long and sustained efforts to bring about the pasteurization of city milk supplies and to reduce infant mortality thereby." It was resolved at the meeting that a committee should obtain a conference with Mr. Strauss and endeavor to dissuade him from his present purpose, and among the members of this committee are Dr. Abraham Jacobi; Robert W. De Forest, of the Charity Organization Society; Homer Folks, of the State Charities Aid Society, and R. Fulton Cutting, of the New York Association for Improving the Condition of the Poor. In the meanwhile, the following notice has been posted at the various Strauss stations: "On Oct. 1 this infant milk station will be closed, and the sale of the baby milk stopped, on account of the misrepresentation and the vicious attacks of the New York *Herald* and Paris *Herald* on Mr. Nathan Strauss and his milk pasteurization work."

Current Literature.

MEDICAL RECORD.

SEPT. 17, 1910.

1. BLOCK, S. *Psychological Study of Gangs.*
2. VALK, F. *The Method of Simple Extraction of the Lens.*
3. CRUM, F. S. *Deaths in Childbirth.*
4. ESKRIDGE, F. L. *Ainhum Complicating Uncinariasis Americana in an American White Girl.*
5. DE BEECK, F. O. *A Suppurative Adenitis under the Sternocleidomastoid Muscle Treated with Streptococcus Vaccine.*
6. BECK, A. L. *An Improved Pharyngoscope.* [L. D. C.]

NEW YORK MEDICAL JOURNAL.

SEPT. 17, 1910.

1. HAMMOND, L. J. *The Surgical Importance of the Omentum.*
2. BASSLER, A. *Duodenal Regurgitation Due to Fatty Foods and Oils as a Clinical Entity. Fat Intolerance of Gastric Origin.*
3. LEE, H. M. *Heredity.*
4. SWEENEY, G. B. *The Syphilitic and Tuberculous Patient.*
5. VANDERGRIFT, G. W. *Notes on a Few Prevalent Eye Diseases.*
6. ROTH, H. *Acute Intestinal Obstruction Caused by a Foreign Body in the Peritoneal Cavity.*
7. RINGER, P. H. *Important Physical Signs in the Diagnosis of Incipient Pulmonary Tuberculosis.*
8. KNOTT, J. *Aconite.* [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

AUG. 27, 1910.

1. *FOX, H. *Recent Progress in the Serodiagnosis of Syphilis.*
2. LONG, J. D. *Pellagra.*
3. *FREEMAN, A. W. *The Farm: the Next Point of Attack in Sanitary Progress.*
4. HEMENWAY, H. B. *Certain Legal Aspects of Domestic Quarantine.*
5. HATCHER, R. A. *Variation of Dosage Dependent on the Method of Administration.*
6. WOODS, H. *Study of Some Cases of Otitis Media Seen in Consultation.*
7. BUSH, B. E. *The Close Relation of the Dentist to the Physician.*
8. DENCH, E. B. *Symptomatology and Diagnosis of Meningitis of Otitic Origin.*
9. SMITH, S. MACC. *The Indications for Surgical Interference for the Relief of Otitic Meningitis.*
10. MYGIND, H. *The Operative Treatment of Otitic Meningitis.*
11. CALVERT, W. J. *A Possible Differential Sign between Cardiac Dilatation and Pericarditis with Effusion.*
12. *TODD, F. C. *Neuralgias and Functional Disturbances Arising from Infections in and about the Tonsils.*
13. WILLSON, P. *Poisoning from Bites of Copperhead Snakes.*
14. HIRSCH, O. *Endonasal Method of Removal of Hypophyseal Tumors, with Report of Two Successful Cases.*
15. SHOEMAKER, A. M. *Carcinoma of the Spleen and Stomach, with Unusual Blood Picture.*
16. PORTER, M. F. *The Rôle of Surgery in Preventive Medicine.*
17. MOSS, W. L. *A Cutaneous Anaphylactic Reaction as a Contra-Indication to the Administration of Antitoxin.*

1. The various precipitation tests for the diagnosis of syphilis are too unreliable to be of much practical value. The Schurmann color reaction has been extensively tried and found to be worthless. The favorable results claimed for the interdermic reaction are encouraging, as the test is very simple. Will's cobra venom test has excellent claims, but is too complicated for ordinary use. That the Wassermann reaction as originally performed is not entirely satisfactory is shown by the many attempts that are made to improve and simplify it. That of Noguchi in America is most widely employed. The use of urine in place of serum for the Wassermann reaction is not to be recommended. No simple modification has as yet entirely replaced the original Wassermann. The use of barium sulphate suggested by Wechselmann to remove the disturbing complementoid from the patient's serum has apparently given a greater proportion of positive reactions than those obtained by the original method. The non-syphilitic diseases giving a positive reaction include leprosy, frambesia, sleeping sickness, scarlatina, malaria and lupus erythematosus acutus.

3. Freeman, in a very sane article, shows how the wave of sanitary improvement which is accomplishing so much in cities has not yet spread to the country districts. In few states is there adequate supervision of rural communities. Infectious diseases are not reportable. Disease started here spreads rapidly to larger communities. Many cases of typhoid and other diseases that appear in cities after vacation time can be traced to bad sanitation in the country. The farm is the unit of evil with its dangerously situated and ill-cared-for privies and water supplies. There is a crying need of systematic supervision of and instruction in rural communities.

12. Todd believes that pain and soreness in the neck in the region of the tonsils usually arise from diseased tonsils, which also cause neuralgias of the ear, side of head, neck, teeth, gums or antrum. Disturbances of function through pressure on or inflammation of nerves may manifest itself in hoarseness, loss of voice, cough, difficult deglutition, or entrance of food into the trachea, defects in hearing, dyspepsia and disturbed heart action. Such diseased tonsils are not usually large or acutely inflamed.

[E. H. R.]

THE JOURNAL OF INFECTIOUS DISEASES. VOL. 7.

NOS. 2, 3 AND 4. MARCH 1, 1910.

13. KYES, P. *Venom Hemolysis.*
14. *CRAIG, C. F. *Studies in the Morphology of Malarial Plasmodia after the Administration of Quinine, and in Intracorpuscular Conjugation.*
15. HEKTOEN, L., AND CARLSON, A. J. *On the Distribution of Antibodies and Their Formation by the Blood.*

MAY 20, 1910.

16. *CLARK, P. F. *The Relation of the Pseudodiphtheria and the Diphtheria Bacillus.*
17. MCCOY, G. W. *Plague Infection in the Brush-Rat.*
18. MCCOY, G. W., AND SMITH, F. C. *The Susceptibility to Plague of the Prairie Dog, the Desert Wood Rat and the Rock Squirrel.*
19. *TORREY, J. C., AND RAHE, A. H. *The Distribution of Bacteria in Bottled Milk and Certain Controlling Factors.*
20. HAMILTON, A. *The Value of Opsonin Determinations in the Discovery of Typhoid Carriers.*
21. ROSENOW, E. C. *A Study of Pneumococci from Cases of Infectious Endocarditis.*
22. ROSENOW, E. C. *Immunological Studies in Chronic Pneumococcus Endocarditis.*
23. STOKES, W. R., AND STONER, H. W. *An Outfit for Sending Bile, Specimens of Blood, Feces and Urine, and Some Results of the Examination of Such Material.*
24. MACNEAL, W. J., AND KERR, J. E. *Bacillus Abortus of Bang, the Cause of Contagious Abortion in Cattle.*
25. CLARK, L. J. *Some Observations on the Wassermann Reaction.*
26. ANDERSON, J. W. *The Influence of Age and Temperature on the Potency of Antidiphtheritic Serum and Antitoxic Globulin Solution.*

AUG. 24, 1910.

27. *SEDGWICK, W. T., AND MACNUTT, J. S. *On the Mills-Reincke Phenomenon and Hazen's Theorem Concerning the Decrease of Mortality from Diseases Other than Typhoid Fever following the Purification of Public Water Supplies.*
28. PEARCE, R. M., AND EISENBREY, A. B. *The Physiology of Anaphylactic "Shock" in the Dog.*
29. BANZHOF, E. J., AND FAUMLEUER, L. W. *The Influence of Chloral Hydrate on Serum Anaphylaxis.*
30. HALE, F. E., AND MELIA, T. W. *Studies on Inhibition, Attenuation and Rejuvenation of Bacillus Coli.*
31. *DAVIS, D. J. *A Hemophilic Bacillus found in Urinary Infections.*

14. Craig has studied the effects of quinine upon the morphology and life-cycle of the malarial parasite. All varieties of plasmodia react in the same general way to this drug. In fresh specimens Craig noted an initial stimulation of ameboid activity, followed by a decrease in activity, and eventually by a cessation of motion. The protoplasm showed granular degeneration, and fragmentation of the parasite was the end result. Craig insists upon the administration of quinine in divided doses at regular intervals, following a larger initial dose, instead of giving it all in one dose just before sporulation. His reasons for this are that he found quinine able to destroy the plasmodium at every stage of its life-cycle in man, with the possible exception of the sporulating stage. If, on the other hand, only one large dose is given, the plasmodia which survive go on to normal development as soon as the drug is excreted. He refers to over two thousand patients in which he has used this method with success.

In the second part of his paper, Craig describes, with the aid of illustrations, the intracorpuscular conjugation of the parasite. In cases of duration of more than a few days, or in those in which the blood becomes loaded with plasmodia, two forms may be seen uniting within an erythrocyte. These sexually united forms, Craig believes, escape death from medication and lie dormant in the bone marrow or spleen. Their reawakening to activity is the origin of a relapse.

16. From an exhaustive series of experiments Clark concludes that the pseudodiphtheria bacillus or Bacillus Hofmanni belongs to a different species from the true Klebs-Loeffler bacillus.

19. Torrey and Rahe, investigating an opinion of Hess that the top 2 oz. of cream in a quart bottle of milk contain many more bacteria than the subjacent fluid, found (1) the upper 2 oz. of the cream of fresh bottled milk of fair quality contain 50 to 100% more bacteria than an equal amount of the lower cream. In older or more impure milk the lower layers may contain more bacteria than the upper. (2) By removing the top 2 oz. and using the remaining top milk (8 oz.) for infant feeding, there generally results a reduction of from 30 to 50% in the bacterial count.

27. Sedgwick and MacNutt's paper is an interesting collection of mortality statistics from cities which have installed filtration systems for their drinking water. The Mills-Reincke phenomenon is the decrease in mortality from diseases, aside from typhoid, commonly not thought of as being water-borne, for example, pneumonia, pulmonary tuberculosis, diphtheria and infantile diarrhea, which follows the installation of a filter. It is not known whether this decrease is due to improved resistance or to a decrease in the bacteria ingested, or to a combination of the two. At any rate, the problem seems worth investigation.

31. Davis reports three cases from the urine of which he isolated a bacillus resembling, but not identical with, the bacillus of influenza. This bacillus could be grown only in the presence of hemoglobin, and grew best under anerobic conditions. The cases from which it was derived all had more or less pus in the urine. Two of them had joint trouble, although there was no proved relationship between it and their pyuria. [G. G. S.]

Deutsche Medizinische Wochenschrift. No. 34.

Aug. 25, 1910.

1. Rosenbach, F. J. *A New Tuberculin.*
2. *Nocht, and Werner, H. *Observations on the Relative Resistance to Quinine of the Malaria from Brazil.*
3. Citron, J., and Munk, F. *The Cause of the Wassermann Reaction.*
4. de la Motte, W. *The Porges Syphilitic Reaction.*
5. Selter, H. *A Simplified Method of Alcoholic Hand Disinfection.*
6. Müller, W. *The Disinfection of the Field of Operation by Gross' Method with Tincture of Iodine.*
7. Gräfenberg, E. *The Importance of Pantopons in Gynecology and Obstetrics.*
8. Meyer, E. *The Importance of Direct Investigation of the Upper Air Passages in Pediatrics.*
9. Dreuw. *Massage by Water Pressure.*
10. Lange and Wechselmann. *Technic of Injections of Dioxy-Diamido-Arseno-Benzol.*

2. Nocht and Werner had an opportunity to study a number of cases of malaria which came from Brazil. The parasites resembled the tertian and tropical types except that they were small and caused relatively small changes in the blood cells. These cases showed certain peculiarities in that they presented symptoms on the part of the intestinal tract, lungs and nervous system; also the temperature charts were not characteristic. The peculiar feature was their resistance to quinine even in doses considerably above the usual amount. Methylene blue was tried and found without value. Ehrlich's new antisyphilitic preparation acted well in driving the parasites from the circulation, but it did not prevent relapses. Further work with this preparation may produce better results. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 34.

Aug. 23, 1910.

1. Schittenhelm, A., and Weichardt, W. *Hypersusceptibility in Infections and Immunity.*
2. Fraenkel, C., and Grouven, C. *Experiences with Ehrlich's "606."*
3. *Alt, K. *Technic of Treatment with the Ehrlich-Hata Drug.*
4. Stursberg, H. *Sciatica of the Nerve Roots.*
5. Autenrieth, W., and Tesdorpf, T. *Calorimetric Estimation of Grape Sugar in the Urine.*
6. Kausch, W. *Technic of Amputation for Diabetic Gangrene or Phlegmon.*
7. Zweifel, P. *Bolus Alba as a Carrier of Infection.*
8. Göbl. *Sterilization of Women by Roentgen Rays.*
9. Best. *Topical Diagnosis of Hemianopsia.*
10. Burow, R. *Successful Treatment of Tuberculosis with Guaiacol-Arsenic.*
11. Hollander, E. *A Case of Advanced Loss of Fat Tissue and Its Replacement with Human Fat.*
12. Henrichsen, J. *Rhinolith Due to a Foreign Body.*
13. Friedmann, E., and Maase, C. *Formation of B-Oxybutyric Acid from Acet-Acetic Acid.*

3. Alt describes in detail his method of using Ehrlich's "606," which, in his experience, has been most satisfactory. He says also that his results of treatment with this drug (which were summarized from an earlier number) have been entirely confirmed by the independent work of others, but some writers have seen more pain resulting from the injections. (This may have been due to different methods of making up the solution.) [G. C. S.]

No. 35. Aug. 30, 1910.

1. Schottmüller, H. *Cause of Septic Abortion.*
2. Pässler, H. *Substitution for the "Indifferent" Thermal Baths of the Inhalation of Their Radium Emanations.*
3. Spiethoff, B. *Arseno-benzol for Syphilis.*
4. Duhot, R. *Unexpected Results to a Syphilitic Infant by Treatment of the Nursing Mother with "606."*
5. Ehrlich, P. *Does the Intravenous Injection of "606" have Special Danger?*
6. Jaeger, O. *Morbidity in the Puerperium from Early Death of the Fetus and from Syphilis of the Mother.*
7. Baruch, M. *Influence of Powdered Silver Nitrate on the Growth of Granulation Tissue and Epithelium.*
8. Köhler, F. *Diagnosis of Pulmonary Tuberculosis.*
9. Gerber. *Increase of Scleroma in Eastern Prussia.*
10. Ohm, R. *An Apparatus for Photographic Registration of the Pulse.*
11. Kaestle, C. *A New Method for Determining the Length of Time which Fluids Remain in the Stomach.*
12. Gillet. *New Results in Determination of the Position of Foreign Bodies by the X-rays.*
13. Trautmann, G. *Treatment of Tonsillar Plugs.*

[G. C. S.]

Berliner Klinische Wochenschrift. No. 34.

Aug. 22, 1910.

1. Senator, H. *Farewell Address.*
2. *Aaser, P. *Protective Inoculation in Man against Asiatic Cholera.*
3. Simmonds, O. *Pneumonia of the Right Superior Lobe with Protective Atelectasis of the Middle and Lower Lobes.*
4. Einhorn, M. *Duodenal Nutrition.*
5. Sarnizyn, P. J. *A New Procedure for Obtaining the Contents of the Small Intestine by the Use of a Capsule containing Sponge.*
6. Klopstock, F. *Cirrhosis of the Liver. (II. Tuberculosis and Cirrhosis.)*
7. Bruhn-Fabrocus, M. *An Easily Transportable Tonometer to Measure the Systolic and Diastolic Blood Pressures.*
8. Breccia, G. *Concerning the Action of Serous Effusions on Collargol.*
9. Hadda, S. *Hemorrhagic Cystitis after Operations on the Rectum.*
10. Ditthorn, F. *Bacteriolysis of the Tubercle Bacillus.*
11. Marxer, A. *Our Knowledge Concerning the Streptococcus and the Anti-Streptococcus Serums.*
12. Kromayer. *Theoretical and Practical Considerations concerning the Ehrlich-Hata Preparation "606."*
13. Truffi, M. *The Transmission of Syphilis to the Guinea Pig.*
14. Richter, E. *Injections of Metallic Mercury.*
15. Davidsohn, F. *The X-Ray in Dentistry.*
16. Munzer, A. *Concerning Suicide.*

2. The author describes his technic and reports a series of 31 cases that he has inoculated with cholera vaccine. In none of these cases did the fever, due to the reaction, last more than twenty-four hours, and in no case was there any diarrhea. [J. L. H.]

No. 35. Aug. 29, 1910.

1. Ewald, C. A. *Pantopon, Sahli's Opium Derivative.*
2. *Blaschko, A. *Critical Notes on the Ehrlich-Hata Treatment.*
3. Citron, J., and Klinkert, D. *The Biological Proof by Means of the Serum Reaction of Lipoid Substances in the Blood and Urine in Tuberculosis, and Its Importance.*
4. Aronson, H. *The Biology of the Tubercle Bacilli.*
5. Bálint, R., and Molnár, B. *The Pathogenesis of Diarrhea in Exophthalmic Goiter, together with Remarks concerning the Diagnostic Value of the Ferment Contents of the Feces.*
6. Suzuki, S. *Two Tumors from the Suprarenal Tissue.*
7. Grabow. *A Case of Remarkably Large Sarcoma of the Pleura with Calcification following Primary Sarcoma of the Tibia.*
8. Eyler. *Early Symptoms and the Serum Treatment of Tetanus.*

2. The author explains exactly what the "Preparation 606" is, giving the chemical formula. After carefully reviewing the work that has been accomplished by this new drug, he reminds us that Ehrlich has repeatedly warned us that all cases of syphilis are not suitable cases for this form of treatment. The author groups the cases in which this treatment is indicated. [J. L. H.]

Annales de l'Institut Pasteur.

July 25, 1910.

1. *Broquet, C. *The Red Disease of the Butterfly of the Silk Worm in Cochin China.*
2. Mazé, P. *The Theoretical and Practical Technic of Making Cheese.* (Concluded.)
3. *Bordet, J., and Fally, V. *The Bacteria of Diphtheria in Poultry.*
4. Javillier, M. *The Migration of Alkaloids in Grafts of Solanees upon Solanees.*
5. Lazarus, E. *Proteolysis of Anthrax Bacillus.*
6. Dobowatski, K. *The Bacteria which Produce Phenol.*

1. In the region of Tâu Châu there is a micrococcus which attacks the butterfly of the silkworm and destroys it. This author calls it the "red disease" because when grown in excess it assumes a red color. On the destroyed butterflies it gives a distinct red color. Broquet did experimental work to prove that this coccus was the cause of death and not an overgrowth afterwards. This coccus also exists in the laboratory air, etc. The other known silkworm diseases exist in the same district. By destruction of the diseased ones and purification of the air the disease can be cleared up.

3. Bordet and Fally give cultural characteristics and method of isolation, through inoculation of eyes, of the bacillus which causes the disease of diphtheria in poultry. It is a difficult bacillus to grow, as others overgrow it, but by inoculating animals' eyes they obtain it in almost pure culture from the discharge, and from this make cultures. They also report some experimental inoculation work which further supports the claim that this bacillus is the etiological factor in the disease. [C. F., Jr.]

Revue de Médecine.

August, 1910.

1. *Hedon. *The Internal Secretion of the Pancreas.*
2. Janowski. *Curves Produced by the Left Auricle.*
3. *Stcherbak. *The Pathological Rôle of the Trichocephalus.*
4. Berthelot. *New Uses for Lactic Acid Bacteriotherapy.*
5. Kabanov. *Edema and Disturbances of the Function of the Sweat Glands in Nephritis.*
6. Gembarski. *A Case of Syphilitic Jaundice.*

1. Hedon's article, from its title, "The Internal Secretion of the Pancreas," at first sight would seem to contradict the theory of the nervous control of glycemia. He admits, of course, that subcutaneous transplantation of a portion of the pancreas, after the remaining glandular tissue has been removed, is sufficient to prevent diabetes. But "the abdominal vasculo-nervous connections of the transplanted fragment remain intact."

In order to study this relation he has performed four experiments. Firstly, the carotid artery and the jugular vein of a depancreatised dog are connected with the pancreatic artery and vein respectively of a sound animal. This procedure fails to reduce the sugar content of the blood or urine of the affected dog. This is one point in favor of the nervous or reflex origin. Secondly, the injection of pancreatic venous blood of a sound dog fails to diminish diabetic tendencies in a depancreatised animal. Thirdly, on the other hand, exsanguination of a depancreatised dog and replacement of the lost fluid by normal blood causes a diminution of glycosuria, which is, however, only temporary. Whether this is due to renal changes, as the author believes, is open to question. Lastly, by a reciprocal anastomosis of the carotids of diabetic and normal dogs, a constant interchange of blood is effected. This produces a gradual decrease in glycemia and glycosuria in the diseased animal, and a corresponding increase of the former without the appearance of the latter in the sound animal. The glycosuria gradually diminishes and after some hours disappears from the diabetic, only to return when connection is severed.

In spite of the last two experiments, the author, who was formerly admittedly a sound adherent of the "internal secretion theory," declares that the regulation of sugar metabolism is undoubtedly the result of a double action, humoral and reflex as well. The former is a most complex mechanism, understood under the name, misleading in its simplicity, of the internal secretion of the pancreas. The latter comprises a central nervous control by means of the pancreatic nerves and the abdominal sympathetic plexus.

3. While the trichocephalus is found in the stools very frequently, the author believes that many conditions may be attributed to their action, when they are found in large quantities in the excreta. These conditions are either local, on the one hand, or general and secondary in nature, on the other. Foremost among the former are ileocolitis and appendicitis. Anemia may result from mucous membrane trauma. Under the latter heading are enumerated many functional central nervous disorders, such as neurasthenia, hystero-neurasthenia, hystero-epilepsy, hemichorea, headache and migraine. Many cases are cited in which symptoms are detailed. The eggs of the parasite were found in profusion in all, and the removal of the supposed etiological factor resulted in complete recovery, or at least in an amelioration of symptoms. The treatment which Stcherbak recommends is that of thymol, given in small doses covering a long period of time. [L. H. S.]

Obituary.

GUSTAV BAUMGARTEN, M.D.

Dr. Gustav Baumgarten, for many years intimately associated with medical progress in St. Louis, has recently died in his seventy-fourth year after a protracted illness. Dr. Baumgarten was born at Clausthal, in Germany, and received his preliminary education there and at Northeim. He came to this country in 1850 and later returned to Germany for special work at Goettingen, Berlin, Prague and Vienna. Returning to St. Louis, he became one of the leading practitioners of that city, and was widely known throughout the entire country. He received the degree of LL.D. from Washington University in 1906, and in 1899 was president of the Association of American Physicians. He was so far identified with America that he served during the Civil War as Assistant Surgeon-General in the Navy. He was editor for a time of the St. Louis *Medical Journal*, and for a good many years was a frequent and illuminating contributor to medical literature. His chief interest was in pathology and therapeutics. His death removes a figure of national prominence in medicine.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 17, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,174	448	Waltham	6	3
Chicago	—	—	Pittsfield	10	3
Philadelphia	—	—	Brookline	7	—
St. Louis	—	—	Gloucester	4	—
Baltimore	—	—	North Adams	7	2
Cleveland	—	—	Northampton	9	1
Buffalo	—	—	Chicopee	4	1
Pittsburg	—	—	Medford	1	—
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster	4	1
Washington	—	—	Hyde Park	6	1
Providence	—	—	Melrose	3	1
Boston	219	85	Newburyport	1	—
Worcester	48	23	Revere	4	2
Fall River	24	16	Westfield	—	—
Cambridge	26	13	Woburn	4	2
Lowell	36	18	Peabody	—	—
New Bedford	28	18	Marlboro	3	1
Lynn	27	11	Attleboro	3	3
Springfield	22	8	Adams	3	2
Lawrence	27	12	Clinton	3	2
Somerville	18	7	Gardner	3	0
Brockton	9	1	Milford	—	—
Holyoke	13	9	Watertown	5	2
Malden	13	5	Plymouth	—	—
Chelsea	15	4	Southbridge	4	3
Newton	8	2	Weymouth	3	—
Salem	14	4	Framingham	5	4
Haverhill	10	1	Wakefield	—	—
Fitchburg	—	—	Webster	6	3
Everett	6	0	Arlington	1	—
Quincy	—	—	Greenfield	3	1
Taunton	25	6			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 14, 1910.

MCINTOSH, W. P., surgeon. Detailed as member of a Revenue-Cutter Service Retiring Board, Baltimore, Md., Sept. 15, 1910. Sept. 6, 1910.

WERTENBAKER, C. P., surgeon. Granted one month's leave of absence from Sept. 12, 1910.

ROBINSON, D. E., passed assistant surgeon. Granted one month's leave of absence from Sept. 8, 1910.

GWYN, M. K., passed assistant surgeon. Detailed as member of a Revenue-Cutter Service Retiring Board, Baltimore, Md., Sept. 15, 1910. Sept. 6, 1910.

PETTYJOHN, JOSEPH, passed assistant surgeon. Granted one month's leave of absence from Sept. 15, 1910, on account of sickness.

WARNER, H. J., assistant surgeon. Granted seven days' leave of absence from Sept. 17, 1910.

PREBLE, PAUL, assistant surgeon. Granted ten days' leave of absence from Sept. 8, 1910.

GRIMM, R. M., assistant surgeon. Leave of absence for four days' from Sept. 1, 1910, amended to read four days from Sept. 13, 1910.

THOMPSON, LEWIS R., assistant surgeon. Directed to proceed to Chicago, Ill., and report to the medical officer in command for duty and assignment to quarters. Sept. 13, 1910.

BINGHAM, E. O., acting assistant surgeon. Granted fifteen days' extension of leave of absence from Aug. 16, 1910, on account of sickness.

HORNING, HENRY, acting assistant surgeon. Granted seven days' leave of absence from Sept. 6, 1910, under paragraph 210, Service Regulations.

HUME, LEA, acting assistant surgeon. Granted five days' leave of absence from Aug. 1, 1910.

MASON, WILLIAM C., acting assistant surgeon. Granted seven days' leave of absence from Sept. 18, 1910.

SINCLAIR, A. N., acting assistant surgeon. Granted four days' leave of absence from Aug. 23, 1910, under paragraph 210, Service Regulations.

WALLACE, C. R., acting assistant surgeon. Granted nineteen days' extension of leave of absence from Aug. 3, 1910, on account of sickness.

WALKLEY, W. S., acting assistant surgeon. Granted three days' leave of absence from Sept. 16, 1910.

STERNS, C. O., pharmacist. Granted twenty-six days' leave of absence from Sept. 12, 1910.

APPOINTMENT.

DR. LEWIS R. THOMPSON commissioned (recess) an assistant surgeon in the Public Health and Marine-Hospital Service. Sept. 6, 1910.

REINSTATEMENT.

F. A. STUMP reinstated as a pharmacist of the third class. Sept. 9, 1910.

BOARDS CONVENED.

Board of medical officers convened to meet at the Marine Hospital, San Francisco, Cal., Sept. 21, 1910, for the purpose of making physical examinations of officers of the Revenue-Cutter Service. Detail for the board: Passed assistant surgeon R. E. Ebersole, chairman; assistant surgeon R. A. Kearney, recorder. Sept. 9, 1910.

Board of medical officers convened to meet at the Marine Hospital, Baltimore, Md., Sept. 21, 1910, for the purpose of making physical examinations of officers of the Revenue-Cutter Service. Detail for the board: Surgeon W. P. McIntosh, chairman; passed assistant surgeon M. K. Gwyn, recorder. Sept. 9, 1910.

SOCIETY NOTICE.

MASSACHUSETTS MEDICO-LEGAL SOCIETY. — The Fall Meeting will be held in Sprague Hall, Medical Library, Boston, on Wednesday, Oct. 5, 1910, at one o'clock. The following papers will be read and discussed: 1. "The Preservation of Medico-Legal Evidence," Fred E. Jones, M.D., Medical Examiner, of Quincy; Prof. William F. Whitney, of Harvard Medical School. 2. "A Close Gunshot Wound without Powder Marks," H. M. Cutts, M.D., Medical Examiner, of Brookline. 3. "How Far May a Medical Examiner Go in Employing Expert Assistance?" W. N. Cowles, M.D., Associate Medical Examiner, of Ayer.

OLIVER H. HOWE, M.D.,
Recording Secretary.

COHASSET, Sept. 27, 1910.

RECENT DEATHS.

DR. G. HOWARD JONES, of Brookline, Mass., died Sept. 15, at Harrison, Me. Dr. Jones was born in Boston, in 1844, and was graduated at the Harvard Medical School in 1872. He served through the Civil War as Assistant Surgeon in the Fifth Massachusetts Regiment.

Dr. WILLIAM G. DAGGETT, of New Haven, has recently died following an operation for appendicitis. Dr. Daggett was graduated from Yale College in 1880, and from the Medical School of the University of Pennsylvania four years later. He had been lecturer on clinical medicine for a number of years at the Yale Medical School, and was one of the foremost physicians of New Haven.

DR. JOHN BEVERLY CROWELL, of East Orange, N. J., died suddenly from cardiac disease on Sept. 20. He was sixty years old and a graduate of the University of the City of New York and the College of Physicians and Surgeons, New York

DR. JOHN P. PHILLIPS, who died at his home in New Haven, Conn., on Sept. 20, at the age of seventy-seven years, served as surgeon with the Eleventh New York Regiment in the Civil War, receiving a medal from the state of New York in recognition of his services. Dr. Phillips was graduated from Columbia College in 1856, and three years later from the New York Medical College.

DR. WILLIAM FREDERICK HOLTHAUSEN, of Brooklyn, N. Y., was killed in a railroad collision in Indiana, on Sept. 24. His death is peculiarly tragic, as he was to have been married on the 26th, and was on his way to the home of his fiancée at Kokomo, Ind. Dr. Holthausen was a native of Brooklyn and thirty years of age. He was a graduate of the School of Mines, Columbia University, and was graduated from the Medical Department of Columbia in 1904.

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Address.

IMMUNITY WITH SPECIAL REFERENCE TO VACCINE THERAPY.*

BY TIMOTHY LEARY, M.D.,
Professor of Pathology, Tufts Medical School.

It is my purpose to review hastily the progress of our studies in immunity in order to make plain why that portion of the scientific medical world which has been interested in the *practical* application of immune principles to disease conditions welcomed the work of Wright as opening up a new avenue of approach toward the elucidation of a problem whose solution seemed impossible from the viewpoints which were held at the moment when his work was presented.

The student of pathology learns early in his career that the morphological tissue response to insults is limited to a few fundamental possibilities. Details of the reaction may be infinitely varied, but the basic variations are few, no matter what the character of the injury may be. Further, by artificial stimuli we have not succeeded in adding to the varieties of response which are exhibited against natural stimuli.

It seems to be equally true of immunizing responses to stimuli that the types of response are relatively few.

It should be made clear that the laboratory worker in immunity, when he makes a step in progress, does nothing new or strange. He invents nothing. He evolves no new principles. He studies nature and endeavors to wrest from her the secret of her methods of rendering harmless the parasitic organisms or their products which find themselves in the living animal body. Studies of immunity will be complete when we have laid bare all of these methods. The successful artificial method of attacking an infectious process depends upon as close an imitation as possible of nature's method of accomplishing the same thing.

Practical progress in specific therapy of human infectious processes really began with the discovery of diphtheria antitoxin. First came the demonstration that the diphtheria bacillus produced a soluble toxin; that bouillon in which the diphtheria bacillus had been grown for several days had acquired a definite poisoning power for animals even after the diphtheria bacilli which produced the toxin had been filtered off; that a measurable quantity of this bouillon, or diphtheria *toxin*, as it is called, would kill a guinea pig of a certain weight. Next came the discovery that an animal into whose body less than a fatal dose had been injected developed after a time the power to overcome what would be a fatal dose for an untreated animal of its weight. The injection of the non-fatal dose of toxin had stimulated the formation of an antitoxin. This antitoxin, produced in various tissues, is delivered into the blood stream, where it is found in the globulins of the blood serum. It was a simple practical problem to produce this substance in quantity in large animals, from whom large quantities of blood could be removed without harm, and the serum or its globulins made use of to supply the deficiency in antitoxin production in human beings undergoing infection with the diphtheria bacillus, or even to prevent infection in those exposed, by surcharging their tissues with antitoxin and thus making the ground unfavorable for the diphtheria bacillus.

It should be noted that diphtheria antitoxin has no important direct influence on the diphtheria bacillus. It acts solely by neutralizing the toxins of the organism, which, thus disarmed, falls an easy prey to other protective agencies.

The discovery of diphtheria antitoxin led to the hope that similar sera could be produced which would have as happy an influence on other infectious processes. It was soon learned, however, that few other bacteria than the diphtheria bacillus produce a soluble toxin in quantity. A study of infection with the diphtheria bacillus shows it to be an almost pure toxemia. The bacteria are limited to the local lesions in the throat. Here they manufacture their toxins, which are carried in the blood stream to all parts of the body, producing toxic degenerations of the so-called parenchymatous organs and the nerve trunks. The lesions which lead to death are thus produced largely at points distant from the region where the toxins are elaborated. The tetanus bacillus is the only other organism among the important pathogenic bacteria which produces mainly a soluble toxin and whose lesions largely arise at a distance from the bacteria, as in the case of diphtheria.

With the great group of other pathogenic bacteria, the story is a distinctively different one. General processes, when they arise, do so as a result of the invasion of the blood stream by the bacteria (bacteremia), and the organisms are carried to all parts of the body. The staphylococcus, streptococcus and pneumococcus, for example, depend for their activity in great part, not upon soluble toxins, but upon toxins (endotoxins) which are limited to the bodies of the bacteria. The problem in these cases is not the simple one of neutralizing toxins, but the more complex one of destroying bacteria as well.

Investigation has shown that bacteria which enter the blood stream may be destroyed by substances present in the blood serum which produce a digestion — a solution (bacteriolysis) — of the organisms. This phenomenon depends upon the interaction of two substances. The first of these is a specific body, — the so-called amboceptor, — a distinct immune body which may be increased in quantity at will in susceptible animals, just as diphtheria antitoxin may be produced experimentally in quantity. If this body were capable alone of the destruction of bacteria, our problem would be solved. Unfortunately, however, the actual destruction of bacteria (bacteriolysis) is dependent upon the interaction with it of a second body — the ferment which completes the solution of bacterial cells and which is known as complement. Complement is an unstable body, with little resistance to heat, and disappears rapidly

* Read at meeting of Rhode Island State Medical Society, June, 1910.

from blood serum which is kept. It is present in the blood serum of all living animals, although its quantity may show marked variations. A slight disturbance, such as a headache, may diminish its quantity markedly, and we have discovered as yet no means of increasing the amount normally present to any considerable degree. Hygienic living, with abundant fresh air and good food, will keep its measure at a high par, but even under these conditions slightly untoward circumstances will rapidly lower the amount.

The individual who is undergoing infection with the typhoid bacillus, for example, is producing sufficient amboceptor for his needs. What his blood lacks is complement, and we as yet have no means of artificially supplying this need. Antisera rich in amboceptor may be readily produced, but the real need of the infected individual — complement — we cannot provide for.

For these reasons the so-called anti-bacterial or bacteriolytic sera are, as a whole, failures. An apparent brilliant exception, Flexner's anti-meningococcic serum, belongs in a class by itself because of the character of the meningococcus. This organism is one of a group of bacteria which undergo solution readily, probably even in the absence of complement. Rosenow has shown, and our own experience has confirmed this, that the group of organisms to which the meningococcus belongs will undergo solution in any normal serum, even in a serum which has little bacteriolytic influence on other bacteria, and sometimes solution of the bacterial bodies will occur in physiological salt solution. A specific serum against this organism belongs, therefore, in a special class and does not seriously modify the statement that bacteriolytic sera as a whole are failures.

Another method of dealing with infection was suggested by Metchnikoff's observation that the animal body protected itself in part against the invasion of pathogenic bacteria by means of active cell processes. He observed that, in the lower animals, certain infections were held in check or overcome by the action of motile cells, which took the invading bacteria into their bodies and destroyed them by a process of intracellular digestion (phagocytosis). The most active phagocytic cell in the human body is the polynuclear leucocyte. It was shown that the number of leucocytes in the circulating blood could be increased by the use of preparations containing nucleic acid. Substances such as yeast, rich in nucleins, were, therefore, used as a means of combating infection, but without marked influence on the processes.

Thus matters stood when A. E. Wright published his first practical results from bacterial vaccination. From 1892 to 1902, efforts in the direction of specific therapy had resulted in no signal advance. Our study of nature's methods had disclosed no new avenue of approach toward the solution of the problem, and we could not imitate nature successfully along the old ones.

The new facts which Wright brought out were (1) that the cellular destruction of bacteria (phagocytosis) does not depend solely on cell activity; that before bacteria are taken into the bodies of cells they must be acted upon by substances present in the blood serum (opsonins). White corpuscles washed free from serum are not attracted by bacteria with which they are brought in contact and will not, therefore, show phagocytic activity. The addition of a small amount of normal serum to the mixture of bacteria and washed white cells will be followed promptly by the familiar picture of phagocytosis.

(2) That the injection of suspensions of dead or modified bacteria (bacterial vaccines) into infected individuals would provoke the formation of antibodies more or less specific in character against the bacteria used for making the suspensions. The use of suspensions of modified bacteria in the *prophylaxis* of disease has been practised since the earliest years of bacteriology. The new step was the demonstration of their value in treatment of infections already established. The response to their injection is indicated not only by the formation of opsonins, but also by the production of other antibodies.

Wright's work has opened up a new world of possibilities in the struggle with infection. It is producing practical results in the treatment of infections which could not be hoped for a few years ago, and it has given the research worker a new basis from which to attack the problems of immunity.

THE PRINCIPLES OF VACCINE THERAPY.

It should be said in the beginning that the opsonic index as a measure of the immunity response under vaccination is looked upon in this country as inaccurate. It requires a complicated technic, has many sources of error, and in our experience the results obtained are unsatisfactory. It has a value in the diagnosis of obscure conditions.

Wright believes that a proper therapeutic dose of vaccine in an infected individual is followed by a period of intoxication, accompanied by a diminution in antibodies (negative phase), followed by a stimulation of the immunizing machinery and the production of an increased amount of antibodies (positive phase). Theoretically, it should be possible to bring about the production of surges of antibody production, each wave higher than the preceding one, with progressive beneficial results to the infected individual. Wright, in his early work, insisted that, in order to provoke a positive response to vaccination, it was necessary to inject a sufficient dose to produce at first intoxication (negative phase). Our experience and that of others has shown that the ideal immunizing response can be produced without the toxic negative phase. Physiological doses of vaccines should be followed by an immediate production of antibodies without toxic action.

Wright believes that the individual who is undergoing infection with a carbuncle does not produce sufficient antibodies because the toxins of the staphylococcus are not being absorbed from the local lesions, owing to the disturbed blood vascular circulation and the obstructed lymphatic

drainage of the infected region. Such an individual, however, has general malaise and frequently shows temperature, both of which should be accepted as evidence of toxic absorption. A more reasonable explanation, it seems to me, is that, while absorption of abundant toxic material is taking place, the character of the toxic material is not such as to stimulate the defensive forces. It is possible that there is some selective action in absorption, so that certain beneficial stimulating substances may not be taken up by the lymph stream from the focus of infection.

Another reasonable explanation rests on a belief in the local character of many immunity responses. It has been generally accepted that the immune bodies are produced almost wholly by the blood-making (hemapoietic) organs, and thence delivered into the blood stream. This theory fails to take into account the special immunity which certain tissues exhibit against infection. Most important among these are the muscles. Voluntary muscle is recognized as almost completely immune to tuberculosis, and undergoes infection with pus-producing organisms only after the intermuscular connective tissue has been overwhelmed. We recommend the injection of vaccines into muscle or into the intermuscular connective tissue. The satisfactory response which is obtained, we believe to be due in part to the awakening of the defensive metabolism of the muscle system by a stimulus differing in character from the toxic material absorbed from the local focus of infection.[1]

If the school of vaccine therapy does no more than to call attention to the muscle system as an important factor in the immune mechanism, it will have justified its existence.

Wright believes that an interval of at least seventy-two hours should elapse between inoculations of vaccines because of the toxic-negative phase following each inoculation. Early in our experience it became evident that, with proper dosage, the negative phase could be eliminated. The immunity response began to appear almost immediately following the injection of a physiological dose of vaccine. We have, therefore, shortened the interval between doses markedly, particularly in ugly local or in general infections.

Wright advocated the exposure of the suspensions of bacteria used in making vaccines to 60° C. for one hour for the purpose of killing. The immune response to the injection of vaccines is at least in part a specific one. This may be supplemented by more general phenomena (see staphylococcus below), but the object sought is an increased resistance to the specific organism which is producing the infection in a given case. Such an increased resistance means the formation of antibodies against the specific proteins of the bacterium. Bacterial proteins as well as others lose their specific character by exposure to high temperatures or by prolonged exposure to low temperature. We have, therefore, gradually shortened the time of exposure of such suspensions to a point where the organisms are just killed. We believe that our greatest contribution to vaccine therapy has been the modification of the killing method. Other methods of killing than by heat (galactose, ether, etc.) have since been advocated, in an effort to preserve the specificity of the bacterial proteins intact.

Staphylococcus Aureus vaccine, in addition to provoking the ordinary specific immunizing response, seems to possess the power of stimulating an increase in general resistance. Merrick,[2] who treated a series of infants suffering from furunculosis, calls attention to the fact that the children not only recovered from the boils, but their general nutrition became so improved after treatment that, from a condition of emaciation, they speedily became the best-nourished and most-resistant children in the institution.

GENERAL INFECTIONS.

The objections to the use of vaccines in infectious conditions seem to focus themselves against their use in general infections. They will, therefore, be considered here. The general harmlessness of vaccines is indicated by the results in two cases of infection in which, through error, 10 ccm. of staphylococcus pyogenes aureus vaccine containing 10,000,000,000 organisms were injected at one time as an initial dose. This is forty times the standard initial dose. In one case no untoward symptoms appeared. In the second there was a temporary collapse, with prompt response to heat and stimulation. There are few powerful drugs in the Pharmacopeia which could be used with such disregard for dosage without serious results.

The most obvious objection to the use of vaccines in general infections is that the patient is undergoing extreme intoxication and that the injection of vaccines will but add to this intoxication. I have called attention to our theory of muscle immunity, and to the fact that physiological doses of vaccines are not followed by a toxic (negative) phase. The dose of vaccine used in pneumonia, for example, contains fewer organisms than will be found in a few out of the myriads of infected air sacs of the lung in this disease. The dosage is so infinitesimal, and its toxic effect is so slight, if any, that it is not measurable. As evidence that even much larger doses are at least harmless, I might cite the case of a child of seven years undergoing an infection with pneumonia, with a temperature of 103 and extreme meningeal symptoms, into whose body was injected as an initial dose, 8 ccm. of pneumococcus vaccine containing 1,600,000,000 pneumococci. The standard dose for adults is 8 minims, or 100,000,000 pneumococci. This child receiving sixteen times the adult dose of vaccine not only did not show harmful results, but began to mend shortly following the initial injection and recovered under daily injections of several times the usual adult dose. A second child with pneumococcus meningitis showed prompt diminution

[1] Since this paper was read, Theobald Smith, in a paper on "The Experimental Basis for Vaccine Therapy," read before The Massachusetts Medical Society, June 8, 1910, called attention to the possible local character of immune body production, and suggested vaccination in different sites as a means of awakening these local mechanisms.

[2] Ann. Gynec. and Pediat., September, 1908.

in the number of pneumococci in the cerebrospinal fluid, and sharp amelioration of symptoms accompanying the use of four to eight times the standard adult dose of pneumococcus vaccine. Death occurred from exhaustion, the meningitis having followed a series of children's diseases with bronchopneumonia,

Another objection offered to the use of vaccines in general infections is that vaccines stimulate the production of bacteriolytic substances and that these substances may kill many bacteria and set free their toxins, thus overwhelming the body with toxic products. Flexner's antimeningococcic serum is a bacteriolytic serum about whose value there is little question. It is injected into the subdural space of children who are suffering from extreme intoxication with the meningococcus and its products in a region which is most sensitive to these products. Its injection is followed by the immediate action of its bacteriolytic substances on the meningococci with which they come in contact. Examination of the fluid shows a prompt and extreme diminution in the number of meningococci, and yet I have never seen reported harmful results related to the sudden setting free of their toxins. Following the injection of vaccines, the theoretical evolution of bacteriolytic substances, if occurring, must take place slowly and gradually. There is not an explosive setting free of these substances such as the injection of meningococcus serum brings about, and the effect, if any, must be less than that shown in meningitis, which is practically negligible.

It may be argued that Flexner's serum contains anti-endotoxins capable of neutralizing the toxins of the meningococcus when set free. If this is true, it is the first practical anti-endotoxic serum which has been produced (Besredka's anti-endotoxic typhoid serum has only experimental interest) and Flexner makes no claims of anti-endotoxic properties. Even though such claims are made, the prompt recovery of a child into whose subdural space normal horse serum was injected in an emergency when Flexner's serum could not be obtained would suggest that danger from products of bacteriolytic action is not serious.[3]

A third objection is that patients undergoing infection are in an anaphylactic state; are, therefore, hypersusceptible to intoxication. With chronic infections such as tuberculosis this danger apparently exists, and for that reason I believe the use of tuberculin in treatment should be carried out with extreme care. We have never seen evidence of its existence in the acuter conditions produced by other bacteria. It takes time for the establishment of anaphylaxis, and the general infections with their sudden onset should be largely free from such danger. Anaphylaxis is a purely theoretical danger, as is evidenced by the infrequency of serious results following the use of diphtheria antitoxin. If guinea-pig experiments with horse serum gave a true picture of what was to be expected in human beings, the use of diphtheria antitoxin would be so limited on account of anaphylaxis that its value would be very questionable. As I have said elsewhere, theoretical considerations of this sort must yield to the facts of experience.

[3] Personal communication, Dr. S. P. Beebe.

DISTINCTION BETWEEN GENERAL AND LOCAL INFECTION.

The old belief in bacteriology was that there was a sharp dividing line between general and local infections. More recent work has demonstrated that such a line does not exist. Every case of typhoid fever is a general infection, as is every case of pneumonia, endocarditis, meningitis and most of the acute septic processes. It has been demonstrated that every case of erysipelas starts in as a general infection. Recovery from these conditions is brought about, first, by the localization of the infection and then by the destruction of the bacteria in the local focus.

In streptococcus general infections French workers found that the injection of turpentine into skeletal muscle, if successful in provoking a local abscess, was associated with the focalization of the infection, which could then be handled as a local process. If the patient's condition were such that local abscess formation did not occur, then the treatment was not successful.

Our grandfathers, probably with the same end in view, thrust setons through skin, subcutaneous tissue and muscle with apparently similar results.

Some of our results with general streptococcus sepsis were illuminating in much the same direction. We were given opportunity to treat cases of puerperal sepsis in which all clinical expedients had been exhausted and in which the outlook was hopeless. In a number of these cases a prompt drop in temperature followed the exhibition of vaccine. In this group I am somewhat skeptical as to the influence of the vaccine, since other factors may have played a part. In many of the other cases there was a progressive forcing downward of both pulse and temperature, which reached normal after several days. In certain of these cases local formation of pus, either in the uterus or else in muscle or subcutaneous tissue, occurred from one to three days after the temperature had reached normal. The further treatment of these cases consisted in the simple problem of caring for a local infection.

The localization of a general infection following the injection of turpentine into muscle by the French, the introductions of setons according to the older surgery or the injection of specific vaccines according to the newer procedures, first drew our attention to the apparently important part which local defensive mechanisms, and notably muscle, played in increasing general resistance.[4]

It is not my intention to speak of the use of vaccines in pneumonia until we have carefully collated the data obtained from reports of work

[4] I do not want to be misunderstood as claiming that we have solved the problem of streptococcus general sepsis. We believe that we have saved many cases of puerperal general sepsis which otherwise, according to the best views of able practitioners and consultants, would have died. Some cases, notably those whose resistance was gone, have died. In cases where the resisting mechanism was still capable of stimulation, the use of an autogenous vaccine killed at 60° C. for fifteen to twenty minutes, and injected at frequent intervals in physiologic doses, has furnished remarkably good results, and we have never seen evidence of harm.

during the past year. We have furnished pneumococcus vaccine for about fifteen hundred cases, but in spite of the fact that we made the reports so simple that a few minutes would suffice for recording the desired data, the return of these reports is slow. The evidence seems to predominate that this vaccine is a distinct addition to our armamentarium.

LIMITATIONS OF THE VACCINE TREATMENT.

Vaccine treatment in surgical conditions does not do away with the necessity for intelligent surgery. In an accumulation of pus the opsonins and other antibodies which are formed in response to bacterial vaccination cannot be delivered from the blood stream into the pus. In thick pus currents are sluggish or absent and the transmission of antibodies into the central part of the mass of pus must be interfered with. Contact with the bacteria is prevented and, therefore, the organisms are unaffected. It is essential that drainage be established. If this is done, the bacteria along the granulating wall will be quickly destroyed and healing be more rapid than surgical measures alone could bring about. Vaccine therapy does not supplant, but supplements, intelligent surgery.

With infections in certain locations, particularly along some mucous surfaces, vaccine therapy is less successful than elsewhere. Gonococcus vaccine, for example, has little influence on urethral infections in our experience, but a freshly prepared gonococcus vaccine made from first cultures from fresh cases gives such prompt and constant results in gonorrheal rheumatism that we are led to doubt the diagnosis in cases which do not respond. Our doubts have been justified in all cases which did not respond in a considerable series.

In infections of the kidneys, where there is a local irritant in the form of a stone, or where drainage is interfered with, vaccine treatment has little value. If the colon bacillus is the infecting agent, intoxication will be relieved and fever eliminated, but local infection will persist.

In the bladder, if residual urine is constantly present, vaccine therapy is only palliative, since the chronic irritation of the bladder mucosa by products of the saprophytic bacteria usually present will favor the continuation of the process.

In bacteriuria, vaccines have little value. Bacteriuria is marked by the growth of organisms in the urine, as in a culture medium. There is no infection. The bacterium and the human being are growing in harmony. No means of breaking this symbiosis has as yet been discovered for most organisms. Infection, if it exists, can be overcome, but the symbiosis persists.

NECESSITY FOR RESISTING ABILITY.

Diphtheria antitoxin confers a passive immunity. It requires the patient only to furnish a circulation for its distribution. When it comes in contact with diphtheria toxin, it neutralizes it without assistance from the patient. The defensive mechanism of the patient is left free to cope with the diphtheria bacilli at the point of infection.

Bacterial vaccines require the active co-operation of the patient. Vaccines, as far as we know, accomplish nothing directly except to stimulate the lagging immunizing machinery to produce needed antibodies. It is, therefore, essential that the defensive mechanism be in condition to respond to this stimulation if good results are to be obtained. For lack of this preparedness, fulminating cases of streptococcus peritonitis, for example, in which the septic absorption is extreme, do not usually respond to treatment, while slower infections do.

PRACTICAL APPLICATION.

It is not possible nor desirable to go into detail about practical procedures in this rather lengthy paper. Suffice it to say that the group of infections for which the average practitioner desires to use vaccine therapy, while comprehensive, is due to the activity of relatively few organisms. *Staphylococcus* vaccine is now accepted as the standard method of treatment of local conditions due to this organism. In general infections results are less satisfactory because, I believe, such a general process is usually a pyemia, and the organisms in a pyemia are contained in masses of clot and less accessible to the antibodies which may be formed.

Of *streptococcus* general infections I have spoken. Among local infections, erysipelas responds in most cases with promptness. This is particularly true if an autogenous vaccine can be obtained. Local septic processes also respond promptly.

The empirical use of vaccines made from autogenous throat cultures, and containing usually a mixture of the pneumococcus and streptococcus, has given usually prompt relief of pain and a bettering of other symptoms in a large percentage of the cases of rheumatism treated.

The treatment of the associated infection in tuberculosis with autogenous vaccines in which the streptococcus and pneumococcus usually predominate is accompanied by diminution of temperature and relief of cough and night sweats, followed by increase of weight.

Pneumococcus and *gonococcus* processes have been mentioned.

The frequency with which *B. coli* is an infecting agent has only been fully appreciated since vaccine therapy has been inaugurated. The colon bacillus may give rise to marked toxic symptoms from a relatively slight infection. Such intoxication can be relieved usually within a few hours. Genito-urinary infections due to this organism have been considered. The response in bladder infections, where well drained, is rapid and permanent where re-infection can be guarded against. In typhoid fever the so-called exhaustion which arises in the late stages and which leads frequently to a fatal issue is apparently due to B. coli infection. An autogenous vaccine made from the feces has in three cases with us been followed by a prompt disappearance of the septic temperature and rapid progress to convalescence. In membranous colitis an amelioration of symptoms persists while the vaccine is used, but prompt relapse usually follows its withdrawal. B. coli vaccine prepared from the urine of cystitis asso-

ciated with rheumatism or rheumatoid conditions has not only cleared up the cystitis, but has also relieved the rheumatoid symptoms promptly in a small series of cases with us. B. coli vaccine should always be prepared directly from the patient's organism and should be used in small doses. The initial dose should not be more than 25,000,000, cautiously increased.

Tuberculin.—No final judgment of the value of any agent used in the treatment of tuberculosis can be made unless its practice has been followed for many years. I am, therefore, only hazarding an opinion of the value of tuberculin from our limited observation. I believe that tuberculin in proper doses is a valuable addition to standard methods of treatment. Its use, however, is associated with dangers which make extreme caution necessary in its exhibition. Wright's method, which calls for an extremely small dose at weekly intervals, seems to eliminate all dangers of over dosage.

I hope that the time is not far distant when local laboratories will properly develop the field of vaccine therapy. The observer in this field requires an accurate and extensive knowledge of the small group of organisms which play a part in most infectious processes. With this mental equipment a knowledge of the technic of vaccine production and therapy can be quickly developed. There is no reason why autogenous vaccines cannot be produced in the larger hospitals and medical centers of the community. I look forward to the day when an equipment in this direction will be expected of the local pathologist and bacteriologist.

Vaccine therapy is in its infancy. It is but a step in progress toward the specific therapy of infectious processes for which the medical world has been anxiously waiting. I trust that I have made clear my reasons for believing that, through the new viewpoint it has opened, a way to the solution of these problems may be made possible.

Original Articles.

TYPES OF GRAVES' DISEASE.

BY J. G. MUMFORD, M.D., BOSTON.

The types of Graves' disease are so various, and the special symptoms, or lack of symptoms, so puzzling, that it is well for a student of the subject frequently to compare cases, especially that he may bring home to himself the possible and serious outcome of conditions which often appear trivial and more often are obscure. Frequently it happens that the frank, acute cases, with the classical symptoms, are cured by any treatment, and by no treatment even. Sometimes it occurs that a case apparently trifling, perhaps running an easy, chronic course, suddenly becomes worse and dies in spite of all treatment.

Here are two dissimilar cases, a typical case and an atypical case, both of which occurred in my practice, both of which caused me the greatest anxiety and taught me new lessons regarding the nature of this interesting ailment.

Case 1 was that of Mrs. A. S., a woman of forty-two. She had behind her a long surgical history, — operations for salpingitis, for retroperitoneal cyst, for ovaritis, — but in spite of these serious diseases and operations, which occupied many years of her younger life, she came out strong and vigorous. At the age of thirty-seven, however, she consulted her physician for what appeared to be a trifling heart lesion, for she found herself troubled with occasional dyspnea on exertion. Her physician discovered a slight mitral leak and some dilatation of the heart. Careful treatment and prolonged rest resulted in no benefit; gradually there developed further a constant distressing dyspepsia, pain and nausea after eating and a state of continual apprehension. These symptoms persisted for two years, when there developed further a mild, bilateral tremor of the fingers. At this stage she consulted me, on the advice of her physician, and I was able to suggest the diagnosis of exophthalmic goiter. Even so, the diagnosis was by no means assured, for no enlargement of the thyroid was evident, nor were there marked eye symptoms, while the heart rate rarely went above 80. We continued to treat her as a cardiac case only — bearing in mind the possibility of Graves' disease — for another year, when within a month there developed a series of characteristic symptoms: the thyroid gland became enlarged, with a typical thrill; the eyes gradually became prominent, with lagging of both lids and widening of the palpebral fissure; and tachycardia became pronounced, the rate of the heart ranging between 110 and 130.

Here was a case which, in spite of its gradual onset, seemed suitable for immediate and vigorous medical treatment. Accordingly, we instituted the use of hydrobromate of quinin, neutral, in 5-gr. capsules, three times a day, and continued the medication without intermission for fifteen months. During the early months of treatment the patient experienced great relief; her apprehension vanished, her thyroid tumor became somewhat smaller, the heart action became slower and her general sense of improvement marked. Such was her state twelve months after the beginning of the quinin treatment. She was not well, however, and her condition of instability became especially apparent at that time through the accident of a serious grief; a favorite sister became ill, and, after a month's extreme suffering, died, under the constant watchfulness of our patient. The strain and anxiety of this experience renewed at once, and markedly, the exophthalmic symptoms. Within a very few weeks, from the state of quiescence I have described, all her discomforts reappeared; the eyes became prominent and anxious, with their associated abnormal lid phenomena; her tachycardia returned; the heart became irregular; dyspnea became extreme; she was troubled with a constant diarrhea and distaste for food; profuse sweating became pronounced; the tremor returned in force; and the right lobe of the thyroid rapidly doubled in size.

Now the case presented all of the typical

symptoms of acute Graves' disease and demanded, apparently, most energetic treatment. Fortunately, during the whole of this period she had been under constant medical care and I had seen her myself once a month for more than a year. The hydrobromate of quinin appeared to be no longer useful, and, in view of the rapid development of her acute symptoms, it seemed wise to me to undertake a radical operation; at the same time, in view of her alarming psychic state, I made every attempt to bring her to the operation in a calm frame of mind. I believe firmly in the value of Crile's suggestion regarding psychic influences in acute Graves' disease, and in the importance of bringing the patient to operation practically without her knowledge. In the present case I followed the plan which I always institute in similar acute cases. The probability of our doing an operation was explained to the patient and her consent to it was secured, as well as the consent of her relatives, but the exact time of the operation was not set, nor was the operation explained to her as inevitable. I sent her to a quiet private hospital, confined her to her room, with a congenial nurse, and kept her there, resting and closely observed, for ten days. She spent her time in bed. I was able to relieve the sleeplessness from which she suffered by the liberal use of bromide of strontium, and, through the inhalation of various volatile oils and colognes, to suggest to her the possibility of improvement. During those ten days she was treated every morning by inhaling either nitrous oxid, eucalyptus, alcohol, spirits of camphor, ether or cologne, all in small, harmless amounts and freely mixed with air. In this way she acquired the idea of taking inhalations without the slightest terror or distress.

The principle of this treatment, as enunciated by Crile, rests on the following proposition: We know that the acute phenomena of Graves' disease are due to the abundant outpouring of the thyroid gland secretion into the lymphatics and so into the general circulation; we know that this outpouring can be increased by such stimuli as fear, anxiety and even mirth, but fear and anxiety are especially deleterious. Clinical evidence shows that the ordinary preparation for operation and the giving of ether have, through the stimulus of fear, more than once killed a patient, from the sudden resulting outpouring of thyroid intoxicants, without any operation having been done. If, then, we can bring the patient to the operation, can produce anesthesia and can operate without altering the equanimity of the patient's mental attitude, we are convinced that we then operate under the most favorable conditions.

I followed this method with the patient under discussion. On the morning set apart for the operation she realized no change in the ordinary routine. She was, indeed, given a hypodermic of morphia, but she had been given hypodermics of sterilized water daily, so that a hypodermic of morphia impressed her mind not at all. An hour after the hypodermic, when she was in a calm and untroubled state, I myself, as had been my custom, entered her room and proceeded with the anesthetic, giving her first a few whiffs of cologne, then an abundant inhalation of nitrous oxid, with a little oxygen, and then, when consciousness was gone, had the anesthesia carried on by ether. This was more than a year ago. My present custom is to carry the patient through the operation with nitrous oxid and oxygen, as I am convinced that thus her resistance can be kept nearest to its normal. The patient was carried, anesthetized, to the operating room, and these interesting facts were noted. Before taking her anesthetic her pulse had been 110; when completely anesthetized her pulse was 112; during the removal of the gland her pulse varied between 100 and 110; half an hour after her return to her room, and while recovering from the anesthetic, her pulse reached 120, but three hours later it had fallen to 90.

This is in notable contrast with the ordinary experience of bringing a terrified patient to the operation, when during that operation we note a steadily rising pulse and a condition often of great gravity before the recovery from ether.

The operation itself in the present case was a simple one; it consisted in removing the left lobe of the thyroid, stripping the posterior capsule after the method of C. H. Mayo, in the removal of the isthmus and the removal of about one third of the right lobe.

After the operation, and with the patient's recovery from ether, all acute interest in the case ceased; though one was struck, as one always is in satisfactory cases, to observe her rapid and complete recovery of health. The first noticeable change was the loss of peevish irritability which had characterized her before. She was relatively calm and tranquil after the operation, and two days later had ceased entirely to complain of any operative sore throat and pain in her neck. Coincidently, one observed a steadying of the pulse and a gradual decline in its rate; the tremor also abated rapidly; dyspnea was never again observed; the sweating disappeared, and at the end of ten days her digestive disorders were greatly improved. The wound healed promptly and never disturbed us. The most noticeable fact, however, about this case, as about all successful cases, was the calm, tranquil and happy attitude of the patient herself. One may not in words clearly define this change, but it is so rapid and so striking in all successful cases that it suggests the relief brought by the timely and appropriate use of morphia to a person in pain and terror. It is the reverse of euthanasia; it is the confident return to a cheerful and comfortable life.

The operation I have described was done some eight months ago, and I have seen the patient four times since she left the hospital. It is too early as yet to pronounce her permanently cured; indeed, one symptom still remains, a slight exophthalmos, but in all other respects she appears and feels absolutely well and goes about her work in life with a vigor and a cheerfulness which she had not known for five years.

This case, in its later developments, was a

typical acute Graves', and in its ready yielding to treatment illustrates admirably the value of operation in proper cases. In no way was it especially remarkable except in the long and gradual onset of the symptoms and in the sudden accession of serious symptoms on the experience of a depressing grief.

Case 2 was atypical: Mrs. T. B. was a vigorous young woman, of active habits, some thirty-two years of age, and the mother of four children. With the exception of her obstetrical history, there was nothing in her past life of any special significance. She had always been regarded as peculiarly sane and well-balanced. Some two years before I saw her she suddenly became extremely nervous; within a week she took on symptoms that suggested to her physician a rapid neurotic breakdown; she was sleepless, fretful, irritable and almost impossible to live with, as her friends asserted. Within a week after the surprising development of these symptoms her physician discovered a marked tumor of the thyroid gland. There was no other evidence of hyperthyroidism, with the exception of the nervousness; there was no exophthalmos, no tachycardia or palpitation, no tremor, no digestive disturbance, no sweating; in fact, the diagnosis was founded almost solely on the nervousness and the rapidly enlarging thyroid.

This patient's physician had the courage of his convictions, and his convictions were sound and accurate. Without stopping to employ drugs, and without waiting to see the development of the case, he proceeded at once to a surgical operation, and his surgical activity seems to have been justified by the results. He removed the whole of the left lobe of the thyroid, leaving, however, the isthmus, with a considerable pyramidal lobe, and the whole of the right lobe. The lobe removed was much the most affected; those parts which were left seemed to be but slightly hypertrophied.

Mrs. B. promptly recovered from the operation and promptly recovered her normal health. Her nervousness disappeared, and her usual cheerful and equable temperament was restored to her. Her husband's later account to me of the year which followed was encouraging, if it had not been pathetic. At any rate, the operation showed brilliantly the immediate benefit of cutting out a greatly active gland which obviously was pouring toxins into the patient's organism. Mrs. B.'s after-history, however, was stormy and instructive. Her symptoms of hyperthyroidism gradually returned after a year and became more settled and more pronounced than before. Not only was she the victim of an intense nervousnses on this second occasion, but she developed many of the classical symptoms of Graves' disease; her eyes became prominent, with the usual associated lid symptoms; the remaining lobes of the gland became enlarged to about four times their normal size; tachycardia developed, though not in an extreme degree, but her pulse came to range between 100 and 110; she became the victim of dyspnea and palpitation, while her digestive disturbances were poignant, — pain after food, eructations and constant diarrhea, — associated also with rapid emaciation. Such was her condition when she consulted me, some fourteen months after the first operation.

I endeavored for some two months to relieve her symptoms and to build her up by the use of hydrobromate of quinin, but at the end of eight weeks she was but little improved, and the outlook began to appear very serious. Meantime, her husband and her physician, who had performed the first operation, both urged me strongly to proceed with a second operation. It was evident to all concerned that the failure of the first operation to effect a cure was due to the incompleteness of the work. It was said, with apparent justice, that much more of the affected gland should have been removed. At this time, that is to say, immediately before my own operation, which I undertook with some hesitation, the patient, while extremely ill in the thyroid sense, seemed to be an excellent surgical risk. She had herself well in hand and exhibited little of the terror and perturbation which these people usually show when an operation is anticipated; indeed, it did not appear to me that my usual course of psychic treatment was indicated; the patient was so perfectly familiar with her coming ordeal, and so keenly intelligent about preparing for it, that I thought it best to consult her about the day and the circumstances of the operation.

On the appointed day she walked to the operating room herself to take her anesthetic, and appeared reasonably placid. Her pulse was 106, of fair quality, but slightly intermittent. There were no evidences of degenerative changes in the heart or nervous system, though a slight, hemic, mitral murmur was obvious; the heart, however, was not enlarged. I anesthetized this patient with gas and oxygen with the greatest immediate success. The combination of these agents is usually peculiarly effective in cases of Graves' disease. At the same time, in order to block, so far as possible, the effects of hyperthyroidism, I followed the suggestion of Crile and infiltrated the skin about the tumor thoroughly with a 1% cocaine solution. I found the operation of thyroidectomy in this case unusually difficult. The previous operation had had the common effect of filling the operative field with extensive and dense scar tissue, through which there was an abundant blood supply. The dissection was most painstaking and bloody, though the total amount of hemorrhage or of blood lost was inconsiderable, I am convinced. At one time I counted 47 hemostatic forceps in the field of operation, and I am sure there must have been twice that number before the operation was completed. All this, of course, shows the difficulty of the operation and its length. The thyroid lobes seemed everywhere closely adherent to the surrounding structures. I found the stump of the old left lobe which had been removed, and proceeding thence I took out the somewhat enlarged pyramidal lobe and about half of the enlarged right lobe. I assured myself by this method — that is, by slicing laterally the right lobe — that the parathyroid glandules were

not disturbed. To the same end, the blood vessels were seized and controlled within the substance of the gland itself. The operation occupied about thirty-five minutes and was extremely tedious; the patient bore it well, however; her pulse rose but little, and while the stitches were being put in, it was counted at 112. While she was recovering from the anesthetic, that is, fifteen minutes later, her pulse had sunk to 100, and all promised well.

Every reasonable operative precaution had been taken to avoid increasing the hyperthyroidism. In spite of the dense adhesions about the gland, that organ had been handled very little, while after the operation abundant drainage was provided. Even so, one recalls with interest Crile's assertion, based on numerous investigations and experiments, that the escape of thyroid secretion during the operation has little or nothing to do with post-operative hyperthyroidism.

Trouble began immediately after our patient was put to bed. She was the victim of an intense and prolonged nausea, vomiting frequently and painfully for twelve hours. She awoke to consciousness in a state of excessive irritability, throwing herself about the bed, demanding to be taken up, crying out for the nurse every two or three minutes, continually asking for ease from her discomfort, a discomfort which she failed to describe; her apprehension became painful and extreme, her agitation seemed almost maniacal, and her former tranquillity was so far abolished that she complained bitterly and continually of her attendants and of the nature of her treatment. She bewailed the fact that she had submitted to a second operation, and assured us continually that she was about to die. At the end of twelve hours the reasonably slow and steady pulse had risen irregularly to 130 and 140, the heart action became embarrassed, intermittent and irregular; a rapid cardiac dilatation supervened; the patient was bathed in sweat; her exophthalmos became exaggerated in appearance and her misery became almost indescribable. In other words, here was presented a picture of extreme and grave thyroid poisoning, such a picture as one sees in the most advanced cases of Graves' disease immediately before death; indeed, death was imminent in the case of this unfortunate patient. I attempted in every way to relieve her misery by the use of appropriate drugs, but the rapid deterioration of her heart seemed to render them ineffective; opium alone gave her some slight comfort.

The situation was such as we used commonly to encounter after operating for Graves' disease two or three years ago, before the present effective technic had been devised.

The patient sank rapidly under her accumulated sufferings and died some thirty-six hours after the operation. She died of acute hyperthyroidism.

The case in its development and in its early features was conspicuously atypical, and although during that interval between the first and second operations characteristic symptoms accumulated, so that the case became almost classical in its appearance, still the condition at no time was regarded as serious. One cannot but ask oneself what would have happened had no operation been done. In spite of the futility of this question, one cannot but feel that had no second operation been done, the patient must have continued on the edge of a volcano, and that at any time, almost, some slightest excitement or stimulus might have thrown her into a state of advanced hyperthyroidism from which she could not have been rescued. Looking back at my own relation to her illness, that is, during the last two months of her life, and at the course followed, I believe now that I should not have dallied with drugs, but should have followed the example of her first surgeon and operated immediately after she consulted me.

The two cases which I have related, eventually and pathologically, were cases of frank, acute Graves' disease. There was no evidence in the thyroid lobes removed that any retrograde changes had as yet begun in those organs. It is to such retrograde changes, with their associated symptoms, leading in the last event to the antipodes of Graves' disease, to an actual myxedema, that the physician must often look for spontaneous cure of hyperthyroidism. Neither in the case of Mrs. S. or of Mrs. B. were such changes evident.

These two cases, little as they resemble each other, illustrate that great class which should be treated by early thyroidectomy.

HYSTERIA — WITH AUTOPSY.*

BY WILLIAM R. WOODBURY, M.D.,
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AND
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In January, 1909, a young colored girl, seventeen years old, came to the Nerve Department of the Boston Dispensary. She came reluctantly with her mother; and this is the story they brought:

At two and one-half years of age came her first sickness: she had whooping cough. For six to eight weeks she was very ill. It was nearly a year before there was full recovery. Then followed immediately measles, which was not a particularly severe illness. When she was five and one-half years old she was vaccinated. The first vaccination did not take. The second vaccination took. Up to this time the skin of her entire body was perfectly clear. A rash appeared with the vaccination and the swelling of her arm. From head to feet the entire body was covered with "white boils." These in healing left permanent white marks on her colored skin. These white spots distressed the girl greatly when she began to attend school — at six years of age. During the following two years she was taken to the Carney and Homœopathic hospitals, but she was never cured. Her body and scalp had a scaly eruption which was white, dry and did not itch. At times the eruption appeared to be gone; then it would return.

At eight years of age she had tonsillitis. She was in bed ten days. Following the tonsillitis appeared for

* Read at a clinical meeting of the staff of the Boston Dispensary, May 6, 1910.

the first time her "bladder trouble," which the mother said began "with a constant desire to pass her water." This "trouble" was continuous the next one and one-half years. At the Carney Hospital "kidney trouble" was suspected, and the doctor wanted the girl to go into the hospital. She refused, and she cried, and her mother took the girl home. From that time (eight years of age) to sixteen years of age she made no complaint of "water trouble." Menstruation began when she was fifteen years and two months old — in February.

At sixteen years of age she weighed 118 to 123 lb., and it was generally remarked how well she looked. In December of her sixteenth year she went to visit her grandmother, who lived in a nearby city. The visit lasted one week. On her return Lucinda began not to seem well. She complained of being tired, and her "water trouble" became constant. As soon as the bladder was relieved the desire to urinate returned. She said, "I always felt as though there was a drop more that I could not get rid of; it was always irritating." Her disposition began to undergo a complete change. She grew more irritable; she was peevish; she was easily annoyed; and she became less unselfish. She began to lose in weight, and from that time on her weight steadily fell away.

The physical examination discovered a fairly well-developed but poorly nourished body. The skin, save that of the face, carried a general psoriasis. Where the psoriasis had healed and the scales had come off were white scars which showed prominently on the dark skin. Above the pubes was a slight tenderness. The heart and lungs were normal. The girl refused to answer questions, but when pressed she would break her silence only with a whining, "Mamma, you tell him; mamma, you tell him." During the time we were getting her history and making the physical examination she insisted on going to the toilet three times. Her mind seemed centered on her bladder; she would continually say, "My bladder," — nothing could get her attention away from it. She depended absolutely and always on her mother to do everything for her. The girl demanded constant service night and day. She insisted on keeping her mother with her all the time; she compelled her mother to sleep with her.

If any one was about at meal times she refused flatly to eat. A member of the family said, "Lucinda liked to eat, but she hated to have any one know it." When in bed she would eat under the sheet so as not to be seen eating. Analysis of her urine revealed nothing to be remarked.

During the year previous to coming to the Dispensary the girl was under the care of a number of physicians. At one time she was in the Vincent Hospital for a period of two or three months. While there she urinated at intervals of from every fifteen minutes to every three hours. Some kind of treatment was given for the bladder, but nothing was discovered, no relief came. After that she became a patient at the Emmanuel Church Clinic.

From January to Aug. 4, 1909, we kept in closest touch with the patient at the clinic and in her home. She came with her mother to the Nerve Room at regular and frequent intervals, but she always came most reluctantly, — under vigorous protest, — and she showed much vigor and no little determination in her conduct towards us. Our Medical Social Service visitor saw the girl, her mother and the family frequently in their home. We all endeavored to stimulate the girl to try to do something for herself, to want to do for herself. Our efforts singly and combined met with no success. When her mother returned to her own bed and locked her door, Lucinda would spend the entire night between going to the bath room and sitting crying at the head of the stairs opposite her mother's bedroom door. The girl would eat only after much urging, and then she ate very little. Naturally she grew steadily weaker, and was losing in weight, but her endurance held good. "Lucinda says she will jump out of the window" was the message which came one day from her excited mother. Upon the information that the window was in the second story, the mother was told to tell Lucinda that she might jump if she wanted to. This closed the window incident. The girl made no more mention of the subject.

On the 17th of April she was taken into the Milton Convalescent Home. She was to stay there three weeks. The third day after being admitted we were requested to have her removed at once. She cried and raised such a rumpus generally that the interests of the other patients demanded her speedy departure.

Dr. Edgar Garceau saw the patient at his office, by appointment, and gave her a painstakingly careful examination. His report was:

PLEASE FILL OUT THIS CARD AND RETURN TO
SOCIAL SERVICE DEPARTMENT
NO. { *Nerve Room* / *2456* BOSTON DISPENSARY
COR. BENNET AND ASH STREETS

FOUND *Extreme emaciation, anemia. Contracted bladder. Hyperemia of trigone and vesical neck. Hyperemia of the kidneys (calcic oxalate and diminish amount). There was so much emaciation that I suspect deep-seated disease (adrenal tumor?).*

RECOMMENDED *Advise against bladder treatment now. Better rest a while and return for examination later.*

DATE *May 11, 1909.* (SIGNATURE) EDGAR GARCEAU.

The girl's condition was not improving; she was steadily becoming weaker. Nothing would stimulate her into any effort; she continued, and strenuously, her tyranny over the family. In July she was taken to Nova Scotia to visit some family friends. Her mother remained at home — she was compelled to help meet the family living expenses. Lucinda knew this, yet she moaned and so carried on that in a few days an urgent telegram came to her mother to come at once and take the girl home; she was in bad condition. The girl had refused all food for the entire ten days. She had taken only two quarts of milk and a few caramels, and she sat throughout those ten days in one position, her favorite one, with her right leg doubled up under her.

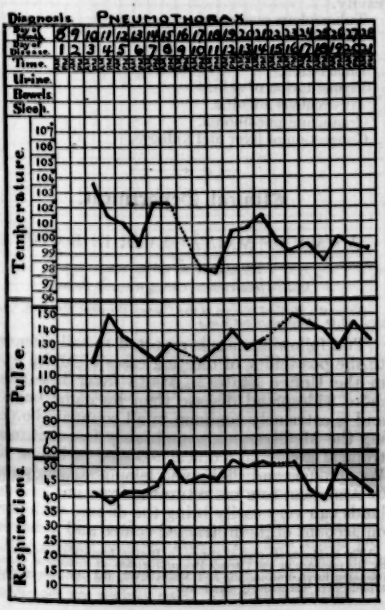
On her return she went to bed and there on Aug. 4 she was seen at her home. Her emaciation was much more advanced; and she complained of a numbness and inability to move her right foot — a pressure paralysis resulting from her ten days' sitting on that leg. Physical examination revealed nothing else. It was necessary to force her to take food. She would eat candy and cookies, but nothing else. Her silence was still sphinx-like. During the remainder of August, September and up to Oct. 8 the usual condition continued, but naturally the emaciation and physical weakness were advancing. She was a mere skeleton. On Sept. 28 her grandmother died. The mother left the patient — who had demanded her constant attendance day and night — and she made no remonstrance against the mother going to the nearby city where the grandmother had died. The grandmother's death seemed to bring the girl back into a state of reasonableness, and she ate willingly; she was less tyrannical.

At four o'clock of the afternoon of Oct. 8, the girl was seized with a violent attack of coughing which lasted until nine o'clock in the evening. She said there was something in her throat which she could not get

up. Suddenly she cried out and fell out of the chair to the floor, but she complained in no way of being hurt. An examination of the throat discovered nothing; but there was found a left pneumothorax, with the heart displaced to the right. The next day there was a high pulse-rate and temperature, and the girl was weak and had labored and rapid breathing. She was pale, extremely emaciated and had a constant, dry cough.

On Oct. 10, the left chest was slightly larger than the right, and tympanitic on percussion. The pulse was 120, small and weak; respirations were 40 and labored; and the temperature was 103.5. On the left side of the chest the breath sounds could not be heard: they were replaced by a peculiar metallic sound like the ringing noise made by striking on an empty rain-barrel or hogshead. On the right side the breath sounds were intensified, harsh and hurried. The heart sounds were clear but weak, and dullness or percussion was found two finger breadths to the right of the sternum. The three weeks that followed were relatively uneventful save that all the symptoms previous to the pneumothorax had disappeared, and the girl became her old rational self. She ate well, and without any urging; her bladder trouble was forgotten; she talked and asked to have her friends come and see her; and she replied to questions asked her. The right lung became slightly edematous on the seventh day, but in a day or two it had practically cleared up. On the fifteenth day the edematous condition reappeared and disappeared as before. On but one occasion (the twelfth day) during this time did she complain of the bladder. She felt some pain and retained her urine. Four ounces of urine were drawn with a catheter, and no further disturbances followed. Bed sores developed on the sacrum on the nineteenth day, and these never wholly healed. The last three days fluid appeared in the left chest.

Lucinda died following a sinking spell, Oct. 27, — the twenty-first day of the pneumothorax. Nine hours after death the autopsy was made by Dr. A. W. Hunter, of the Boston City Hospital. His report is:



AUTOPSY.

Peritoneal cavity. — Surfaces are normally smooth, with a slight increase of fluid in the cavity. This fluid is clear, limpid and estimated at 100 ccm. The liver extends 10 cm. below the costal border in the median line and 8.5 cm. in the right midclavicular line. Diaphragm, right sixth rib; the inferior surface is evident in the median line. It has a convexity downward and it is palpable along the costal margin to the level of the eighth rib, where it recedes backward along the eighth and ninth ribs. Throughout its course the convexity is evident downward. The large intestine is moderately distended with gas. Mesenteric lymph nodes are visible, but not enlarged. The appendix lies retrocecal, and is 6 cm. long, with an old, thin, fibrous band stretching across its mid-portion, but apparently is not remarkable.

Pleural cavities. — On percussion over the left side of the thorax there is a hyperresonance of tympany. After reflexion of the skin on the anterior thoracic wall a small amount of water was poured between the skin and the thoracic wall, all bubbles removed and a puncture made into the left thoracic cavity below the water line. Through this opening a continuous series of bubbles escaped. On removal of the sternum the left parietal pleura is of a gray color and studded with minute, raised, gray papules.

Right cavity. — A few firm, gray adhesions are present on the posterior and apical parts of the visceral pleura. In the cavity there are estimated to be 300 or more cubic centimeters of yellowish, clear, limpid fluid. The interlobar cleft between the upper and middle lobes is obliterated by adhesions, and slightly between the middle and inferior lobes in the axillary line.

Left cavity. — The heart occupies the median line. The left lung is contracted and occupies a small area along side of the vertebral column. The pleural cavity is empty except for 300 or 400 ccm. (estimated) of yellowish, slightly turbid, fluid. The upper half of the parietal pleura in the axillary and posterior portions is injected and covered with a thin layer of friable, gray, fibrinous adhesions. Similar scattered areas along the parietal wall are evident. On the visceral surface the pleura is thickened and superimposed; on this gray, thickened pleura is a layer of gray, friable, elastic exudate. The interlobar cleft is obliterated. At the inferior posterior portion of the upper lobe there is a firm, gray, fibrous band binding the lung to the parietal wall; this band is 1 cm. in thickness. Immediately below it is a circumscribed round hole 1 cm. in diameter which communicates with a cavity within the lung. The entire lung is bound posteriorly along the median line to the posterior parietal wall and the vertebral column. The left lung measures 11 cm. in its vertical diameter and 13 cm. in its antero-posterior diameter.

Pericardial cavity. — The surfaces are normally smooth, moist and glistening. Cavity contains 50 ccm. of pale, limpid fluid. In the unopened pericardial sac the heart lies 4 cm. to the left of the median line at the fourth space and 2 cm. to the left at the sixth rib, while it reaches 7 cm. to the right of the median line at the fourth space.

Heart. — Appears small. Scattered over the epicardial surface, particularly at the right auricle and the left ventricle, there are circumscribed, gray, opaque, macular areas. On section the musculature is brownish colored and of fair consistence. The endocardium is

smooth, as are also the valves. The coronaries are not remarkable.

Measurements: Tricuspid valve, 10.3 cm.; pulmonary valve, 6.3 cm.; mitral valve, 8 cm.; aortic valve, 5 cm.; left ventricle, 1.2 cm.; right ventricle, 4 mm.

Right lung. — Upper lobe: The apex and posterior margin of the right lung are of a mottled, grayish-red color, crepitant throughout, on section very moist, with some pitting on pressure. The anterior half of the upper lobe is firm, hepatized, pinkish in color, on section dry and semi-gelatinous in appearance; it is non-crepitant and has a finely granular surface throughout. Toward the posterior margin of this area there are large, soft, rather dry, cheesy-looking, circumscribed areas .5 to 1 cm. in diameter. The posterior margin of this area also has scattered areas as afore-mentioned, surrounded by crepitant, moist lung tissue.

Left lung. — Size is much diminished. The pleura is covered with adhesions as afore-mentioned. Lower lobe: Diaphragmatic surface feels firm, hepatized and gradually fuses in its upper part with mottled, grayish, crepitant lung tissue. The upper lobe at its inferior posterior surface has an opening afore-mentioned. On dissection of the primary bronchi of the left lung there is evident an injected mucosa with five circumscribed, raised, minute nodules on its surface. Deeper in the lung substance the bronchioles are more injected, and one area has a continuous studded area with gray, minute papules. This bronchiole leads into a cavity which communicates with the afore-mentioned hole. This cavity is approximately 5 cm. in diameter vertically and 3 to 4 cm. in its antero-posterior diameter. Its walls have a gray, necrotic, firm appearance, as has also the pleural opening. In the upper third of the upper lobe there is a circumscribed, protruding, nodular mass 6 cm. in diameter, of a mottled, grayish-red color on the pleural surface and firm to palpation. On section it has a soft, slightly moist, gray, granular appearance surrounded by a deep red, very moist, crepitant lung substance. The peribronchial lymph nodes are palpable, but on section not remarkable.

Spleen. — Is apparently of normal size. On section it has a mottled, deep red color. Pulp is scant; trabeculæ prominent.

Gastro-intestinal tract. — Aside from the slight distention of the large intestine, it is not remarkable.

Pancreas. — Is well-shaped and negative.

Liver. — Weight estimated at 1,200 to 1,500 gm. The capsule is smooth; on section it has a mottled, yellowish-red color which is uniform throughout. The small sinusoids appear somewhat prominent and filled with pus. Gall bladder is moderately distended with green bile.

Kidneys. — Weight apparently of normal size. Slight fetal lobulations persisting. The capsule is thin and non-adherent, leaving a smooth surface when stripped. On section the cortex and pyramids have a mottled, dark red color. Considerable blood oozes on to the cut surface, particularly in the pyramids. The cortex is of normal thickness; otherwise the kidneys are not remarkable.

Adrenals. — Negative.

Bladder. — Is moderately distended with urine. The mucosa is smooth. Beneath the mucosa there are numerous mottled, dark red areas which on section do not appear to involve the muscular coat. They are most evident on the inferior surface of the bladder.

Genital organs. — The vagina is negative. Cervix is conical and patent. The uterus is small and firm; the mucosa of deeper red color. The tubes and ovaries are apparently negative.

Aorta. — Is smooth, elastic and of a pale yellow color.

Thoracic duct. — Is defined but not remarkable.

Head. — Not done.

MICROSCOPICAL EXAMINATION.

Heart. — Negative.

Lung. — Much fibrin in alveoli; endothelial leucocytes; areas of caseation. Small areas of apparent connective tissue growth within the alveoli. Diagnosis: Tuberculous pneumonia; organizing pneumonia.

Pleura. — Areas of tuberculous nodules showing giant cells. Other part shows necrosis, fibrin, giant cells and connective tissue increase.

Spleen. — Negative.

Stomach. — Negative.

Intestine. — Mucous cell débris and bacteria on gut mucous membrane.

Pancreas. — Negative.

Liver. — Congested.

Kidney. — Congested.

Adrenal. — Negative.

Lymph node (peribronchial) shows areas of tuberculous necrosis and giant cells.

Uterus. — Negative.

Gall bladder. — Desquamation of cells.

Bladder. — Submucosal edema, congestion and a small submucosal hemorrhage.

Aorta. — Discrete nodules of intimal proliferation and thickening.

ANATOMICAL DIAGNOSES.

Pneumothorax.
Acute pleurisy with effusion. } Tuberculous.
Chronic tuberculous pleuritis. }
Hydrothorax.
Hydropericardium (slight).
Hydroperitoneum.
Chronic abscess of lung with rupture into the pleural cavity.
Tuberculous pneumonia.
Tuberculous bronchitis.
Atelectasis of lung.
Emaciation.
Pigmentation of skin.
Tuberculous adenitis.
Organizing pneumonia.
Congestion of liver and kidneys.

Clinical Department.

A CASE OF MALTA FEVER IN BOSTON.

BY HAROLD H. SMITH, M.D.,
Medical House Officer, Carney Hospital, Boston.

(From the Medical Service of the Carney Hospital, Henry A. Christian, M.D., Physician-in-Chief.)

THE following case is reported to call attention to the possibility of meeting cases of Malta fever in the United States.[1] Malta faver is a much more widespread disease than its name implies, and is extremely common in all countries bordering the Mediterranean, and fairly frequent in all tropical and semi-tropical regions, including the West Indies and Philippine Islands. Immigrants or American tourists returning from any of these lands can very easily bring the disease with them on account of its protracted course and numerous

[1] The incidence of tropical diseases in Boston hospitals is emphasized by the presence at the Carney Hospital within six months of cases of relapsing fever, uncinariasis and Malta fever, and one case in which typhus fever was strongly simulated.

remissions. Such cases undoubtedly occur here with considerable frequency, although they are rarely recognized.

Therefore, the possibility of Malta fever should be considered in every obscure case of continued or remittent fever occurring in a person lately returned from any of the above-mentioned countries, if the physical signs are practically negative, except for enlarged spleen; if the leucocyte count is persistently low, and if the blood serum fails to agglutinate typhoid and paratyphoid organisms. In such a case the diagnosis can easily be made or ruled out by determining the agglutinating power of the patient's serum toward the *micrococcus melitensis*. Positive blood cultures have been obtained by some observers in a high percentage of cases and furnish even better diagnostic evidence than agglutination, but a negative culture does not rule out the diagnosis.

Patient is a male Italian, thirty-nine years of age, married, a shoemaker. He had always lived near Palermo, in Sicily, and came to the Carney Hospital directly from the United States Immigration Bureau, May 9, 1910. Patient speaks no English and very little in the way of history could be obtained except that he had been sick with fever for four days and had had three slight chills.

Physical examination shows a well-developed and well-nourished man lying comfortably in bed, breathing somewhat rapidly.

Glands show no general enlargement.

Neck: There is no rigidity. There is visible carotid pulsation on both sides.

Skin is hot and dry, shows no rash and no scars.

Chest: Well formed, symmetrical, expands equally on both sides.

Lungs: Resonance is normal in front; behind there is slight dullness over the left base. Breath sounds are somewhat diminished in intensity over both bases behind, but are normal elsewhere. Tactile fremitus and voice sounds are everywhere normal. There are many fine moist râles and a few high-pitched musical râles over both bases behind, more on the left. Occasional fine moist râles are present on both sides in front.

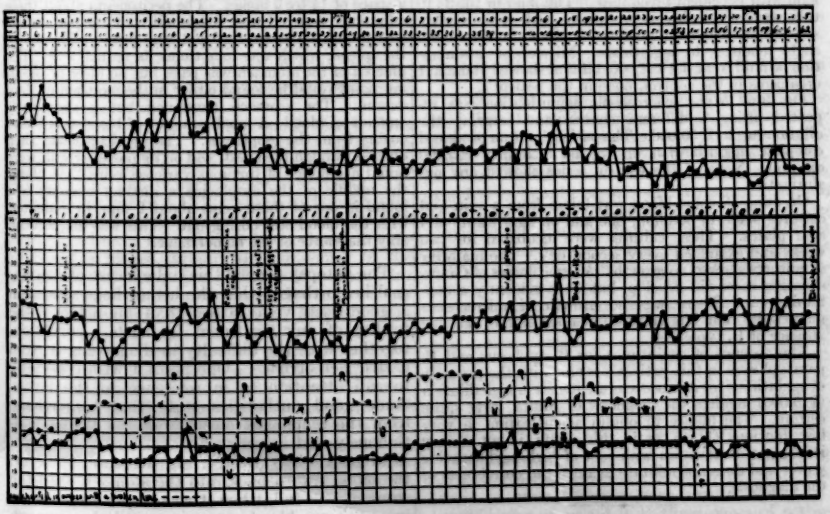
Heart: The apex impulse is seen and felt in the fifth space, 3½ inches to the left of the mid-sternal line. The left border of dullness is 4 inches from the mid-sternal line; right border at the right sternal margin; upper border at the top of the third rib. Heart's action is regular, sounds clear and loud. No murmurs.

Radial arteries show slight thickening. Pulses are equal, synchronous, regular, fair volume and normal tension.

Abdomen: Level, soft, no tenderness. No masses felt. Liver dullness extends from the fifth intercostal space on the right to the costal margin; its edge is palpable. Spleen is markedly enlarged, its edge being easily palpable two fingers' breadth below the costal margin. The edge is sharp and the organ seems firm.

Reflexes: Knee jerks are present and equal. There is no Kernig or Babinski sign. No ankle clonus.

Extremities: Negative.



Pupils are equal, regular and react promptly to light and with accommodation. External ocular muscles are normal.

Mouth: The teeth are neglected and carious and there is marked pyorrhea alveolaris. The tongue protrudes in the median line, is covered by a moist white coat and shows a fine tremor. The lips and oral mucous membranes are slightly pale. Pharynx is normal.

Genitals: Negative.

Blood: Hemoglobin, 85%. Leucocyte count, 4,000. Stained smear is not remarkable. There are no malarial plasmodia in either fresh or stained specimens. Serum does not agglutinate *B. typhosus*.

Stool: A very few ova of ascaris lumbricoides and trichuris trichiuris.

Sputum shows no tubercle bacilli.

The case appeared to be a mild typhoid, but malaria and tuberculosis were strongly considered. The patient had no chills while in the hospital, and repeated blood examinations failed to show any plasmodia. Sputum was very scanty and never showed tubercle bacilli.

The subsequent course is best shown by the accompanying chart. The patient complained of practically no pain at any time. There was moderate constipation throughout. The pulmonary signs persisted for nearly two weeks and then gradually cleared up except for a small area below the right nipple. Over this area there were persistent fine moist râles. At one time there was heard a slight friction sound in the right axilla; this disappeared in a few days. The spleen became progressively smaller, but was still palpable when the patient left the hospital. The leucocyte count never went higher than 6,000. The blood serum failed to agglutinate *B. typhosus*. A single agglutination test with paratyphoid bacilli was negative.

Suspecting Malta fever, on May 24 cultures were made from a catheter specimen of urine. These cultures were negative except for a few colonies of Gram-positive cocci, apparently staphylococcus albus.

On June 1 a microscopic agglutination test was tried, using the patient's serum and a fresh bouillon culture of the micrococcus melitensis. The 1:10 preparation showed no clumping after one hour. The 1:50 preparation showed marked clumping at the end of half an hour. On the following day a macroscopic agglutination test was performed, using bouillon cultures and patient's serum in dilutions 1:10, 1:100, 1:500, 1:1,000. A control series of similar dilutions of normal serum was also prepared. At the end of fifteen hours the 1:100, 1:500, 1:1,000 preparations of patient's serum showed clear fluid with flocculent precipitate. The fluid in the 1:10 tube was turbid with no precipitate. All of the control series were turbid, although the 1:10 dilution showed a slight tendency to agglutinate. Microscopic examination of fluid from the 1:1,000 dilution showed abundant organisms in the control, none in the patient's.

On June 5 the macroscopic agglutination was repeated, using a different control and carrying the dilutions up to 1:50,000. The patient's serum produced complete agglutination up to and including 1:5,000 dilution. None of the control series showed any agglutination.

On June 18 some blood was taken from a vein and cultures made in bouillon, bile and on agar slants and agar plates.[1] These cultures were incubated for two weeks and examined every second day. The majority of cultures showed no growth. A few colonies of Gram-negative cocci did develop, but were evidently a contamination. There was no growth of micrococcus melitensis. The bile culture remained sterile, showing absence of B. typhosus.

The absence of agglutinins for B. typhosus and B. paratyphosus in this patient's serum with the presence of agglutinins for micrococcus melitensis in high dilution (1:5,000) renders the diagnosis of Malta fever quite certain. The failure to obtain agglutination in very low dilutions (1:10), as in this serum, is not a very infrequent observation with sera of high agglutinating power and does not militate against the correctness of the diagnosis.

ESOPHAGEAL HEMORRHAGE.

BY C. C. NICOLA, M.D.

THE following case is reported on account of its unusual character and to add to the statistics of this class of cases.

[1] For assistance in making and studying the blood cultures, I wish to acknowledge my indebtedness to Daniel J. Hurley, M.D., of the Pathological Department of the Boston City Hospital.

The patient, Mr. E. S., was brought into the Attleboro Sanitarium Hospital on the morning of Nov. 20, 1909, with a history of severe and persistent hematemesis. Patient was married, thirty-eight years old, an employee in a jewelry factory. He was referred to the hospital by Drs. Holman and Kent, from whom and from the patient's wife the following history was obtained:

Patient had always been generally well, except for occasional indigestion. Last night he went with his wife to the theater, apparently in perfect health. At 9.30 he complained of a feeling of fullness and warmth in the stomach. On reaching home, he vomited a large quantity of blood and food. A physician was called and the vomiting recurred. The attending physicians estimated that at least three quarts of blood were vomited. By morning he was practically pulseless, but was revived somewhat and brought to the hospital in an automobile. Soon after arriving, at 9.30 A.M., he vomited 1½ pints more of dark blood. He was given ¼ gr. morphine, with ice-bag to epigastrium and heat to legs. A saline enema was administered. His pulse was 130 and very weak; mind clear and active. The vomiting stopped and the patient seemed very cheerful during the afternoon. About 5 P.M. he suddenly began to breathe irregularly, and in ten minutes was dead.

An examination of the early vomitus showed undigested food, including good-sized pieces of beef tongue with hard rind which had been swallowed without chewing. A hurried autopsy was held just before the body was removed from the hospital. The stomach was found distended with gas and the posterior surface of the pyloric end was firmly adherent to the liver over a space of 1½ by 3 inches. The peritoneum about these adhesions was red and congested, but no perforation was found. The cardiac end was firmly adherent to the spleen, which was four times its normal size. The mucosa of the stomach was pale, but no ulcer or bleeding point could be found either in the stomach or duodenum. The stomach contained but a very little amount of blood. A small amount of blood was found oozing from the esophagus. The esophagus was then opened through the chest, and on its posterior wall were found a number of tortuous varicose veins. At about the middle of the esophagus a distinct opening was found in one of these veins about 2 mm. in diameter, with the blood still oozing out. This was unquestionably the source of the hemorrhage.

The autopsy proved this to be a case of esophageal hemorrhage; that the hemorrhage was from a good-sized vein rather than an artery; the futility of any treatment for such a condition, together with the difficulty in diagnosing it from gastric hemorrhage. One point I wish especially to call attention to in reference to the latter. Some good authorities state that hemorrhage from the esophagus oozes from the throat continuously and is not vomited from the stomach, as in gastric hemorrhage. In this case, however, the blood flowed back into the stomach until the stomach was full, when it was emptied by vomiting, no more blood appearing until the stomach was filled again.

It is also remarkable that this patient should have had no greater disturbances of digestion preceding the hemorrhage in view of the inflammation which he must previously have had in order to produce the adhesions which were found between the stomach and liver and spleen.

Medical Progress.

RECENT PROGRESS IN PHYSIOLOGICAL CHEMISTRY.

BY J. BERGEN OGDEN, M.D., NEW YORK CITY.

TITRATION OF URINARY ACIDITY.

O. SPINDLER [1] has studied this subject and has reported that acidimetric titrations in presence of NH_4 salts do not give exact results unless allowance is made for the retardation of the end reaction caused by the dissociation of these salts. This effect depends upon the degree of dissociation, and may be minimized by the addition of a neutral and indifferent salt, such as NaCl. These principles are especially important in application to urine, the apparent acidity of which is strongly influenced by variations in NH_3. The exact acidity of urine cannot be titrated unless the content of NH_3 is known, and vice versa. Method: Place 20 ccm. urine in a 100-ccm. flask; add 20 ccm. $\frac{N}{10}$ NaOH, 10 ccm. of a 10% solution of barium chloride, mix, dilute to 100 ccm., and filter. To 50 ccm. of the filtrate add 10 ccm. $\frac{N}{10}$ H_2SO_4, three drops of phenolphthalein solution, and titrate the acidity with $\frac{N}{10}$ NaOH. To determine NH_3, add excess of CH_2O and continue the titration with NaOH.

A CLINICAL METHOD FOR THE QUANTITATIVE ESTIMATION OF URIC ACID IN BLOOD SERUM.

P. Roethlisberger [2] has investigated this subject and reports as follows:

The test is carried out in a room that is dark or contains little light. A red light or an electric light is used, and a strip of silver nitrate paper is placed in a tightly closed glass or porcelain box. One ccm. or less of a 15% sodium carbonate solution is placed on the reagent paper and the box kept closed until it is all absorbed. A single drop of blood is placed directly on the center of the moist spot of the paper. The box is closed for two minutes and then the paper is removed and washed in the dark in pure water. After ten minutes the paper is placed in a solution of one part NH_3 to two or three parts of distilled water for five minutes. The paper is again washed in water. After standing in the water bath for several hours away from the light the paper is dried and examined for a stain. When wet it shows a gray spot. When uric acid is present, the carbonated paper shows a yellow spot which changes with increasing concentrations of uric acid to brown, red and dark brown. In cattle, sheep and horse blood, also in ox, pig, rabbit and dog blood, no uric acid was found; 0.008% uric acid was found in birds' blood. Varying amounts of uric acid were found in the blood of a five-year-old child fed on a meat-free diet; in healthy cases 0.001–0.004% were found. In cases of chronic nephritis and nervous disorders, 0.008–0.012% of uric acid were found. The possibilities of the influence of other reducing agents on the test are noted. With this method from 1-1,000th to 1-2,000th part of uric acid is detected, and the results calculated to 100 ccm. of serum are accurate to 1 to 2 mgm. Illustrations of the test using cattle blood serum and amounts of uric acid from 0 to 0.012% are given.

IRON OF THE URINE.

Urines of a number of animals were all found by O. Walter [3] to contain measurable amounts of iron. It is present in colloidal condition, and urine can be dialyzed twenty-four hours without loss of iron. The latter is present in two forms, a "loosely combined" form, from which it is precipitated by boiling with $(NH_4)_2S$, and a "closely bound" form which can be determined only in the ash. The loosely combined iron is determined by neutralising the urine (entire twenty-four-hour portion) with NH_3, adding $(NH_4)_2S$, and concentrating on the water bath to one third its volume. The solution is filtered and the precipitate dissolved in dilute H_2SO_4. The iron is oxidized to ferric condition by boiling with 2 ccm. H_2O_2 solution and titrated with KI and $\frac{N}{10}$ $Na_2S_2O_3$. To determine the closely bound iron the urine is first dialyzed twenty-four hours, then concentrated to dryness with 30 ccm. concentrated HNO_3. The residue is charred on a sand bath and ashed in crucibles. The ash is dissolved in 10% HCl, boiled three quarters of an hour with 2 ccm. 3% H_2O_2, treated with 2 gm. KI, and titrated with $\frac{N}{10}$ $Na_2S_2O_3$. A correction of 0.32 mgm. iron was made for the iodine freed by the undecomposed H_2O_2. The daily excretion of iron for a man, or a 20 kgm. dog, is about 1 mgm. In herbivorous animals (rabbit, ox, sheep, goat) a considerable portion of the Fe excreted is loosely combined. In normal human urine none can be detected in this form. Cases of pernicious anemia, diabetes and polycythemia rubra excreted about twice the normal amount of iron, a portion being loosely combined. Continued administration of medicinal blood-Fe preparations to men or dogs increases the Fe excretion. Subcutaneous injection of officinal Fe preparations causes a quick increase in Fe excretion, usually accompanied by injury to the renal epithelium.

THE OCCURRENCE OF A PIGMENT SIMILAR TO UROROSEIN IN CERTAIN PATHOLOGICAL URINES.

Nephrorosein, a pigment similar in many of its properties to urorosein, is often found in the urines of convalescents from scarlet fever. V. Arnold [4] also observed it in three cases of orthostatic albuminuria, once in a case of tuberculosis and once in a case of hematoporphyrinuria following sulphonal poisoning. In properties the pigment may be differentiated from urorosein by the fact that the color does not fade so quickly after addition of the acid, and by the absorption spectrum of an amyl alcohol extract of the urine after

addition of one-third volume of concentrated HCl and one drop of 1% $NaNO_2$ (or concentrated HNO_3 alone may be employed). Urorosein gives an absorption band between D and E, while nephrorosein shows a broad band between E and F (λ517–500).

THE OCCURRENCE AND SIGNIFICANCE OF ALLANTOIN IN HUMAN URINE.

Alfred Schittenhelm and Karl Wiener [5] followed the method of Wiechowski and found allantoin in human urine, confirming Wiechowski's results. The quantity found was very small (0.02 gr. from 8 liters of urine) or was frequently impossible of isolation. The significance of allantoin in human urine is obscure. Feeding with uric acid was not found to increase the quantity of allantoin eliminated. Hence allantoin in the human being is probably not an end product of uric acid metabolism. When allantoin is fed, about 30% is recovered in the urine.

THE DETECTION OF TRYPSINOGEN AND TRYPSIN IN URINE.

E. Schoenborn [6] conducted experiments on human, pig and dog urine. Both heated and unheated samples of urine were used. Kinase and enterokinase were sometimes used. The urine was tested after hunger, also after feeding meat. When kinase from sick dogs was used, no activating action was noted. The author concludes from his experiments that active trypsin is seldom present in normal dog's urine and, when present, the amount is very small. Trypsinogen is frequently present in dog's urine and can be converted into active trypsin by means of kinase. Trypsinogen is regularly obtained in large amounts after feeding a meat diet; after a mixed diet the amount obtained is often very small. The amount of trypsinogen on a meat diet corresponds approximately to that of a solution of 0.02 gm. of Grübler's trypsin per 100 ccm. of urine. The urine of hungry dogs often contains the same amount, and after a long-continued period of hunger, during the last days, in addition to trypsinogen, active trypsin is present in appreciable amounts. After the addition of kinase, the tryptic action of this urine was noticeably increased. Moreover, in the urine of hunger a substance was frequently found which was not rendered inactive by heating and was capable of considerably increasing the action of the active trypsin. In many human pathological urines a strong antitryptic action could be detected.

THE DEPRESSOR SUBSTANCE OF DOG'S URINE AND ITS DISAPPEARANCE IN CERTAIN FORMS OF EXPERIMENTAL ACUTE NEPHRITIS.

Experiments were conducted by R. M. Pearce,[7] who found that normal dog's urine contains a depressor substance which, when urine is injected intravenously in doses of 3 ccm., has the power to cause a fall in blood pressure equal to 40–70 mm. of mercury. The exact nature of this substance was not determined. It is not destroyed at 100°, but disappears on prolonged heating. It does not dialyze readily. Alcohol precipitates it completely. The depressor substance disappears at the third to sixth day from the urine of dogs with tubular nephritis, or, if it does not disappear entirely, it is greatly diminished in amount. This disappearance or diminution was not observed in those forms of vascular nephritis due to arsenic or cantharidin. The depressor substance would appear, therefore, to be associated with normal tubule functions, a view supported by the observation that it is greatly diminished at the height of diuresis in the normal animal. Its disappearance in experimental nephritis may be taken as an indication of extensive tubular injury and its reappearance as beginning of repair. The non-elimination of this substance is accompanied in some animals by a low blood pressure, which suggests an influence due to retention of of this substance.

THE RELATION OF PTYALIN CONCENTRATION TO THE DIET AND TO THE RATE OF SALIVARY SECRETION.

No evidence could be obtained by A. J. Carlson and A. L. Crittenden [8] that in man even years of exclusion of meats and greatly increased carbohydrates in the food would appreciably increase the ptyalin concentration of the saliva. No ptyalin was found in the saliva of the dog, cat or fox. In monkeys the diastatic power of the parotid and mixed saliva appeared to be the same or less than that of man. The ptyalin concentration in the rabbits' parotid was found to be the same or slightly greater than that of man, but in the parotid and mixed saliva of the goat and horse no diastatic power could be detected. Weak acids (acetic) in the mouth were a more efficient stimulus to the secretion of the parotid than mechanical stimuli, and within limits the stronger the acid the greater the rate of secretion. The concentration of the ptyalin in the parotid saliva of the rabbit varies directly with that of the organic solids. In man the rapidly secreted parotid saliva contains more ptyalin than the slowly secreted saliva. Qualitatively, different stimuli yield no constant difference in the ptyalin concentration of the parotid saliva in man. In varying directly with the organic solids and the secretion rate the processes of ptyalin secretion appear to differ from the ferment-secreting processes in other digestive glands.

INHIBITION OF THE ACTION OF RENNET ON MILK.

The well-known fact that serum added to milk inhibits the action upon it of rennin was confirmed by Kurt Schern [9] in experiments with normal fresh beef serum. The consideration that in cows suffering from inflammation of the mammary glands serum might enter the milk and so render the milk less sensitive to rennin was borne out by experiment. It was found that to coagulate the pathological milk a larger amount of rennin was necessary than for normal milk. In one of several pathological cases observed the mixed

milk from all the udders of the same cow required 1.75 times the rennin required by normal milk. Examination of the milk of each udder showed one to require fourteen times the normal, thus locating the diseased organ. In a series of animals observed, the variations from day to day in the normal mixed milk of an individual lay between 1:1000 and 1:1400 rennin concentration in terms of the Morgenroth standard. For single udders this might be greater. The results indicate that this method of the determination of the minimum for rennet action can be used to determine pathological milk.

RESORPTION OF FATS IN THE SMALL INTESTINE.

Experiments were conducted by W. Croner[10] upon dogs provided with the Zuntz modification of the Thiry-Vella fistula. About one fifth of the intestine was included between the fistulas, the upper portion of which opened through the back of the animal, allowing liquids to be run in quantitatively, without difficulty. The lower fistula opened through the abdomen. The soap solutions or fat suspensions were run in slowly, one and one-half hours being taken to run in 30–50 ccm. of liquid. The latter ran slowly through the intestine and out the lower fistula, simulating the natural progress of the nutrient mixtures. The section of the intestine was then washed with 0.9% solution of NaCl. Recovery of unabsorbed fats was quantitative. In three animals used, the upper part of the intestine was experimented upon; in two, the part next the cecum. It was found that only the lower section of the intestine absorbs soaps. Neither bile nor gastric juice overcomes the inability of the upper parts to absorb soaps. Emulsified neutral fats are absorbed by all parts of the small intestine; most rapidly by the lower. The absorption is more rapid after the intestine has been acted upon previously by diluted HCl, pancreas, or bile. The absorption varies somewhat with the nature of the fats and their free-acid content.

A NEW DELICATE SKATOL REACTION.

T. Sasaki[11] has found that when one takes 3 ccm. of a skatol solution in a test tube and adds three drops of methyl alcohol and 3 ccm. concentrated H_2SO_4 are then run under the skatol solution, a violet-red ring forms in a short time at the boundary between the two liquids. After a few minutes the contents of the tube are carefully mixed. The entire liquid becomes violet-red. The more dilute the skatol solution, the more the violet shade predominates. The reaction permits detection of skatol in a dilution of 1:5,000,000. The ring, however, is no longer visible when the dilution has reached 1:1,000,000, the color appearing only after the liquids are mixed. The reaction fails with water suspensions because the skatol crystals touch the H_2SO_4 directly, and the entire liquid becomes brown. The reaction has an advantage over other skatol tests in being negative with indol. Tryptophane and a methyl indol also do not give the reaction. Methyl alcohol cannot be replaced by ethyl alcohol in making the test.

THE MOTHER SUBSTANCE OF GLYCOGEN.

In experiments performed upon a large number of dogs, E. Pflüger and P. Junkersdorf[12] observed the following: In a dog (5–10 kgm.) which was starved seven days, water being given and which on the mornings of the three succeeding days of continued starvation was subcutaneously injected with 1 gm. phloridzin, seven hours after the last injection the glycogen content of the liver was reduced to 0.1% and of the muscles to 0.2%. Twenty-four hours later, although no nourishment had been given, glycogen reappeared and at times in large amounts (2–3%), a fact overlooked by Mohr.[13] This increase could hardly have arisen from carbohydrates. It was found that phloridzin stimulates the production of glycogen, since the liver and muscle of dogs without phloridzin treatment contained less glycogen on the eleventh day than when treated. Dogs which had been made glycogen-free were fed for eight days on as much codfish meat (which contains but little glycogen) as they could take. The increase in glycogen content of the liver and muscle was four to five fold out of proportion to what might be contained as glycogen in the food. Dogs, however, the livers of which had been loaded with glycogen[14] by glycogen feeding, when subjected to a rich meat diet were found to lose, to a large degree, their glycogen rapidly. Glycogen-free dogs, to the diet of which easily oxidizable alcohol had been added, showed no increase in glycogen production. Therefore, the marked glycogen increase, in rich protein diet, cannot be attributed to an indirect economy of carbohydrate. Fat fed to glycogen-free dogs caused no increase, but the reverse, so that during rich protein diet the large glycogen production cannot have arisen from fat, but only from the protein.

A SIMPLE METHOD FOR THE ESTIMATION OF IODINE.

Experiments made by E. Winterstein and E. Herzfeld[15] show that 50 ccm. of solution should be placed in a 250-ccm. round-bottomed flask (which must be fitted with a ground-glass stopper through which pass two tubes, as in an ordinary wash bottle) and treated with 5 ccm. syrupy H_3PO_4 and 10–20 ccm. H_2O_2 solution. The outlet tube from the flask is joined by a ground glass connection with a small condenser, which is led into potassium iodide solution. Air is drawn through the apparatus, the contents of the glass being gradually heated to boiling. At the end of thirty minutes the iodine has all been transferred to the potassium iodide solution and is titrated with $\frac{N}{10}$ $Na_2S_2O_3$ solution. When applied to urine, it is necessary to evaporate and ignite the residue with alkali, prior to the distillation, if all the iodine is to be obtained. Figures cited indicate that the method gives very satisfactory results, which tend, however, to be somewhat low.

THE ACETIC ACID TEST FOR THE DIFFERENTIATION OF EXUDATE AND TRANSUDATE.

K. Piefer[16] who has made an investigation of exudates and transudates, finds the following tests of value. Two ccm. of the fluid removed after a puncture are treated with two drops of 5% AcOH. In the case of an exudate, a visible and more or less thick cloud appears which often is transformed into a flocculent precipitate. In the case of a transudate the cloud disappears, or after adding four or five drops of acetic acid an opalescence is produced. When a few drops of exudate are dropped into a cylinder containing 100 ccm. of H_2O and 2 drops of acetic acid, milk-white streaks develop. With a transudate the drops are divided and in certain cases a dark gray turbidity results. These tests were used in ninety-five clinical cases. Both served to distinguish transudates from exudates. Visible differences are noted in both tests when carried out with blood plasma or serum.

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Reports of Societies.

THE AMERICAN GASTRO-ENTEROLOGICAL ASSOCIATION.

Thirteenth Annual Meeting, Held at the Planter's Hotel, St. Louis, Mo., June 6 and 7, 1910.

First Day, Monday, June 6.

The President, Dr. Julius Friedenwald, of Baltimore, in the chair.

THE PRESIDENT'S ADDRESS: RECENT EVENTS IN THE DEVELOPMENT OF GASTRO-ENTEROLOGY.

Dr. Friedenwald, in his opening address, said he could point out but a few of the many contributions that had been added to our knowledge of diseases of the stomach. After referring to Kussmaul's epoch-making work in connection with the therapeutic value of the stomach tube, it remained for Leube, in 1871, to point out the advantage of the stomach tube as a diagnostic measure and also to emphasize the fact that it was impossible to arrive at a proper conclusion concerning the nature of the gastric conditions without the use of this instrument. Twelve years later Leube established his test-meal as a means of determining the state of motor insufficiency of the stomach, concluding that a normal stomach should be empty seven hours after the ingestion of a meal composed of soup, broth, steak and bread. This is still recognized to-day as a most important means of determining variations in the motor function of the stomach. Leube also at this time analyzed the gastric secretion obtained from the stomach, and in 1883 he developed his well-known scale of the digestibility of various foods, which he earnestly advocated as a means of diet in the treatment of ulcer of the stomach.

Riegel, in 1885, showed the difficulties encountered in obtaining gastric juice by stimulating the gastric secretion by means of ice water, according to the method of Leube. In their classic work on the "Physiology and Pathology of Digestion," 1885, Ewald and Boas presented their experiments regarding the appearance of free hydrochloric acid and lactic acid in the stomach contents, and also drew attention to other important features connected with the chemistry of the gastric digestion. The speaker also referred to the work of Reichmann, and the well-known investigations of Beaumont, Richet and Uffelmann and Penzoldt, and spoke of the gratitude due to J. P. Pawlow and his pupils for the many new facts discovered by them relating to the physiology of gastric digestion. The value of surgical procedures in the treatment of certain disorders of the stomach was first discovered by the great master, Kussmaul, which gave Billroth his inspiration. Woelfler, in 1881, introduced the operation of gastro-enterostomy into surgery; he first performed the operation for inoperable carcinoma of the pylorus in which complete resection of this portion of the stomach was no longer possible. The Heinecke-Mikulicz pyloroplasty was devised by both Heinecke and Mikulicz independently of each other.

STRETCHING OF THE CARDIA IN THE TREATMENT OF CARDIOSPASM AND IDIOPATHIC DILATATION OF THE ESOPHAGUS.

By Dr. Max Einhorn, of New York. This was a detailed report of two cases of cardiospasm and three of idiopathic dilatation of the esophagus successfully treated by repeated stretching of the cardia by means of a metallic cardiodilator constructed by the author. The success of this treatment in these cases had induced him to try a similar method of treatment in pylorospasm, and in some cases of that condition he had apparently had good results by stretching the pylorus.

DUODENAL ALIMENTATION.

Dr. Max Einhorn, of New York, read a paper on this subject and demonstrated an apparatus devised by himself by which nourishment could be injected directly into the duodenum. The method consisted, essentially, of introducing the duodenal pump, which had been originally devised for the purpose of obtaining the duodenal contents, into the digestive tract, and feeding was begun as soon as its end was in the duodenum. The apparatus was left in the digestive system for from eight to twelve days; the thin rubber tube did not inconvenience the patient, and thus he was always ready for the feeding. This was best done at intervals of two hours. After the feeding, water was forced through the tube, and finally air was blown through it and the stopcock was then closed. At a single feeding, between 240 and 300 ccm. of food could be slowly introduced. All fluids must, of course, be introduced at body temperature. Dr. Einhorn said he had successfully used this method of duodenal feeding in three cases, in all of which the usual methods of alimentation were either impossible or undesirable. The advantages of duodenal over rectal feeding were at once apparent, for while the rectum and colon were simply organs for the expulsion of feces and for the absorption of possibly remaining liquids, in the duodenum we had to deal with an organ where the most important digestive juices were secreted.

CARDIOSPASM, WITH DILATATION OF THE ESOPHAGUS.

Dr. Jesse S. Myer, of St. Louis, read this paper, in which he reported ten cases of cardiospasm, seven males and three females, treated by forcible dilatation from above. He emphasized the importance of early diagnosis and early relief of the spasm in order to restrict as much as possible the sac development. It was questionable, he thought, that a sacculated esophagus ever fully regained its normal tone; long after the spasm had been completely relieved, certain symptoms persisted because of this fact. Dr. Myer said that his experience with this series of ten cases led him to the belief that there was a congenital basis for the development of the sacculation. These individuals presented certain well-defined outward evidences which indicated a congenital tendency to a general asthenic state. That cardiospasm was of nervous origin seemed to be the general consensus of opinion. How or why it developed in certain persons, however, had never been satisfactorily explained. Many etiological factors had been considered in the previous case reports, but in none, perhaps, with the possible exception of trauma, had any essential connection been determined. For the development of cardiospasm, as for certain other conditions dependent upon nervous causes, there were probably necessary two factors, i. e., a predisposition and an irritant.

The dilator which Dr. Myer used in the stretching of the cardia in his cases consisted of a double rubber bag with a silk bag inserted between them, and attached to the ordinary stomach tube having no opening in the end.

TORTUOUS STRICTURE INVOLVING THREE AND A HALF INCHES OF THE CARDIAC END OF THE STOMACH TREATED BY GRADUAL DILATATION.

Dr. Bertram N. Sippy, of Chicago, reported this case and gave a demonstration of the instrument he employed.

The papers of Dr. Einhorn and those of Drs. Myer and Sippy were discussed together.

Dr. Charles G. Stockton, of Buffalo, said he had had some experience with cardiospasm and with its treatment by dilatation, and while he had succeeded in some instances, there were others in which the result was not satisfactory. He had had cases where he did not succeed in passing a dilator.

Dr. Allen Arthur Jones, of Buffalo, said the condition of cardiospasm was one of the most difficult that internists and gastro-enterologists had been called upon to treat. Surgical interference in these cases was not altogether satisfactory. The only operation that had been feasible in most instances had not attacked the disease at all, but had simply been undertaken to short-circuit it and feed the patient through an artificial opening. For this operation, it might be said in its favor that some cases of cardiospasm were greatly improved by it, and it was possible in a few instances to allow the artificial opening to close, and thereafter the patient was able to take his or her food in the normal manner. In those cases, one could not help feeling that the condition was accompanied by some intermittent or continuous irritation, either direct or indirect, which gave rise to the spasm and closed the esophagus and cardia, and that the operation allayed the irritation and overcame the spasm.

Dr. John A. Lichty, of Pittsburgh, believed we were coming more and more to feel that gastric ulcer was not a local disease; that it was rather a disease due to constitutional, nutritional disturbance, and if we must feed these patients by the rectal method or starve them, we were to that extent hazarding their chances of recovery by further interfering with their nutrition. Therefore, if this method of Dr. Einhorn's of feeding the patient directly into the duodenum by passing a tube through the pylorus proved successful, we had made a great step in advance in the treatment of gastric and duodenal ulcer.

Dr. A. L. Benedict, of Buffalo, said he had never seen a case of esophageal spasm which required any extreme treatment. One or two passages with an ordinary bougie, a little valerian suggestion, if you pleased, — at any rate, very mild measures were sufficient to relieve the condition. In his own experience, we had a very simple type of esophageal spasm which yielded readily to mild measures of treatment, or else we had to deal with a distinctly organic or at least mechanical obstruction.

Dr. Max Einhorn said that in his paper he had differentiated between cardiospasm and idiopathic dilatation of the esophagus. Cardiospasm was a frequent condition and was easily cured in many instances. It was a neurotic affair. With idiopathic dilatation of the esophagus, however, no matter how originally produced, we found a different picture. These patients were never cured with drugs or suggestive measures, and even the introduction of small-sized bougies would not cure them. When, however, we began to dilate forcibly, overstretching the cardia and making it much larger than normal, then we might accomplish a cure. Cardiospasm and idiopathic dilatation of the esophagus were two entirely different conditions, and we should not mix them up.

Dr. Jesse S. Myer said he was not yet quite clear as to how Dr. Einhorn differentiated clinically between cardiospasm, with dilatation of the esophagus, and idiopathic dilatation of the esophagus. Dr. Myer said his own cases were all examples of cardiospasm with dilatation. If the cardiospasm were primary, then we were perfectly entitled to consider the condition as cardiospasm, with dilatation of the esophagus. Under those circumstances, however, we were not justified in calling it an idiopathic dilatation.

THYROIDISM AS A CAUSATIVE FACTOR OF GASTRIC DISTURBANCE.

Dr. Max Ballin, of Detroit, read a paper on this subject, in which he offered the following conclusions: Thyroidism is a complex of symptoms caused by faulty secretion of the thyroid gland. Besides the principal symptoms (heart, nervous and eye symptoms and goiter), intestinal symptoms (diarrhea, vomiting, etc.), and disturbances of metabolism (loss in weight) were very important; more so, as the latter might occur early in the course of the disease and might be more pronounced than the former. Therefore, the diagnosis in those cases where the intestinal symptoms predominated might be difficult and should be based upon accurate examination as to the existence of slight degrees of goiter, tachycardia and slight eye symptoms. As to treatment, surgical interference, if serum and medical treatment failed, would nearly always cure the intestinal symptoms; in fact, often earlier than the cardiac and eye symptoms. A suitable operation (ligation of the thyroid arteries, resection of the gland or enucleation of tumor from the gland) would be followed most frequently by a surprising gain in weight and would check the acceleration of metabolism with its tissue waste.

Dr. John P. Sawyer, of Cleveland, said that in view of the enormous frequency of thyroidism in the district in which he lived, and in other localities, he did not feel that it was warranted that operative interference should be too frequently recommended. He

had seen instances where large goiters pressed on the trachea and gave rise to pronounced symptoms of obstruction; yet they receded and were symptomatically cured under medical treatment. On the other hand, he could recall a number of instances that were operated on with only temporary relief. He was convinced that the best method of treatment in these cases was not yet generally known, but in most instances he would have grave doubts about recommending thyroidectomy.

DR. J. H. STEALY, of Freeport, Ill., said he had been on the lookout for cases of enlarged thyroid or hyperthyroidism for over twenty years, and up to ten years ago, in his section of the country, not 5% of these cases were ever diagnosed. Now about 60% were recognized. As to the operative treatment of these cases, he was in favor of removing the entire thyroid, with the exception of a small portion, say the size of a penny. He had removed the entire gland in a large number of cases, and up to the present time no symptoms of hypothyroidism had developed by leaving the parathyroids.

DR. BALLIN, in closing, said we should save as much of the thyroid tissue as possible. Nobody to-day was in favor of complete thyroidectomy, which would lead to myxedema. We should only tie as many arteries or remove as much of the gland as was necessary to overcome the symptoms.

ACHLORHYDRIA HEMORRHAGICA GASTRICA AS A SYMPTOM OF CHRONIC GASTRITIS.

DR. JAMES TAFT PILCHER, of Brooklyn, N. Y., read this paper, which gave the result of his investigations made in the pathologic laboratories at St. Mary's Hospital, in Rochester, Minn. He stated that there was a definite entity presented in the stomachs of some patients suffering from various intra- and extra-abdominal pathologic conditions, which was characterized by the absence of hydrochloric acid and the presence of "occult" blood. The condition was probably primarily affected through the agency of a reflex nerve stimulation, inhibiting first the production of free hydrochloric acid to only a moderate degree. This so modified the inhibiting factor of the gastric juice that the necessary conditions for the growth of pathogenic bacteria was furnished, chief among which were to be reckoned the streptococci and colon group, which were present in striking numbers. These direct irritants either themselves or in conjunction with the primary irritative factor, gallstones, appendicitis, pancreatitis, etc., perpetuated the pathologic process until there was an achlorhydria produced. It was most probable that to the erosion following this irritation the presence of blood might be ascribed. In the one hundred stomachs examined at operation, atrophy was never present, nor was there, excepting in one case, any evident insufficiency of the pylorus. There was a general symptomatology accompanying this condition which was very suggestive. The test meal recovered was indicative of the pathologic process in the stomach. There were indications in but seven cases observed that there was no secretion from the stomach mucosa. In others, the presence of mucus, the Biuret reaction and coagulation after activation would tend to show that there was still a moderate degree of enzymatic action. The cases were, therefore, not "achylia gastrica." Many instances were shown which illustrated the progressive, established or retrogressive stages of this condition. Proof of the etiological factors had been demonstrated in the cases operated upon, deduced from their prompt and permanent recovery. The condition was relatively common, approximately one in every fifteen stomach cases examined.

DR. MAX EINHORN, of New York, said that some years ago[1] he published his first article on "Clinical Observations on Erosions of the Stomach and Their Treatment," and five years later[2] his second article on "Further Remarks on Erosions of the Stomach" appeared. In those articles he reported a series of cases in which the presence of particles of gastric mucous membrane appeared in the stomach washings, and these, under the microscope, were found to contain glandular elements. In these cases, the absence of hydrochloric acid was also noted in some instances; in some there was complete achylia and in others hyperchlorhydria. In all of them there were various subjective symptoms of gastric origin, which, together with the small pieces of gastric mucosa, clearly indicated the presence of gastric erosions. The condition was found associated with catarrhal gastritis, sometimes of the alcoholic type. He never had a chance to get an autopsy on any of these cases because all of his patients recovered under treatment, but he did not doubt that a similar condition existed in association with other troubles.

DR. JOHN A. LICHTY, of Pittsburgh, said the one point which interested him particularly in Dr. Pilcher's paper was the relatively large number of cases of achlorhydria or hypochlorhydria, and the few cases of achylia gastrica, and it seemed to him to be within the range of possibility that in the cases he examined the patients were under abnormal conditions and did not secrete their normal gastric juice. Probably, in many of them, serious operations were contemplated; they were in a more or less perturbed state of mind, and this might have disturbed the normal gastric secretions.

DR. JOHN P. SAWYER, of Cleveland, said it was well to keep in mind the fact that repeated examinations, at considerable intervals of time, were necessary in order to determine that given findings were essential or particularly peculiar to the pathological condition determined clinically, or perhaps afterwards recognized at post-mortem.

DR. A. L. BENEDICT, of Buffalo, referred to the unreliability of the blood tests that were employed for occult blood. There were quite a number of different substances that would oxidize guaiac and other things, and some authors gave such a large list, including the ferments, starch, mucus and other substances liable always to be present, that it seemed we must check off our tests for occult blood before we could draw any reliable conclusions therefrom.

DR. PILCHER, in closing, replying to Dr. Einhorn, said that in all the stomach washings he had made in these cases he had never been able to identify any cellular elements that could be referred to the stomach mucosa. He had never seen any clumps of cells or any cells which would in the least give one any idea of the condition of the gastric mucosa. As to the suggestion made by Dr. Lichty that the loss of acidity was possibly temporary and associated with a nervous condition of the patient, Dr. Pilcher said he did not think this was so. This so-called "nervous achylia" was very simply differentiated, and the experienced observer could in most cases tell immediately whether he was dealing with a real achylic stomach or a "nervous achylic" stomach if he would merely make a smear from his residue and stain it with any ordinary stain, and find out what the bacterial content was. In the normal stomach there were very few bacteria, and if we were dealing with a case of nervous subacidity or complete lack of acid due to the same cause, we would not find the enormous number of bacteria that were present in true achylia, nor would we find the pathogenic varieties

[1] N. Y. Med. Rec., June 23, 1894.
[2] Jour. Am. Med. Asso., May 20, 1899.

which were so universally present under diseased conditions.

OBSERVATIONS OF THE VARIABILITY OF THE COMPOSITION OF THE GASTRIC JUICE.

Dr. E. L. Eggleston, of Battle Creek, said that repeated test meals given the same individual under as nearly the same conditions as possible indicated a considerable variation in the acid and pepsin secretion, the secretion being no doubt influenced by psychic conditions. What might be termed the normal secretion in any individual fluctuated to a considerable degree, being influenced both by the mental condition and the kind of food taken. The state of mind — the mental condition — of the patient at the time of the test meal was decidedly unfavorable to normal digestion. As the ordinary test meal was not inviting, this also failed to arouse what Pawlow termed the "appetite juice," and the secretion obtained at the end of an hour might be very misleading. When possible, a specimen of the gastric contents should be taken after the patient had eaten of food that was appetizing and under pleasant conditions. Aside from the psychic influences which caused a variation in the composition of the gastric secretion, it was possible to greatly influence it by the kinds of food taken. It was possible in this way to greatly increase the secretion, or to reduce it almost to *nil*. The author summarized his paper as follows: (1) That with the same food materials there may be quite a marked variation in the percentage composition of the gastric juice, which will result from psychic influences. (2) Iced foods or beverages have only a slight inhibitory action on the gastric secretions. (3) Foods containing free fats in any quantity, when taken either at ordinary temperature or frozen, have a decided inhibitory effect on the gastric secretions. (4) Fruit juices, either frozen or at ordinary temperature, quite markedly increase the secretion. (5) Tincture of gentian compound seemed to have but little effect as a gastric stimulant.

Dr. J. C. Johnson, of Atlanta, said that, when we considered the personal equation and variations in the vital equilibrium, he did not doubt for a moment that we would find a considerable variation in the acid and pepsin secretion, even in the absence of any evidence of ill-health, but in order to determine the exact physiological value of such findings, they must be shown to be on an entirely physiological basis, and, at the same time, such findings must be more or less uniform.

The discussion was continued by Dr. Gustav Baar, of Portland, Ore., and was then closed by Dr. Eggleston.

SOME EXPERIENCES WITH THE EINHORN DUODENAL BUCKET.

Dr. W. G. Morgan, of Washington, D. C., in this paper, reported in detail nineteen cases in which he had used the Einhorn duodenal bucket for the diagnosis and localization of ulcers of the stomach and duodenum. He used both the thread test and the duodenal aspirator, and from his experience with these two methods he realized that Dr. Einhorn had given us means to employ which rendered the diagnosis in these cases comparatively easy and reliable. The application of the thread test was readily applicable to most cases, there being only here and there an individual who objected to the procedure. We could often watch the healing of the ulcer by the lessening of the length and amount of the blood stain upon the thread. Dr. Morgan said he had modified this test by substituting a small split shot inclosed in an ordinary gelatin capsule for the bucket devised by Dr. Einhorn, and he felt that it worked even better, as the patient seemed to experience less difficulty in swallowing it; furthermore, it cost much less to have a number of such tests going on at the same time. Dr. Morgan said that the number of latent ulcers, or ulcers giving few prominent symptoms, was larger than was thought, and that, by the systematic use of the thread test, many cases would be found that would otherwise escape recognition. The test, although sometimes disagreeable, was not seriously objected to and should be instituted at the faintest suspicion of ulcer. Besides being able to localize the ulcer, we were enabled to say with more certainty how the case was progressing and when the ulcer was probably cured.

Dr. Max Einhorn, of New York, said he had employed the thread test in over seventy cases of ulcer of the stomach and could subscribe to its usefulness. In cancer the method could be used advantageously in recognizing and localizing the presence of a growth; it did not tell us whether the growth was malignant or benign, but it indicated the site of the ulceration. He had also found it useful in cirrhosis of the liver, with varicosities and ulceration in the region of the cardia and lesser curvature, even before the occurrence of hemorrhage.

Dr. James T. Pilcher, of Brooklyn, said he had tried the Einhorn thread method as an aid to diagnosis in twenty-five cases of ulcer of the duodenum and in ten cases of ulcer of the stomach, as determined at operation by Dr. Mayo, and its localization of the ulcer in the cases in which he had employed it had not always been quite as definite as one might infer from listening to Dr. Morgan's paper. In the first place, in ulcerations of the duodenum, the bucket did not seem to get beyond the point of the ulceration. In four or five of his cases, however, the ulcer was definitely located by the thread and bucket method, as subsequently proven by operation.

Dr. Morgan, in closing, said that this test was still new and that it would take many hundreds of cases to properly estimate its value, but from his experience he believed it would prove to be one of the most valuable guides in the recognition of peptic ulcer.

HYPERACIDITY AND ABDOMINAL AND PELVIC SURGERY.

Dr. J. H. Carstens, of Detroit, said that cases of hyperacidity that were not relieved by ordinary treatment after a reasonable period of time should be subjected to an exploratory abdominal section, so that the exact diagnosis could be made. Sometimes the operation might fail to reveal the trouble, but in the vast majority of cases it would be found that there were adhesions of the gall bladder, stomach, intestines, appendix or pelvic organs which by reflex action produced that temporary condition which we called hyperacidity. The speaker said that while he discouraged indiscriminate operations as much as any one, he thought that the stomach specialist should make more frequent use of abdominal surgery, which was now free from danger, in obscure troubles of the digestive tract. Dr. Carstens offered the following conclusions: (1) Hyperacidity varied in different individuals. (2) Hyperacidity was a symptom, not a disease. (3) Hyperacidity was most frequently caused by reflex action. (4) Hyperacidity was probably due to irritation of the sympathetic nervous system. (5) Persistent hyperacidity should be cleared up by an exploratory abdominal section.

Dr. Allen A. Jones, of Buffalo, said that in considering this question we should be very careful in deciding what we meant by hyperacidity, and that it was an error to allow the patient to make the diagnosis for us. Many patients complained of extreme gastric

acidity when they were not suffering from that condition at all. If we had a definite reason for feeling that the cause of the excessive acidity rested in some other organ than the stomach, such as the gall bladder or appendix, an operation was certainly indicated, but he protested against opening the abdomen with the idea, as Dr. McPhedran, of Toronto, had put it, of going on a roving expedition.

DR. GUSTAV BAAR, of Portland, Ore., said he had found that excessive indican in the urine was frequently associated with hyperacidity, and, when indicanuria was a constant symptom, he became convinced that it was an indication of the presence of an actual intra-abdominal lesion of the appendix or elsewhere.

DR. J. C. JOHNSON, of Atlanta, said we either had to regard an excess of hydrochloric acid as an entity, or not regard it as such; it was either a disease or a symptom of a disease. In either case, the causes producing this pathological condition must operate in essentially the same way, and whatever the remedy might be, whether the knife, or alkalies, or diet, the essential cause must be removed by the employment of the same factors whose perversion led to its development.

A CLINICAL STUDY OF 600 CASES OF COLITIS.

By DR. GEORGE D. KAHLO, of French Lick, Ind. This paper embraced a résumé of 625 cases of chronic colitis, including both the inflammatory and secretory forms, the subject being treated entirely from the clinical standpoint. Statistics were given showing the sex, age, duration of the disease and the relative frequency of prominent symptoms, as also the occurrence of the more common complications. Errors in diagnosis often led to unnecessary surgical interference. The author believed that treatment should be directed to the local condition, as well as to the neurotic influences that had acted to produce the disturbed secretory function. In prescribing a diet, consideration should be given to disturbances of the digestive function and to the state of nutrition. The effect of mineral waters of the alkaline-saline group, both internally and locally, was also referred to, as were the influences of psychotherapy, massage and hydrotherapy.

DR. JOHN A. LICHTY, of Pittsburgh, discussing the treatment of these cases, said he was a great advocate of the warm oil enema, but, more than that, he believed that the cure lay in the correction of the disturbance of nutrition, such as we often found associated with splanchnoptosis. If you fattened your patient and increased the amount of fat in the abdominal cavity, the mucous colitis would often disappear without any other treatment.

SECOND DAY, TUESDAY, JUNE 7.

ON THE ADAPTATION OF THE HUMAN SALIVA TO DIET.

DR. LAFAYETTE B. MENDEL, of New Haven, in this paper, said that the question of the adaptation of the digestive secretions to the character of the diet had been somewhat debated in recent years. It involved not only an important biological problem, but also suggestive practical considerations in relation to dietetics. Lately it had been reported, for example, that a forced diet of carbohydrates in man increased the content of carbohydrate-digesting enzymes in the saliva. The alleged similar adaptation in dogs had already been subjected to experimental investigation by the author and his colleagues with negative results. New experiments on man, under carefully selected conditions, had failed to show any correlation of enzyme concentration in the saliva with the dietary of the individual. Vegetarians furnished no specific exception in regard to ptyalin secretion. The author stated that his experience corresponded with the results just published by Carlson and Crittenden.

FURTHER OBSERVATIONS ON ALCOHOLIC GASTRITIS AND ITS RELATION TO EXPERIMENTAL GASTRITIS IN ANIMALS.

By DR. NELLIS B. FOSTER, of New York. The author stated that alcoholic beverages, when constantly used to excess, as in the case of certain classes in large cities, was the cause of a gastritis which was well-recognized clinically. The most prominent symptom of this condition was the retching occurring before the morning meal. When the digestive function of these individuals was examined, it was found that there was a diminution in the amount of hydrochloric acid secreted, which, in severe cases, was of such a degree that no free acid was demonstrable in the gastric contents. There did not appear to be a corresponding deficiency in the pepsin secretion. The second notable feature of this form of gastritis was the excessive mucous secretion. There was also to be observed in the majority of cases a decrease in the time that the food remained in the stomach. This had been interpreted as a functional compensation for defective peptic digestion, but might be explained in several other ways.

From the experimental point of view, it was relatively easy to induce in dogs a gastritis by means of dilute alcohol solutions. With dogs having the double stomach (Pawlow), observations might be made as to the effect of alcohol. The initial effect of alcohol was to call forth an increase in the amount of gastric secretion and of acid; if, however, the dose of alcohol be repeated for several days, there was apparent a failure of the stimulus, after a time, to produce the initial effect, i. e., increased secretion, and the amount of mucus secreted became more abundant. This sequence of events was in entire accord with physiological principles of response to stimuli. The ultimate result of oft-repeated excitation was an absence of response following an increased reaction. Applying this principle to the condition observed in animals, it followed that the initial increase of gastric secretion would be of brief duration and then the gastric glands would become more and more refractive to stimulation, as was the case. Ultimately, there would arrive a time, were it possible to continue the experiment over sufficient time, when it seemed most probable that an atrophic gastritis would result. A gastritis marked by much diminished secretion and abundant mucus Dr. Foster said he had noticed in dogs as a sequence in other experiments, and in this state the food remained in the stomach for a briefer period than normal.

DR. JULIUS FRIEDENWALD, of Baltimore, said that about five years ago he published a paper on the pathologic effects of alcohol on rabbits, the work being done in the Pathological Laboratory of the Johns Hopkins University and Hospital, and the results of his work corresponded very closely to those reported by Dr. Foster. The quantity of alcohol taken by the rabbits varied very much according to the size and strength of the animal; certain rabbits were found to be so resistant that they seemed capable of tolerating daily intoxicating doses for an indefinite period.

DR. G. H. BENTON, of Chester, W. Va., said that Dr. Foster spoke of stimulation in reference to the effect of alcohol on the gastric mucosa. The speaker thought this should be regarded as an irritation rather than stimulation. This particular application of alcohol produced an excretion of a thick, tenacious mucus, which was nature's way of protecting the mucous membrane of the stomach.

The discussion was continued by DRS. LICHTY

Johnson, Benedict, Charles D. Aaron, of Detroit, and Nathan Rosewater, of Cleveland.

ANTHROPOMETRIC STUDIES OF THE OSSEOUS PROPORTIONS OF THE HUMAN BODY: WITH A VIEW TO OBTAINING A MATHEMATIC EXPRESSION FOR ENTEROPOSIS.

Dr. John C. Hemmeter, of Baltimore, said that enteroptosis was not an abnormality limited exclusively to displacements of the abdominal viscera, but that the thoracic organs were also displaced as far as the diaphragm and the osseous limitations of the thorax would permit it. By radiographic and other methods of investigation the author had become convinced that enteroptosis was an expression of a general osseous, visceral, nervous and vasomotor abnormality. Acquired enteroptosis was comparatively rare, and then only showed displacements in a few organs of the abdomen. In the acquired form, the thoracic organs, as a rule, were in normal position, and the osseous anthropometric proportions of the body were not found to be deviated from the normal, while in the inherited and more frequent type the thoracic organs were rarely in normal position; there were always several abdominal organs out of position, and the osseous proportions were decidedly abnormal.

Dr. Johnson said he was struck by the frequency with which Dr. Hemmeter had observed displacements of the thoracic organs. In his own observations, which were confined more especially to the abdominal organs, he had never yet failed to recognize some displacement or rather lack of proportion between the thoracic and abdominal organs in patients with enteroptosis or gastroptosis.

Dr. Gustav Baar said he was convinced that most cases of enteroptosis were acquired. The condition was rarely observed in children, at least in his experience, and he believed that the chief causative factor was the pressure of the corset in women or the trousers' strap in men. He believed that very few of these cases were congenital, and that ptosis of the thoracic organs was very rare compared with ptosis of the abdominal organs.

The discussion was continued by Drs. Friedenwald and Pilcher.

CHYLOUS CYST OF MESENTERY.

Dr. A. L. Benedict, of Buffalo, presented a report on a case of chylous cyst of the mesentery in a boy of six years, who was operated on by Dr. Charles E. Congdon. So far as the writer could ascertain, no other case had ever been recognized in Buffalo, although chylous ascites and chylo-thorax had. The largest series of cases in the literature hitherto amounted to 25. Dr. Benedict had, thus far, collected about 65 cases, and had found 3 cases prior to Rokitansky's, in 1848, which had previously been supposed to be the first authentic one. Two indubitable cases were found in the reports of the Paris Academy in 1710 and 1727.

It had been declared that sugar was an essential constituent of genuine chylous effusions, Senator being quoted as authority. Dr. Benedict's case yielded no sugar, and he showed that Senator had been misquoted as considering sugar as anything more than a usual constituent; that sugar had been absent in other cases, and that, on purely physiologic grounds, it could not be considered an essential ingredient. A study of the etiology showed that obstruction of the receptaculum and thoracic duct was rarely a cause, and that, indeed, such obstruction would tend to immediate chylous ascites or chylo-thorax; also, that the theory of embryonal rests was not supported by conclusive histologic evidence. From experimental results it seemed possible that any rise of abdominal pressure might operate, if not to produce the original cavity, at least to cause the development of a macroscopic cyst. Hence, the rather characteristic history of colicky pains might have both a diagnostic and an etiologic bearing, though the frequency of such pains in their association with cyst was too slight to let such a history influence us, excepting in a suggestive way. The physical diagnosis of abdominal cysts, by auscultatory percussion, tuning fork percussion, transillumination, etc., and the exclusion of certain common types of abdominal tumor were discussed. Without claiming that a positive diagnosis could be made, Dr. Benedict thought that in favorable cases operation could be undertaken with the fairly positive diagnosis of some sort of cyst, with the probable diagnosis of mesenteric cyst, and with at least the knowledge that there was such a thing as chylous cyst of the mesentery.

Dr. George W. McCaskey, of Fort Wayne, referred to a case which he saw about twenty years ago in which he made a diagnosis of pericardial effusion. This seemed justified by the muffled heart sounds and by the outline of the cardiac dullness given by percussion. A paracentesis was done, and chylous fluid was obtained. He believed the case was one of chylous pericardial effusion.

Dr. C. F. Korsell, of Chicago, reported in detail a case of chylous ascites in combination with multiple small chylous cysts. The largest cyst formation was found between the layers of the peritoneum in the transverse mesocolon, holding over one quart of oily chyle.

Dr. Benedict, in closing, said that, in a recent review of the subject, he found a record of two cases of chylous cyst of the pericardium.

THE CLINICAL FEATURES OF METASTASES INVOLVING THE NERVOUS SYSTEM SECONDARY TO CANCER OF THE STOMACH.

Dr. Henry L. Elsner, of Syracuse, said that metastases due to malignant disease of the stomach and intestines as they involved the nervous system were exceedingly rare; not so rare, however, as had been supposed in the past. Thorough search would frequently uncover clinical manifestations which made their presence positive. These conclusions were confirmed by post-mortem findings. In occasional cases, metastases of the spine, brain and periphery caused such intense suffering, and their symptoms were so prominent, as to mask partially or entirely the primary growth in the stomach or intestines. Cancers of the stomach might be so localized as to give rise to a few symptoms, while metastases springing from such growths might invade the nervous system, particularly the spine, and lead to a definite train of symptoms. Cancer of the stomach, more particularly, might remain latent during a number of years, during which time metastases followed which might occasionally invade the nervous system. It was important to differentiate the various manifestations associated with pernicious anemia, included under the "*Lichtheim symptoms*," and those due to invasion of the central nervous system, particularly the spine, secondary to cancer of the stomach or intestines.

THE RELATION OF GALL-BLADDER AND DUCT DISEASES TO GASTRIC FUNCTION, BASED UPON CLINICAL AND EXPERIMENTAL OBSERVATIONS.

Dr. J. A. Lichty, of Pittsburgh, read a paper on this subject, in which he offered the following conclusions: (1) A lesion of the gall bladder and ducts may

disturb gastric function. (2) This disturbance may consist of a hypersecretion of gastric juice, especially of the hydrochloric acid, and a diminution of gastric motility, and was in direct proportion to the extent of the pathology present. (3) So-called hyperchlorhydria should be looked upon as a symptom of some organic condition somewhere along the gastro-intestinal tract, and should be treated symptomatically only when organic disease could be excluded with a satisfactory degree of certainty. In the experimental work referred to by Dr. Lichty, it was attempted to show in dogs whose normal gastric secretion had been determined, that by placing infected foreign bodies into the gall bladder, a condition similar to cholelithiasis in the human being occurred, and a change in the gastric secretion and motility took place, much as was found clinically.

DR. ALLEN A. JONES said that in not a few instances he had found that definite disturbances of secretion — not necessarily hyperchlorhydria — or of motion were associated with gall-bladder disease. Furthermore, he agreed with Dr. Lichty that extensive or quite marked morbid conditions of the gall bladder, especially pericholecystitis with adhesions, were not infrequently associated with gastric disturbance. On the other hand, there were cases in which the cause of the gastric symptoms lay in the stomach itself rather than in a morbid condition of some of the other abdominal organs. We should also bear in mind that two or more morbid conditions may exist in the abdomen; the patient may have appendicitis or cholecystitis, and may also have an abnormal condition of the pylorus.

DR. FENTON B. TURCK, of Chicago, said he had no doubt that the infection of the gall bladder in dogs produced by placing an infected foreign body into that organ influenced the secretion and motility of the stomach, but whether there were other factors associated with this had not been touched upon in this research by Dr. Lichty.

DR. J. C. JOHNSON said that in dealing with cases of gallstones and gall-bladder adhesions, we all knew that these conditions produced a certain train of symptoms, but what we wanted to learn was, How did they do it, and, Why did they do it? Before gall-bladder trouble, appendicitis or anything else could produce hyperchlorhydria, there must be a disturbance in metabolism of the secretory cells of the stomach.

DR. C. F. P. KORSSELL, of Chicago, said he had almost invariably found that patients with enteroptosis also suffered from hyperchlorhydria and indicanuria. By keeping this fact in mind, he had relieved many patients who were not benefited by having their appendix removed, or their Fallopian tubes amputated, or their uterus curetted, etc.

DR. JAMES T. PILCHER, of Brooklyn, called attention to the fact that we might have these gastric disturbances due to impaired metabolism of the nerve structures. That was really an organic condition; not merely a functional one. We might have an actual change in the nerve, and in that case it could not be regarded as a functional hyperchlorhydria.

DR. JOHN P. SAWYER, of Cleveland, said that hyperchlorhydria seemed to be regarded by many as a continuing expression of an established disorder. Ought we, however, to regard it in that light? Hyperchlorhydria might be present for a considerable length of time in a given patient under a given set of conditions; at another time it might be absent, and the same patient may have an achlorhydria or a hypochlorhydria. We may have tremendous excursions in this respect due to psychical phenomena.

The discussion was continued by DRS. BENEDICT and FRIEDENWALD, and was closed by DR. LICHTY.

REPORT OF A CASE OF INOPERABLE CARCINOMA OF THE SPLENIC FLEXURE OF THE COLON TREATED WITH NEOFORMANS VACCINE.

By DR. CHARLES D. AARON, of Detroit. The case was one of tumor on the left side of the abdomen which upon exploratory incision proved to be inoperable. Under the use of neoformans vaccine there was an apparent disappearance of the growth and an improvement in all the symptoms.

SOME OBSERVATIONS AND MODIFICATIONS ON THE SCHMIDT TEST DIET.

By DR. G. W. MCCASKEY, of Fort Wayne. The author suggested three slight modifications in the Schmidt test diet. One was the advantage which might be gained by introducing into the diet very small cubes of raw meat which had been soaked in carmine solution for twenty-four hours. These might pass through the stomach in case the latter could not digest the connective tissue, and could be readily recognized macroscopically in the feces as small, red masses. He also advised repeating the test with one half the quantity, approximately, perhaps, 1,200 calories, and if we still got the same results, it would give us a clearer indication in regard to functional impairment. The third modification he suggested was to make it more inviting and palatable by substituting for the purées, gruels, etc., properly prepared potatoes and cereals.

THE RÔLE OF THE BACILLUS COLI COMMUNIS IN DISEASE.

DR. FENTON B. TURCK, of Chicago, in this paper, presented some interesting facts on the rôle of the bacillus coli communis in the gastro-intestinal tract in producing lesions in the liver, kidney, stomach and other organs.

Book Review.

Tropical Medicine and Hygiene. By C. W DANIELS, M.B. Cantab., M.R.C.P. Lond. In three parts, with colored and other illustrations. Part II: Diseases Due to the Metazoa. New York: Wm. Wood & Co. 1910.

The absence of Major Wilkinson from England made it impossible, according to the statement in the preface, for him to share in the preparation of this second volume of the work, in the first part of which he was collaborator. The book nevertheless fully maintains the high standard of excellence set by the first volume [reviewed in the JOURNAL for June 2, 1910]. The second part treats of the metazoan diseases, notably filariasis, trichinosis, ankylostomiasis, myiasis and infections with tapeworms and round worms. In addition there is an admirable chapter on "Snakes and Snake-Venoms" by Lt.-Col. A. Alcock, M.B., LL.D., F.R.S., describing in brief but attractive and complete form the zoölogical characteristics and classification of snakes, the nature of the venoms in the poisonous species, and the general and specific methods of the treatment of snake-bite. This volume should be of special value both to students and to practitioners, and Dr. Daniels and Dr. Alcock are to be congratulated on its successful completion.

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PROGRESS OF THE EUROPEAN EPIDEMIC OF CHOLERA.

In the issue of the Journal for Sept. 15 we made editorial comment on the source and modes of diffusion of the present European epidemic of Asiatic cholera, and on the measures taken in different countries to prevent its further spread. Since that time the disease has shown little sign of abatement, either in Russia, its primary stronghold, or in Italy, its secondary seat of invasion. Reports from Russia state that, in the week of Sept. 17 to 23, there were in that country 3,038 new cases and 1,474 deaths. During the same period there were in the single province of Amur, Siberia, 26 new cases and 12 deaths. Six cases have occurred at Ferghana, Turkestan. During the week of Sept. 23 to 30, there were 215 new cases in St. Petersburg alone, with 80 deaths, and 393 cholera patients remaining in hospital. Statistics of the Russian sanitary bureau show that since the outbreak of the epidemic there has been a total of 198,246 cases in the empire and 92,329 deaths. These appalling figures, representing the possibilities of pestilential devastation in a country calling itself civilized, further justify our recent characterization of Russia as "medieval in her attitude toward such infections as cholera."

In Italy the situation is somewhat better, though approximately 1,000 persons are said to have died of cholera during the month of September in the region about Naples, where the epidemic has its focus. Latest reports state that on Sept. 27 there were 32 new cases and 22 deaths in the city of Naples, and on Sept. 28, 15 new cases and 9 deaths. At Rome there are said to have been in all only 4 cases and 1 death, the disease being principally confined to southern Italy.

So extensive an epidemic is, of course, a grave menace to adjacent countries and, to a less extent, to those more distant which maintain maritime intercourse with the infected cities. There seems to have been considerable carelessness on the part of Italian officials in guarding against both the importation and the exportation of the disease, and possibly even deliberate concealment of the facts of its prevalence for supposed economic and commercial reasons. The efficacy of intelligently practised measures of sanitary prophylaxis is illustrated by the fact that the other nations of Europe have nevertheless thus far kept themselves free from invasion by the disease. In America the principal risk is from unrecognized cases developing on shipboard after sailing from an infected port, or from "cholera carriers." Stringent measures are being taken by our national authorities and by those of the seaboard states to forestall such possibilities. Emigrants embarking from Naples and Genoa are detained in quarantine, prior to sailing from those ports, for five days, the maximum incubation period of the disease, and, in addition, are subjected to rigid examination on arrival in the United States. American and other steamers have been warned against touching at Naples. Dr. King, of the United States Public Health and Marine-Hospital Service, has been detailed to inspect also the port of Palermo, from which emigrants from the infected districts may sail for this country.

The advent of cold weather and the gradual awakening of official activity will doubtless before long put an end to the Italian epidemic. Meantime vigilant application of recognized principles of prophylaxis should keep America secure from infection by Asiatic cholera from European sources.

NOTES ON THE TUBERCULOSIS CAMPAIGN.

Some medical problems come and go, but the fight against tuberculosis bids fair to go on forever, or until the millennial day of the completely immune race. Meanwhile there are from time to time encouraging tidings of progress in the conflict. The recently published fifth annual report of the associated committees of The Massachusetts Medical Society for the prevention and control of tuberculosis contains account of the opening and valuable service of the three new state sanatoria for consumptives, providing for 850 patients in addition to those accommodated at Tewksbury; of the opening of the new consumptives hospital at Lawrence, Mass., and of the

outdoor camps at Adams, Mass., and at Quincy, Mass. The reports of the several district committees present also interesting data of the work being done in every part of the state. So aggressive and vigorous a campaign can hardly fail of good results. The chairman's report emphasizes furthur desiderata for the future, particularly the need of getting cases under observation earlier in the course of the disease. In a recent letter to the Mayor, Mr. Edward F. McSweeney, chairman of the board of trustees of the Boston Consumptives Hospital, makes similar comment, and suggests the desirability of a more systematic examination of school children in Boston for the detection of incipient tuberculosis and of conditions predisposing to tuberculosis. He also points out the necessity of suitable provision of occupation and environment for arrested cases, to prevent their relapse after supposed cure.

This suggestion calls to mind the valuable possibilities of the Prendergast Camp near Mattapan, conducted by the Boston Association for the Relief and Control of Tuberculosis. The object of this camp is "to offer to men, whose tubercular process has been arrested, a place where they may live under the most favorable conditions." It is intended primarily for recovered cases who have returned to work, but a few incipient or quiescent cases will also be received under suitable precautions. The camp is intended neither for profit nor for charity, but merely to be self-supporting; and a board-rate of $6.00 a week is, therefore, charged. Patients in the camp remain under the care of their own physicians. Applications for admission should be made to the Secretary of the Association, Mr. Seymour H. Stone, 4 Joy Street, Boston. It is provisions such as these that make one hopeful of the outcome in the conflict with tuberculosis, even though the campaign promise to be long and difficult.

MILK TRANSPORTATION RATES.

SINCE the settlement of the milk strike in Boston last spring, we have been happily delivered from apprehensions of a milk famine, and the season has passed without the threatened failure in quantity or quality of the supply. Problems in connection with the price and transportation of milk, however, still remain to be solved, and work on these has been continued through the summer. On Sept. 28 was held the last of a series of hearings before the Interstate Commerce Commission relative to the present shipment rates. Following the termination of the strike in June, there were some changes in the rates charged by certain railroads for the transportation of milk. Against these changes the contractors protested, and the matter was referred to the Commission for investigation. Both sides have presented figures, the one to show that the present rates mean financial loss to the dealers or an increase in price to the consumers; the other to show that lower rates mean loss to the railroads. The question really at stake is the state regulation of methods and cost of milk transportation. Whatever the decision of the Commission on this point, there seems likely to result, in the near future, an increase in the price of milk supplied to the Boston market.

MEDICAL NOTES.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.—For the week ending at noon, Sept. 27, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 44, scarlatina 11, typhoid fever 26, measles 4, smallpox 0, tuberculosis 43.

The death-rate of the reported deaths for the week ending Sept. 27, 1910, was 17.42.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 1, 1910, was 218, against 183 the corresponding week of last year, showing an increase of 35 deaths, and making the death-rate for the week, 16.95. Of this number 120 were males and 98 were females; 210 were white and 8 colored; 148 were born in the United States, 70 in foreign countries and 0 unknown; 52 were of American parentage, 139 of foreign parentage and 27 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 34 cases and 2 deaths; scarlatina, 22 cases and 0 deaths; typhoid fever, 16 cases and 4 deaths; measles, 3 cases and 0 deaths; tuberculosis, 66 cases and 16 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 22, whooping cough 0, heart disease 23, bronchitis 5. There were 10 deaths from violent causes. The number of children who died under one year was 59; the number under five years, 72. The number of persons who died over sixty years of age was 57. The deaths in public institutions were 87. Cerebrospinal meningitis, 1 case and 1 death. Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following

were non-residents: Consumption, 1 case. Scarlet fever, 1 case. Typhoid fever, 1 case and 1 death.

Deducting deaths of non-residents, the total is 191 and the death-rate is then 14.85.

HARVARD MEDICAL AND DENTAL SCHOOLS. — The Harvard Medical School opens the new year with 267 students, 13 less than last year. The Dental School begins the year with 106 students, 21 more than last year.

UNITED DRUG CONVENTION. — The annual convention of stockholders of the United Drug Company, held in Boston last week, was attended by nearly one thousand representatives, coming from every state in the Union, and from Canada. At the sessions questions of the preparation and sale of drugs and of the policy and government of the company were considered. It was unanimously voted that the next convention be held at Richmond, Va.

ETHER DAY AT THE MASSACHUSETTS GENERAL HOSPITAL. — Members of the medical profession are invited to attend the Ether Day exercises to be held at the Massachusetts General Hospital on Oct. 15, 1910, at 4.30 P.M. The address will be by Dr. George W. Crile, of Cleveland, Ohio. Admission will be by ticket only. Application for tickets should be made to Dr. Frederic A. Washburn, Resident Physician.

RETIREMENT OF DR. AUSTIN PETERS. — The Daily Press announces the appointment by Governor Draper of Mr. Walker, a farmer of Burlington, Mass., to succeed Dr. Austin Peters, the present chief of the Cattle Bureau. With the well-recognized importance to the human race of protection from the diseases of the domestic animals, this change is most unfortunate. Dr. Peters has and deserves the confidence of the medical profession.

BOSTON HOSPITAL CONCERTS. — The first of this season's series of concerts, provided by the Boston Hospital Music Fund, was given on Sunday, Oct. 2, at the Home for Aged Women, Revere Street. Further concerts will be given during the current month, as follows: On Oct. 9, at the Home for Aged Couples, Roxbury; on Oct. 16, at the Cushing Hospital, Roxbury; on Oct. 23, at the Woman's Charity Club Hospital, Roxbury; on Oct. 29, at the Boston State Hospitals for the Insane; and on Oct. 30, at the New England Baptist Hospital, Roxbury.

ILLEGAL SALES OF MILK AND COCAINE. — In the Roxbury district court last week three dealers of that region, whose licenses to sell milk had been previously revoked for disobedience to the regulations of the Board of Health, were fined $50 each for continuing to offer milk for sale. In the Boston municipal court, Carl Foley was found guilty of having made an illegal sale of cocaine in Boston on Sept. 9, and was sentenced to imprisonment for four months. Rigorous enforcement of food and drugs laws is essential for the public safety.

ABOLITION OF PUBLIC DRINKING CUPS IN MASSACHUSETTS. — The new regulation of the Massachusetts State Board of Health, prohibiting the use of common public drinking cups throughout the state, became operative on Oct. 1. This law applies to schools, hotels, theaters, halls, railway stations and other public buildings, to parks and highways, and to railroad cars, boats and other public conveyances. It is gratifying that Massachusetts has so soon followed the lead of other states in this desirable measure of hygienic reform.

OYSTER BEDS CONDEMNED IN RHODE ISLAND. — Report from Providence, R. I., states that on Sept. 27 the Rhode Island Board of Shellfish Commissioners condemned 275 acres of oyster beds at Bristol, in that state, as unfit for use on account of pollution by sewage from the city. It is matter of congratulation, not only to residents of Rhode Island, but also to oyster consumers elsewhere, that their interests are being so observantly safeguarded by local authority.

POLIOMYELITIS IN RHODE ISLAND AND VERMONT. — In the issue of the JOURNAL for Aug. 25, we noted the appearance of epidemic poliomyelitis in Providence, R. I. Recent report states that during the months of August and September there were 81 cases in that city, with 9 deaths. Ten cases have occurred in Newport, R. I. The total number of cases reported to the Rhode Island State Board of Health since June 1 is 163. Report from Montpelier, Vt., states that there have been upwards of a dozen cases of poliomyelitis in that state this summer, with 2 recorded deaths. The progress of these minor epidemics, *pari passu* with the more extensive one that has prevailed in Massachusetts, emphasizes the unquestionably infectious nature of the disease and the importance of its continued clinical and experimental study.

AMERICAN ASSOCIATION OF CLINICAL RESEARCH. — The second annual convention of the American Association of Clinical Research was held last week in Boston in the building of the Society of Natural History. Among the papers presented was one by Dr. E. S. Bailey, of Chicago, on "Research Work in Radio-Activity"; one by Dr. R. R. Smith, of Boston, on "Research Work in Mechanical Therapeutics"; one by Dr. C. H. Wintch, of Newark, N. J., on "Turpentine Poisoning"; and one by Dr. L. V. Briggs, of Boston, on "Recent Researches in Mental Medicine." A report was made by Dr. W. H. Ketchum, of Hopkinsville, Ky., on the use of the hypnotic state in diagnosis, furthur consideration of which was deferred till the next convention. Dr. A. R. Peebles, of Boulder, Col., was elected president for the ensuing year; Dr. I. S. Wile, of New York City, and Dr. J. F. Cobb, of Chicago, vice-presi-presidents; and Dr. James Krauss, of Boston, secretary and treasurer.

NEW YORK.

RATS AND MICE AND A STRIKE. — A strike is threatened among the stenographers and other female employees at the Capitol in Trenton, N. J., because the State Department of Health, having, after some difficulty, secured the necessary permission, is about to establish, on the roof of the building, quarters for rats and mice, among other animals, kept for experimentation.

AN EVASION OF REQUIREMENTS TO PRACTICE. — Justice Hendrick, of the New York Supreme Court, has signed an order denying the application of a certain physician who passed the New Jersey examination, and is licensed to practise in that state, for a writ of mandamus compelling the regents of the University of the State of New York to admit him to the practise of medicine in New York. The regents had refused his application on the ground that he took two out of the four years' college attendance required by law at the Boston College of Physicians and Surgeons, an institution not registered with the board of regents as having a sufficiently high standard of instruction, and that it would simply be an evasion of the requirements to allow him to practise by way of comity with the state of New Jersey.

THE ENTERING CLASS AT COLUMBIA. — The opening exercises of the medical department of Columbia University (the College of Physicians and Surgeons) were held on Sept. 29. There was a slight falling off in the registration, the first-year class showing an enrollment of 75, as against 90 in 1909, a circumstance attributed to the more rigid requirements which went into force the present year. The address on this occasion was by Dr. William G. MacCallum, professor of pathology, who took for his subject, "The Future of Medicine." In the course of it he expressed the opinion that the physician of the future would be employed principally to prevent disease, not to cure it, and he urged that marriages of deaf mutes, imbeciles, epileptics, degenerates and defectives in general should be prohibited by statute.

THE STRAUSS MILK CHARITY. — The regular summer stations of the Strauss Milk Charity have already been closed, but, in consequence of the appeals made to him, Mr. Strauss has decided to keep the seven stations from which pasteurized milk has been dispensed throughout the year in operation until Nov. 1. By that time the committee of which Mrs. J. Borden Harriman is chairman, it is expected, will have completed a plan to carry on the work heretofore conducted by Mr. Strauss under his own name. On behalf of the latter it is stated that while he is unwilling to bear the brunt of such opposition as in the past has been directed against him personally, he would lend any substantial financial backing to this charity if it were carried on in the name of a committee or organization. It is also stated that Health Commissioner Lederle has expressed much interest in the proposed undertaking, and that to the original committee have been added the names of some forty persons, many of them representing charitable organizations.

UNEXPECTED RESULT OF CAMPAIGN AGAINST IMPURE MILK. — One rather unexpected result of the campaign against impure milk which has been carried on of late in the city has been, it is found, that in quite a large number of instances, mothers of the tenements, in their efforts to save their children from the ill-effects of bad milk, are now trying to eliminate milk from the family diet and are substituting tea and coffee in its place. To such an extent has this reactionary movement spread that the consumers' section of the New York Milk Committee has deemed it necessary to come to the defense of milk, and has accordingly issued for distribution a pamphlet, bearing the names of Dr. Harvey W. Wiley, of the Agricultural Department's Bureau of Chemistry; Dr. H. C. Sherman, of the Department of Chemistry, Columbia University; Dr. Ira S. Wile, of the Department of Diseases of Children, Vanderbilt

Clinic, and others qualified to speak with authority on the subject, which warns the mothers against coffee and tea, and sets forth the nutritive value of milk and its peculiar adaptedness for the wants of infants and young children.

Current Literature.

Medical Record.

Sept. 24, 1910.

1. *Kakels, M. S. *A Preliminary Report on Ehrlich-Hata's Preparation for the Cure of Syphilis.*
2. Bassler, A. *A New Method of Treatment for Chronic Intestinal Putrefactions by Means of Rectal Instillations of Autogenous Bacteria and Strains of Human Bacillus Coli Communis.*
3. Eshner, A. A. *A Possible Second Attack of Acute Anterior Poliomyelitis in the Same Patient.*
4. Spingarn, A. *A Brief Report of Three Unusual Cases of Retropharyngeal Abscess.*
5. Evans, W. A. *Library Ventilation.*
6. Loveland, B. C. *Psychotherapy: Its Place; Its Uses.*
7. Persson, G. H. *Culture of Lactic Acid Bacillus in the Treatment of Chronic Specific Urethritis. A Preliminary Report of Thirty-four Cases.*
8. Nascher, J. L. *A Plea for the Study of Geriatrics.*
9. Bass, C. C. *A Practical Inexpensive Aseptic Blood-Sticker.*

1. Kakels reports two cases of tertiary syphilis, which had resisted all other treatment, in which astonishing improvement has followed in one week the subscapular injection of 0.3 gm. of Ehrlich's already famous No. 606. The writer is enthusiastic over the prospects of the new remedy. [L. D. C.]

New York Medical Journal.

Sept. 24, 1910.

1. Cheatham, T. A. *Ambulance Surgery — Its Problems.*
2. Hays, H. *Epistaxis in Its Relation to Various Constitutional Diseases.*
3. Hogan, J. B. *Ether.*
4. Goldberger, M. F. *Observations on the Treatment of Peritonitis.*
5. Casamajor, L., and Karpas, M. J. *The Munich Psychiatric Course of 1909.*
6. Sallom, A. K. *Standardization of Blood Pressure.*
7. Lydston, G. F. *Dr. Pohly's Cases of "Anemic Ulcer" of the Throat.*
8. Knott, J. *Aconite.* [L. D. C.]

The Journal of the American Medical Association.

Sept. 3, 1910.

1. *Hoover, C. F. *A Criticism of the Blood Pressure Apparatus.*
2. Lange, S. *Pathology of Mastoiditis as Revealed by X-Ray.*
3. Cheney, H. W. *Continued Subnormal Temperature in Infancy.*
4. Mygind, H. *In Memoriam. Wilhelm Meyer.*
5. *Matthews, J. *Operations on the Vocal Cords in One Thousand Cases of Goiter.*
6. Fell, G. E. *Currents at the Eastern End of Lake Erie and Head of Niagara River. Their Influence on the Sanitation of the City of Buffalo.*
7. Dutton, W. F. *Present-Day Problems and Progress in Prevention of Typhoid Fever.*
8. Kelley, S. W. *Surgical Mistakes in Infancy and Childhood.*
9. *Waugh, J. F. *Results of Experience with Noguchi Modification of the Wassermann Sero-Diagnosis Test for Syphilis.*
10. *Corbus, B. C. *Two Years' Experience with the Wassermann Reaction in Practice. A Preliminary Report on Fifty-seven Cases.*
11. Mauken, G. H. *Treatment of Stammering.*
12. Claybrook, E. B. *A Case of Opium Poisoning.*
13. Davenport, H. I. *Notes on Certain Tests for Indican in the Urine.*
14. Cooper, C. M. *Succussion Splash in Diverticulum of the Esophagus.*

1. Hoover does not decry the use of the blood-pressure apparatus, but thinks, however, that no instrument is as valuable as the educated finger. He advises the use of the femoral rather than the radial or brachial for palpation.

5. Matthews, examining one thousand cases of goiter, finds that the average frequency of symptoms of pressure on the nerves was directly proportional to the size of the lobes. Exceptions came in small hard lobes which are even more apt to harm nerves than large soft ones. The position of the lobe is important, those situated nearest the clavicle giving the most trouble. Men are about three times as liable as women to paralysis from goiters of the same type. Operation relieves those in which the pressure has not been long enough to produce degeneration of the nerves. Early laryngoscopic examination and operation may prevent complete paralysis.

9. Waugh concludes that in serum diagnosis of syphilis a positive result is an indication that the disease is still active and that more treatment is necessary. One negative result should not suffice in any suspected case of syphilis. The test should be repeated at intervals of six months for the first year after all treatment is discontinued, and afterward at longer periods. In quite a large percentage of cases two years of specific treatment is not sufficient to insure a negative result from the test. The tendency at the present time is to under-treat rather than to over-treat these cases. The Wassermann reaction is of inestimable value in obscure cases of syphilis and in differential diagnosis.

10. Corbus is enthusiastic over the Wassermann test, which he has used for two years as the original test without modification. It is especially valuable as a guide to treatment. We may now begin treatment early, energetically and watch our results with exactness. [E. H. R.]

Sept. 10, 1910.

1. Ormsby, O. S. *Lichen Planus Sclerosus et Atrophicus (Hallopeau). A Report of Six Cases (Five New). With a Review of the Literature.*
2. Sharber, A. L. *Report of a Case of Intussusception.*
3. *Dyer, I., and Hopkin, R. *Diagnosis of Leprosy.*
4. *Somers, L. S. *Significance of Edema of the Soft Palate.*
5. *Hartz, H. J. *Ultimate Results in Treatment of Pulmonary Tuberculosis with Mercury Succinamid.*
6. Marcy, H. O. *Plastic Surgery of the Pelvic Structures.*
7. *Wilson, L. B., and Willis, B. C. *Pathologic Relationship of Ulcer and Carcinoma of the Alimentary Canal.*
8. Bandler, S. W. *An Ideal Operation for Total Prolapse of the Uterus.*
9. Horn, H. *The Bronchoscopic Treatment of Bronchial Asthma.*
10. Morse, J. L. *Agar-Agar in the Treatment of Constipation in Childhood.*
11. Potts, C. S. *The Practical Uses of Electricity in Medicine.*
12. Bass, C. C. *Climatic Treatment of Pellagra.*
13. Wiles, G. M. *Parsimony in Nutrition.*
14. Matthews, A. C. *A Case of Fracture of the Thyroid Cartilage with Prompt Recovery.*

3. Dyer and Hopkins give an excellent review of the symptoms and lesions produced by the lepra bacillus. They plead for a more intimate knowledge by the general practitioner, as cases are becoming more common in this country. The great trouble in diagnosis lies in the number of atypical cases. A change in type from the tubercular to the anesthetic form may take place, or the two may occur together. These variations are not often enough recognised.

4. Somers states that edema of the uvula may occur as a traumatic lesion from over or improper use of the

voice. It is often a prodromal symptom of acute articular rheumatism. In chronic specific infections, as tuberculosis and syphilis, it may occur late and is significant of grave local lesions and destruction of tissue. It may be the only symptom of approaching uremia. It is rare in acute nephritis, but occurs in scarlet fever as a sign of profound intoxication.

5. Hartz selected twenty cases of non-active, chronic and generally favorable tuberculosis of the lungs for a trial of the mercury succinamid treatment advocated by Wright, U. S. N., and found that, although they showed a temporary improvement, yet all eventually began to deteriorate almost in direct proportion to the number of injections they had received. The deterioration was more marked and rapid than in others who had not had the mercury. He therefore concludes that mercury as recommended by Wright has utterly failed as a specific agent in the treatment of pulmonary tuberculosis, and is positively injurious to the patient.

7. Wilson and Willis, from the examination of operation specimens, conclude that the relationship to cancer of simple chronic irritation of the unbroken free surface of the mucosa of the alimentary canal, as indicated by clinical data, is not readily demonstrable pathologically. Scar tissue at the bases of ulcers, obliterations of the lumina of appendices and diverticula segregate portions of mucous epithelium from the neighboring mucosa and from the lumen of the alimentary canal. These portions of segregated mucous epithelium tend (*a*) to degenerate from pressure and diminished blood supply; or (*b*) to proliferate and infiltrate the surrounding tissues, thus forming cancer. [E. H. R.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

SEPTEMBER, 1910.

1. WOOD, J. C. *Gastro-Intestinal Auto-Intoxication and Mucous Entero-Colitis from the Viewpoint of Surgery.*
2. ALLISON, N. *Muscle-Group Isolation and Nerve Anastomosis in the Treatment of Paralyses of the Extremities.*
3. *FRAZIER, C. H. *The Treatment of Spasticity and Athetosis by Resection of the Posterior Roots of the Spinal Cord.*
4. BACON, C. S. *Management of the Breast in the Puerperium and During Lactation.*
5. STOWE, H. M. *The Abdominal Wall after Delivery and the Prevention of Abdominal Insufficiency and the Neurasthenic State.*
6. *SCUDDER, C. L. *Congenital Stenosis of the Pylorus. A Study of the Effect of Gastro-Enterostomy upon Digestion and upon the Pyloric Tumor.*
7. STAVELY, A. L. *Chronic Gastro-Mesenteric Ileus.*
8. RICHARDSON, E. H. *Parasitic Myomata. With Report of an Unusual Case.*

3. Frazier finds that section of the posterior roots of the spinal cord in some cases gives marked relief from spasticity, but that operation must be carefully followed up by persistent after-treatment in the form of education of the muscle groups. Benefit is not immediate. Much pain may be expected until improvement finally sets in. Voluntary movement is generally restored in part, but restoration of useful function cannot always be expected.

6. Scudder, after a concise review of the pathology, symptoms and treatment of congenital pyloric stenosis in infants, reviewing the post-operative history in fourteen cases, concludes that the presence of the gastro-enterostomy stoma does not alter the metabolism of the infant to its detriment, and from x-ray pictures and one autopsy case demonstrates that the pyloric tumor probably persists even into adult life. [E. H. R.]

THE LANCET.

AUG. 27, 1910.

1. *An Address to Students.* [J. B. H.]

BRITISH MEDICAL JOURNAL.

AUG. 27, 1910.

1. BOLTON, C. *Remarks on Some Points in the Treatment of Gastric Ulcer.*
2. MONSARRAT, V. W. *A Clinical Lecture on the Necessity for Operation in Gastro-Duodenal Ulceration.*
3. BIDWELL, L. A. *Hepatic Abscess following Acute Appendicitis.*
4. BROWN, H. H. *A Cause of Death after Operation for Appendicitis; the Three Lines of Defense.*
5. FAULDER, T. J. *Direct Esophagoscopy.*

THE BRITISH MEDICAL ASSOCIATION.

Section of Radiology and Medical Electricity.

6. DAVIDSON, J. M. *Introductory Remarks.*
7. THOMSON, J. J. *Röntgen Rays in Therapeutics: A Suggestion from a Physicist.*
8. HOLLAND, C. T. *A Screen for Examination in the Upright Position.*
9. JELLINEK, G. *Electro-Pathology.*
10. *DOMINICI, H., AND WARDEN, A. A. *The Technic and Results of Radium Therapy in Malignant Disease.*
11. BAILEY, C. F. *A Method of Treatment by Radiant Heat and Iodine Ionization.*
12. JONES, H. L. *On the Treatment of Some Corneal Ulcers by Zinc Ions.*
13. FREUND, L. *The Conditions Necessary to Obtain Radical Cures by Means of the X-Ray Treatment.*
14. *PIRIE, A. H. *Hyperidrosis Cured by X-Rays.*
15. *TURNER, D. F. D., AND GEORGE, T. J. *Some Experiments on the Effects of X-Rays in Therapeutic Doses on the Growing Brains of Rabbits.*
16. SOMERVILLE, W. F. *The Relief of Pain and Discomfort by Means of High-Frequency Currents.*
17. *JORDAN, A. C. *Types of Phthisis from the Radiographer's Point of View.*
18. *ORTON, G. H. *Some Points in the X-Ray Diagnosis of Pulmonary Tuberculosis.*
19. ROWDEN, L. A. *The Value of Screen Examinations in the Diagnosis of Renal Calculus.*
20. LAZARUS-BARLOW, W. S. *Radiation and Biological Processes, with Some Reference to the Skatographic Action of Animal Tissues.*
21. SIMMONS, G. A. *The Constitution and Organization of an X-Ray Department of a General Hospital.*
22. *BARCLAY, A. G. *The Normal and Pathological Stomach as Seen by the X-Rays.*
23. MORTON, R. *Some Bony Changes Observed in a Case of Chronic X-Ray Dermatitis.*
24. SIMPSON, J. B. *The Advantages of X-Rays in Country Practice.*
25. WENCKEBACH, K. F. *A New Stand for X-Ray Work.*

10. Dominici describes remarkable results obtained by means of radium therapy in some cases of malignant disease, including lymphoma of the parotid, sarcoma of upper jaw, sarcoma of the neck, epithelioma of the nose and others. The article is illustrated by means of an excellent plate.

14. Pirie describes a peculiar form of excessive sweating which he calls "hyperidrosis frigida," characterized by its increase by cold and its entire cessation at night. Such cases which he presents suffering from this condition have been entirely relieved by x-rays.

15. Turner and George present preliminary results of work done on the effect of x-rays in therapeutic doses on the growing brains of rabbits. They demonstrate certain gross changes, but come to no definite conclusions. They advise further work on the subject.

17. Jordan makes the remarkable statement that "the Röntgen-ray method is an indispensable diagnostic aid in all pulmonary diseases and that it is capable of demonstrating the exact position and extent of the pulmonary lesion even in very early cases of phthisis." He goes on to state, however, that the healed lesion may make a shadow similar to that of the earlier active lesion. These two statements do not seem to agree.

18. Orton regards the x-ray as an aid to diagnosis in early tuberculosis, but by no means the most important factor. He discusses various points in the early diagnosis of this condition by means of the x-rays.

22. Barclay discusses the stomach in normal and pathological conditions as seen by the x-rays, with special reference to the diagnosis of pyloric obstruction, ulcer and cancer. He believes that the x-ray examination by means

of the bismuth meal will give much information in experienced hands, but that the method is a difficult one. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 35.

Sept. 1, 1910.

1. Graser. *The Treatment of Tetanus.*
2. *Munk, F. *The Diagnostic Importance of Microscopically Visible Lipoids in Urine and Sputum.*
3. Brüning, A. *Treatment of Tuberculosis with Trypsin.*
4. Bofinger, O., and Dieterlen. *Essay on the Knowledge of the Cause of Meat Poisoning.*
5. *Tsuzuki, M. *The Influence of Calcium Iodide and Arsenious Acid on Typhoid Bacilli during Typhoid Convalescence.*
6. Fejes, L. *Bacillus Coli Communis as a Cause of Sickness and as a Saprophyte in Man.*
7. Löwenberg, M. *The Serum Diagnosis of Syphilis by Means of the Porges Reaction.*
8. Gierlich, N., and Hirsch, M. *Tubercle at the Root of the Brain found at Autopsy.*
9. Kausch. *Operative Treatment of Diastasis of the Recti Muscles.*
10. Biesalski. *Tendon Transplantation.*
11. Clemm. *Observations on the Specific Action of Pyramidon.*
12. Schall, M. *Recent Technical Improvements in the Field of Medicine.*

2. Munk describes a substance which resembles fat but which can be separated from it by the polarization microscope. This substance called "lipoid" occurs normally only in the suprarenals. Under certain conditions of disease it appears in other organs and vessels. This author has found it in the urine and sputum of patients and thinks that the examination of a urinary sediment with the polarization microscope for lipoid is of diagnostic value in making a differential diagnosis between acute and chronic nephritis.

5. Tsuzuki found that patients recovering from typhoid fever became free from the bacilli in their stools and urine more rapidly if they had administered to them calcium iodide or arsenious acid. These drugs seem to act much more actively *in vivo* than *in vitro*. This is rather in the form of a preliminary publication, but if verified by others it ought to prove of value in the attempt to eradicate bacillus carriers. [C. F., Jr.]

Berliner Klinische Wochenschrift. No. 32.

Aug. 8, 1910.

1. Neisser, A., and Kuznitzky, E. *The Value of Ehrlich's Arsenobenzol in the Treatment of Syphilis.*
2. Friedberger, E. *The Relation between Hypersensitiveness and Immunity.*
3. Much, H. *The Use of Serums in Psychiatry.*
4. Allard, E. *Pseudopulmonic Sounds and Their Avoidance in the Auscultation of the Apices.*
5. Hofbauer, L. *The Question of Emphysema.* (Part II.)
6. Halberstaetter, L. *Does the Exciting Cause in Trachoma arise through a Change in the Gonococcus?*
7. Stabilini, C. *Contribution to the Subject of the Meiostagmin Reaction in Malignant Tumors.*
8. Satta, G., and Fariani, G. M. *The Influence of Lipoids in Liver Autolysis.*
9. Meyer, G. *Nursing in Health and Sickness, Social Medicine and Medical Statistics.*
10. Leiske, H. *Misuse of Medical Titles.*
11. Meyer, H. *A New and Simpler Laryngeal Mirror.*

No. 36. Sept. 5, 1910.

1. *Hadda, S. *Two Cases of Punctured Wounds of the Larger Blood Vessels.*
2. Wolff-Eisner, A. *The Relation between the Action of Tuberculin and the Tuberculin Treatment.*
3. Lange, C. *Wassermann's Reaction, Particularly in Relation to the Treatment of Syphilitics with "Ehrlich's 606."*
4. Finkelstein, J. A., and Dawydow, W. J. *Studies with the Wassermann Reaction in the Laboratory and the Clinic.*
5. Friedländer, W., and Reiter, H. *The Vaccine Treatment in the Complications of Gonorrhea.*
6. Grabow. *Concerning a Case of Extensive Sarcoma of the Pleura with Calcification following Primary Sarcoma of the Tibia.* (Continued.)
7. Eyler. *Early Diagnosis and the Serum Treatment of Tetanus.* (Continued.)
8. Runge, E. *The Question of Cæsarean Section.*

1. After relating the progress that has been made in the surgery of blood vessels, the author presents two cases. The first was a punctured wound of the left femoral artery in the region of Hunter's canal. This wound was repaired with silk sutures, and complete recovery followed. The second case is mentioned to show that even the largest veins may be penetrated without immediate fatal hemorrhage, for the superior vena cava was penetrated. This was not diagnosed until after death, which followed some sixteen hours after his injury. [J. L. H.]

Correspondence.

WINCHESTER AND THE ARTHURIAN REGION. SALISBURY. STONEHENGE. GLOUCESTER. BATH.

[*From Our Foreign Correspondent.*]

Gloucester, Sept. 12, 1910.

Mr. Editor: Our past ten days of travel have taken us through the regions particularly associated with Arthurian romance, and it has been pleasant in connection with them to recall the half-mythical, half-historic legends of the British king and his knights which have formed the material of our greatest racial and national epic.

From Southampton one may go up the River Itchen, memorable for its later piscatorial association with Sir Izaak Walton, to Winchester, supposed to be the "many-tower'd Camelot" of Arthur. There is little in the busy town of to-day, however, to recall the "blameless king" and his vanished state. Indeed, modern Winchester has much more obvious reminiscences of another monarch, Alfred the Great, who made it the capital of his kingdom of Wessex, and issued thence his four famous Anglo-Saxon translations. His heroic statue, erected at the millennium of his death, dominates the market-place and principal street, and sends westward over land and sea the benediction of his uplifted sword-hilt. Even after his time, during the ascendency of the Mercian kings, the city retained much of its political importance and was a headquarters for William the Conqueror and his Norman successors until the seat of government was finally transferred to "the place which now is this world's hugest." Of all this royal magnificence there is now scarcely any trace, and castle and palace have been outlasted by the grim, massive cathedral, where, among others of note, the good Sir Izaak lies buried, and by the famous Winchester School, founded by Bishop William of Wykeham, whose motto, "Maners makyth Man," deserves to rank with the more practical apophthegm of another ecclesiastic of his time, "Serve God and be Chearefull." Both might be pondered and applied to advantage in our own day. Few men have succeeded as well as Wykeham in impressing their own personality on institutions which they have shaped, and to this day the graduates of the Winchester School and of its scion, New College, Oxford, form throughout England a clan of Wykehamites whose loyalty to each other and allegiance to their school and the principles of its founder are remarkable. A visit to the pleasant, venerable buildings of this ancient school is well rewarded, not only by the interest of observing its preservation of old usages and customs, such as the serving of food on wooden trenchers, but by the inspiration of the noble inscriptions under its portals to the memory of alumni who have sacrificed life or fortune in the honorable service of their country.

Among so much of medieval interest there is small wonder that everything but the memory of Arthur has perished out of Winchester, and one must have recourse to imagination to restore the Camelot of old. In this

instance the trick is not so difficult, and for once the fancy cheats " as well as she is famed to do." Close by the river stand still the ruins of Wolvesey Palace, a Norman structure of the twelfth century, and if one walk out of the town and down the stream at sunset, when the light blurs the outlines and glorifies the semblance of everything it touches, one can transform their fragments at will into the stately towers and gates of King Arthur's fabled castle. As we went one afternoon on such an excursion, we met, in the person of a small urchin, an enthusiastic modern disciple of the " compleat angler " who later gave new fame to these waters. Stopping by the bank to inquire of his success, we asked him what he was fishing for; to which he solemnly replied, " Trite," a plural which was novel but might perhaps be justified on the analogy of " kine " and " mice." As we came back, after this episode, the mist-wreaths were already rising from the river and twining among the reeds along the shore, and in the evening twilight it was not hard to see once more the lovely Lady of Shalott drifting down out of the dusk on her barge to the jasper gates of Camelot.

Not many miles from Winchester is Salisbury, a rather prim and quiet town with a beautiful " mercat-cross," in the shape of a stone crown, like that of Chichester, and an elegant cathedral that suns itself in a broad, open green, surrounded but not hidden by noble elms and beeches. In this cathedral, near the chancel-rail, is buried

" The subject of all verse,
Sidney's sister, Pembroke's mother,"

the Countess of Pembroke, for whom the " Arcadia " was written by her gallant and chivalrous brother, Sir Philip Sidney, the knight-errant of English poets. By a curious coincidence, we learned that a Boston physician had been married in this church five years ago, and found the record, with his name, on the register. After all, personal associations, whether past or present, are the strongest links that draw us to old places as well as to old friends.

Even more interesting than Salisbury, because unique in kind, is Stonehenge, the most impressive and ancient human monument in England. One visits it from Amesbury, a quiet, sunny little village, preserving, in slightly altered form, the name of Almesbury Abbey, whither the guilty Queen Guinevere fled after the discovery of her treason with Launcelot, and where, after Arthur's last battle, she " let make herself a nun." Of the old nunnery no trace remains, but the present small abbey church doubtless stands upon its site, and seems to harbor some measure of the peace to which she passed.

Stonehenge itself is about two miles from Amesbury, standing solitary and inexplicable in the open rolling country of Salisbury Plains. As you first catch sight of it from a distance, it looks almost insignificant; but as you approach, it acquires dignity; and when you stand close to its enormous shafts, you begin to appreciate its archaic grandeur. Dozens of theories have been propounded by antiquarians and geologists to account for its existence. The probability seems to be that at least some of the gigantic monoliths of which it is built were brought by glaciers during the Ice Age from Iceland, and subsequently left on the alluvial plains of southern England. Here they were found by the Phenicians at the time when this ancient race, near the dawn of history, apparently roamed and settled sporadically over a large part of Europe. With them the Phenicians constructed Stonehenge as a temple of sun worship, in the form of two concentric circles enclosing two ellipses. At the westerly focus of the inner ellipse was an altar, upon which, on the longest day of the year, the rising sun casts the shadow of a single stone, now called the Friar's Heel, set up some distance to the eastward. Midway between this stone and the outer circle of the temple is a large, flat slab on which the victims are supposed to have been slaughtered and their viscera then carried up in processional to be burned on the altar. It is a striking coincidence that the date assigned to this structure by archeologists on the basis of stone implements and utensils dug up in the vicinity, and that computed by astronomers from the present slight deviation of the shadow, owing to slow cyclic change in the position of the solstices, is the same, — 1700 B.C.

The Phenicians passed away; the Celts came, whom we think of and know as the native, aboriginal Britons. The Druids, the priests of their national religion, found Stonehenge ready to hand, and, knowing nothing of its astronomic significance, used it as a temple for their own form of worship. Their victims were probably killed on the same slaughter-stone, but, instead of being burned, were buried in the peculiar tumuli or barrows which still remain in the meadows round about. Then came the Romans, drove the Britons to the fastnesses of Scotland, Wales, Cornwall, and Brittany, built up a civilization of their own and were in turn displaced by the invading hordes of Jutes, Angles, Saxons and Danes. And still Stonehenge remained a puzzle and marvel to successive races, remained through the Norman conquest and the vicissitudes out of which has developed the England of to-day. Many of the monoliths have fallen, but the original plan is perfectly distinct. When one contemplates this colossal monument, which in its utter simplicity of construction has persisted through the storm and stress of thirty-six centuries, the remote antiquity of Arthurian legend seems recent in comparison, and if one reflects that these stones of which it is built were probably brought two hundred thousand years ago by glaciers from the strata in which they were formed in æons past, one begins to realize how small a moment the whole of human history is in the space of measurable time. Such a contrast reduces the greatest individual achievement to nothing, and makes Stonehenge the peer of the Sphinx and the Pyramids and the image of Ozymandias.

From Stonehenge it was a long journey, and a much longer lapse in thought, to Camelford, the little hilly town in Cornwall near which is reputed to have been fought Arthur's " last, great battle in the West." Of course, there is nothing now but tradition to tell the tale, and we had not even time to seek out Dozmare Pool, locally regarded as the " murmuring mere " into which Sir Bedivere cast the brand Excalibur. For us Camelford was only a stopping-place from which to continue our way by coach to Tintagel.

Tintagel, with which Tennyson has familiarized us as " dark Dundagil by the Cornish Sea," remains not only one of the most romantically beautiful spots in England, but one of the most tangible memorials of a shadowy and legendary past. On a huge, rugged promontory thrust out into the roaring ocean from a shore of dark, bristling, slaty reefs, stand the ruins of a castle of unknown date, which, though doubtless not the original structure, probably occupies the site of the ancient castle of the kings of Cornwall. The ceaseless action of storm and waves has battered down the ramparts and carried a large part of the once extensive fortress into the sea; but the round keep on the shoreward side still commands the dark, narrow ravine that leads down to it from the land. The castle should seem impregnable, and is said to have been entered never by force and only once by fraud, when Uther Pendragon made his way in by representing himself as Gorlois, the King of Cornwall, whom he had just slain in battle. In this castle was born Arthur, the child of Uther and of Igraine, the Cornish queen, and from here he is fabled to have been taken at night by Merlin, who entrusted him secretly to Sir Ector to be nurtured and educated until it should be time for him to claim his kingdom. At the base of the cliff on which the castle stands is a wicked cave, tunnelling completely through the promontory, slippery with seaweed and dripping with ooze at low tide, and at high tide filled with thundering surf and dashing boulders; and this is still known as Merlin's Cave, for here the great wizard lurked till he could obtain the child. That romantic episodes should have occurred in such an environment seems inevitable, and from the prosaic certainties of to-day it is fascinating to speculate back into the haze of a bygone age and conjecture what may have been the basis of actual fact underlying so much that is beautiful in song and story.

In later time, after King Arthur had come to his own and had established the Round Table, Tintagel Castle remained the seat of the kings of Cornwall, and became the scene of the more tragic romance of Iseult, the wife of King Mark, and Tristram of Lyonesse. That story, unfortunately more familiar to most of us in the foreign garb of the opera " Tristan und Isolde," is still one of the most perfect types in literature, and its association with Tintagel makes the old castle doubly interesting. As one stands on

the headland looking across towards the Irish shore, one can see in any passing boat the silken-sailed vessel bearing Tristram and Iseult, upon whom the sea has worked its immemorial magic.

From Tintagel our road lay along the coast, through Cornish and Devon villages of the greatest charm and beauty, but without particular interest of association. At Taunton, the county-town of Somersetshire, we came, singularly enough, upon two totally diverse objects of professional interest. In the local museum here is preserved the trunk of a young ash tree cleft for the cure of congenital hernia. There appears to have been a rather widely diffused superstition in England that if a child with a hernia be passed thrice through a sapling thus cleft, and if the tree subsequently grow together again, the child will be healed of his infirmity. In this instance, the cure must have failed, or else some enterprising folk-lore student secured the specimen too early and aborted the result, for the split in the trunk still remains widely enough separated to admit the passage of a full-term baby through it with ease. We were credibly informed that this practise has been followed in all good faith by inhabitants of the vicinity until within very recent years. It is quite conceivable that the percentage of spontaneous cures of infantile umbilical hernia, and of hydrocele incurring the still customary parental diagnosis of hernia, was sufficiently great to establish and maintain the reputation of this procedure, which, like other primitive therapeutic measures, apparently had its origin in the idea of transferring the ailment in similar form to some creature or thing, in which it might become cured by natural process. Our other object of professional interest at Taunton was a sign-board on the highway advertising the "Harvard Teeth Institute." Apparently the merits of American dentistry and of at least one American school are not unknown in Somerset, or their possible commercial value unappreciated.

A forenoon's journey from Taunton took us once more out of the mercantile atmosphere of a busy market-town back to the dreamland of medieval romance, to Glastonbury, the Avalon of Arthurian tradition. Geologic and climatic change, as well as the growth of so-called civilization, have altered it somewhat from

> "The island vale of Avalon,
> Where falls not hail, or rain, or any snow,
> Nor ever wind blows loudly";

yet it is still as lovely a spot as is to be found in all of merry England, and lies

> "Deep-meadow'd, happy, fair with orchard-lawns,
> And bowery hollows, crown'd with summer seas."

It was always hard to understand how Glastonbury could ever have been an island, but the solution becomes easy at a glance when one ascends the Tor and looks down on the great alluvial plain that encircles the four hills, — Tor, Chalice, Edmund's and Wearyall, — between which lies the little town. In Arthur's time this plain was all under water, and Avalon with its hills formed a sheltered "island-vale," to which the king was brought "to heal him of his grievous wound." To this island also was reputed to have come some centuries earlier Joseph of Arimathea, bringing with him as a supremely precious sacred relic the Holy Grail. His descendants were supposed to have built on Chalice Hill the Grail Castle and to have dwelt there as guardians of the Grail and kings of the surrounding country, until the holy vessel was lost through the misdemeanor of King Pelles, about the time when Arthur came to his kingdom. Hence the quest of the Grail became one of the favorite exploits essayed by knights of the Round Table; and hence, after his last battle, Arthur was appropriately taken to Avalon. Of his reputed grave there, and of Queen Guinevere, and of the mythical castle, there is, of course, no trace to be found. In later days, when the waters had receded, and Glastonbury had ceased to be an island, a monastery was established there, which in time grew into the most splendid mitered abbey of England. Here St. Dunstan lived and vanquished the devil in summary fashion, and hither came pilgrims "from every shires ende" to visit the famous shrine. Wearyall Hill still preserves the memory of their hardships, when from its summit they first caught sight of their goal and began the last stage of the journey. Yet apparently the creature comforts of wayfarers were not wholly neglected even in those days, for we lodged in the town at the "Pilgrimes Inn," built in 1425 for the accommodation of palmers coming to the shrine, and if they were as well housed and fed there as we, their lot could not have been a very hard one.

Of the vast church and accessory buildings of Glastonbury Abbey, only a few fragments are still preserved, but they are enough to give a conception of its former lofty magnificence and beauty. Unfortunately, human progress seems inevitably to involve the sacrifice, not only of human lives, but of many of the finest fruits of precedent human genius. Henry the Eighth, that uxorious and iconoclastic monarch, to whom the world owes so much, yet who ruthlessly destroyed so many of its noblest monuments, suppressed the abbey during his wholesale measures in the sixteenth century, and hanged its last abbot on Glastonbury Tor, saying that he would make a scarecrow of him to frighten his fellow-prelates. After this, the days of the abbey were numbered, and the unthinking and unfeeling generations completed the work of plunder by pillaging the ruined walls of rare tracery and exquisite carving to be used for macadamising the roads of the neighborhood.

After so distinguished a history and so calamitous a visitation, Glastonbury and its abbey remain, however, rich in stirring memories and associations. Whether Arthur were really ever buried here or not, his spirit has become the *genius loci*, as that of Friedrich Barbarossa has of the Harts Mountains. And if ever one should wish to appreciate the significance of Arthurian romance, or look for the return of Arthur and his time to this earth, it could be in no other spot than in this isle of Avalon.

It is singular that the translation and apotheosis of Arthur should have occurred so near the site of one of the earliest and perhaps the most authentically historic of the episodes in his career. Less than thirty miles from Glastonbury, rising greenly wooded behind the city of Bath, is Bath Mountain, where was fought the celebrated battle of Mons Badonis, mentioned by Nennius as the last of a series of engagements which marked the victory of British resistance to Roman rule and ended in the establishment of King Arthur upon his throne of sovereignty among a number of petty British chieftains. The modern city of Bath, however, has many more reminiscences of the Georgian than of the Arthurian era, and the spirit of Beau Nash still pervades its abbey and its pump-room, despite the Roman excavations that reveal the luxury of earlier conquerors. The waters still bubble up hot and copious as they were doing fifteen centuries ago, at the rate of half a million gallons a day; and, whether their efficacy be due to chalybeate virtue or to a radio-activity unsuspected in the days of the Cæsars, their healing properties are still eagerly sought by those who are not sick enough to be abed nor poor enough to be obliged to work for a living. Doubtless, as the Pindaric quotation over the door of the pump-room says, "Water is best," but one need hardly come to Bath to learn that truism.

One other place of Arthurian association deserves mention in the chronicle of our journey, and that is "old Caerleon upon Usk." Here once was Arthur's summer palace, and here still is preserved the local memory of his presence. Caerleon to-day is a sleepy little hamlet, dozing in the leafy valley of the Usk that rivals the more celebrated Wye in beauty. It has but a few hundred inhabitants, and contains a single, diminutive inn, with sanded floors and deal tables and walls adorned with scripture texts and the warning that "swearing is strictly prohibited." There seems much doubt whether the circumvallated mound, still pointed out in a meadow as King Arthur's castle, were ever a castle or had anything to do with Arthur. Be that as it may, the name is still there to conjure with, and in romance a name is everything. Caerleon upon Usk is a phrase to recall all the buoyancy of boyhood, and the sunny beginning of adventures "once upon a time." If ever there were an enchanted palace, it should be here, and there is no better place than here to take farewell of King Arthur, the secret of whose immortality is that he embodies as an ideal the eternal youth and hope of man.

MEDICUS PEREGRINUS.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, SEPT. 24, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,225	476	Waltham	6	4
Chicago	—	—	Pittsfield	18	5
Philadelphia	—	—	Brookline	3	1
St. Louis	—	—	Gloucester	—	—
Baltimore	—	—	North Adams	5	2
Cleveland	—	—	Northampton	12	1
Buffalo	—	—	Chicopee	6	4
Pittsburg	—	—	Medford	7	—
Cincinnati	—	—	Beverly	3	1
Milwaukee	—	—	Leominster	4	—
Washington	—	—	Hyde Park	6	3
Providence	—	—	Melrose	7	1
Boston	227	101	Newburyport	6	1
Worcester	44	15	Revere	4	2
Fall River	41	19	Westfield	4	1
Cambridge	31	8	Woburn	7	0
Lowell	54	19	Peabody	—	—
New Bedford	41	21	Marlboro	3	0
Lynn	23	5	Attleboro	5	2
Springfield	21	7	Adams	5	2
Lawrence	38	17	Clinton	3	1
Somerville	13	4	Gardner	4	0
Brockton	9	3	Milford	—	—
Holyoke	—	—	Watertown	4	1
Malden	10	—	Plymouth	—	—
Chelsea	5	1	Southbridge	3	1
Newton	3	1	Weymouth	2	—
Salem	15	5	Framingham	3	1
Haverhill	17	5	Wakefield	—	—
Fitchburg	11	3	Webster	4	1
Everett	3	1	Arlington	2	1
Quincy	—	—	Greenfield	1	—
Taunton	19	8			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 21, 1910.

GASSAWAY, JAMES M., surgeon. Granted one month's leave of absence from Sept. 7, 1910, on account of sickness.

WHITE, J. H., surgeon. Granted ten days' leave of absence from Sept. 17, 1910.

WILLIAMS, L. L., surgeon. Granted seven days' leave of absence from Sept. 19, 1910, under paragraph 189, Service Regulations.

MCINTOSH, W. P., surgeon. Granted seven days' leave of absence from Sept. 23, 1910.

PARKER, H. B., passed assistant surgeon. Granted three days' leave of absence from Aug. 25, 1910, on account of sickness.

ANDERSON, JOHN F., passed assistant surgeon. Directed to proceed to Ellis Island, N. Y., upon special temporary duty. Sept. 16, 1910.

GOLDBERGER, JOSEPH, passed assistant surgeon. Granted one month's leave of absence from Sept. 26, 1910.

SCHERESCHEWSKY, J. W., passed assistant surgeon. Directed to report at Bureau upon special temporary duty. Sept. 16, 1010.

FRANCIS, EDWARD, passed assistant surgeon. Directed to proceed to Philadelphia, Pa., New York, N. Y., and Detroit, Mich., upon special temporary duty. Sept. 14, 1910.

MCCOY, GEORGE W., passed assistant surgeon. Directed to proceed to Berkeley, Cal., upon special temporary duty. Sept. 14, 1910.

WARREN, B. S., passed assistant surgeon. Detail to represent the service at the meeting of the state health officers, to be held in Waterloo, Ia., Sept. 20, 1910. Sept. 15, 1910.

RUCKER, WILLIAM C., passed assistant surgeon. Leave of absence for one year without pay from June 4, 1910, amended to read from June 4 to September 14, 1910, without pay. Granted ten days' leave of absence from Sept. 14, 1910.

STANTON, J. G., acting assistant surgeon. Granted twenty-six days' leave of absence from Sept. 21, 1910.

CURLEY, C. P., acting assistant surgeon. Granted twenty-one days' leave of absence from Sept. 22, 1910.

MAGUIRE, E. S., pharmacist. Leave of absence for thirty days from Aug. 6, 1910, amended to read twenty days from Aug. 6, 1910.

BECK, J. E., pharmacist. Granted thirty days' leave of absence from Sept. 15, 1910.

BELL, J. M., pharmacist. Relieved from duty at Chicago, Ill., and directed to proceed to Savannah (Quarantine), Ga., and report to the medical officer in command for duty and assignment to quarters. Sept. 16, 1910.

STUMP, F. A., pharmacist. Directed to proceed to Honolulu, Hawaii, and report to the chief quarantine officer for duty. Sept. 12, 1910.

PROMOTION.

OTT, C. R., pharmacist. Promoted to pharmacist of the second class, to date from Aug. 29, 1910.

BOARDS CONVENED.

Board of medical officers convened to meet at the Marine Hospital, San Francisco, Cal., Sept. 26, 1910, for the examination of Assistant Surgeon Friench Simpson, to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the board: Surgeon Rupert Blue, chairman; Passed Assistant Surgeon F. E. Trotter; Passed Assistant Surgeon R. E. Ebersole, recorder. Sept. 14, 1910.

Board of medical officers convened to meet at the Marine Hospital, Stapleton, N. Y., Sept. 26, 1910, for the examination of Assistant Surgeon R. A. Herring, to determine his fitness for promotion to the grade of passed assistant surgeon. Detail for the board: Surgeon Hiram W. Austin, chairman; Passed Assistant Surgeon W. A. Korn; Passed Assistant Surgeon George L. Collins, recorder. Sept. 14, 1910.

Board of medical officers convened to meet at Philadelphia, Pa., Sept. 21, 1910, for the purpose of determining the physical condition of Surgeon Eugene Wasdin. Detail for the board: Surgeon Hiram W. Austin, chairman; Surgeon W. G. Stimpson, recorder. Sept. 15, 1910.

A CORRECTION.

IN our issue of Sept. 29 the note entitled "The Cost of Progress" should have been credited to the *British Medical Journal*.

RECENT DEATHS.

COLLINS, ORVILLE WILLIAMS, M.D., M.M.S.S., died in South Framingham, Sept. 5, 1910, aged fifty-seven years.

DR. WILLIAM COWPE GARDNER, of New York, died on Sept. 29, from cardiac disease. He was born in Liverpool, England, in 1855, and was graduated from the Long Island College Hospital, Brooklyn, in 1892.

Dr. JOHN ERHARD, of College Point, Borough of Queens, New York City, died on Sept. 28, at the age of forty-eight years. He was graduated from the Long Island College Hospital in 1896.

DR. HUBERT B. GUDGER, of Asheville, N. C., died in New York City on Oct. 2, at the age of twenty-six. He graduated from the University of Pennsylvania Medical School in June, 1910.

DR. CHARLES EDWIN MILES, who died last week in Roxbury, was born at Stow, Mass., on Dec. 31, 1830. He graduated from Worcester Medical College in 1859, and since that time had practised medicine in Roxbury. He was at one time chairman of the Massachusetts State Board of Registration in Medicine. He is survived by his widow.

OCT 18 1910

Original Articles.

ACUTE THORACIC EMPYEMA. AVOIDANCE OF CHRONIC EMPYEMA. RIB TREPHINING FOR SUCTION DRAINAGE.*

BY SAMUEL ROBINSON, M.D.,

Surgeon to Out-Patients, Massachusetts General Hospital; Visiting Surgeon to the Harvard Clinic.

DEATH of patients as a penalty for neglect of diagnosis and treatment of inflammations within the abdomen has finally persuaded us to recognize such conditions early. Surgeons, realizing the danger to life, operate promptly to remove infection, or with close observation seek to limit the spread of the disease. Suppurative infections of the thorax are regarded with less respect, and are looked upon with reason as less threatening to life; hence the lax enthusiasm to recognize promptly thoracic infections, and a tardiness approaching indifference on the part of the surgeon in securing drainage. In other words, in suppurating conditions of the lung and pleura, as in other lesions of the body, the effort made is in direct proportion to the fear of losing the patient. A not uncommon remark is the following: "I have never lost a case of empyema."

The object of this paper is to emphasize the fact that while nature strenuously combats pleural infections in spite of our incomplete efforts, accuracy of diagnosis, prompt surgery and diligent after-treatment of such conditions are absolutely necessary not only to save the patient, but to shorten the convalescence, to prevent amyloid disease of other organs and to restore the normal function of the lung and pleura. Complete recovery and not the mere saving of life should be, from the outset, the main object in the treatment of thoracic suppuration. It cannot be denied that abscess of the periphery of the lung, if early recognized and operated upon, might avoid a local empyema. Local empyema detected with like promptness will often prevent the occurrence of a general pleural infection, and, furthermore, chronic empyema is a condition which should never exist, and which is in each and every case attributable to neglect either in the recognition of infection at its early stages, in its operative treatment or in its post-operative management. A large percentage of the cases of purulent pleurisy which result after operation in so-called chronic empyema, namely, in the existence of a large thick-walled cavity, with many ounces of residual pus contents, are due to the negligence of the internist. A smaller group of cases of chronic empyema may be credited to the neglect of the surgeon to provide for the re-expansion of the lung after complete or incomplete drainage; and while the main discussion of this paper will deal with the prevention of chronic empyema by methods of thorough drainage and efforts at re-expansion, it should be noted by the internist that such re-expansion is frequently impossible when he has allowed a purulent pleurisy to remain unrecognized or neglected until the lung is so adherent in its retracted, compressed condition that expansion is impossible without a grave radical procedure, even though the expansibility of the lung tissue may yet persist.

Through the courtesy of the Visiting Staff of the Massachusetts General Hospital, I have had the opportunity to operate upon fifty-one patients with intrathoracic diseases, of which thirty-four cases were empyema. The views expressed in this paper are based essentially upon experiences with these cases, although a detailed account is omitted.

DIAGNOSIS.

I hesitate to discuss the diagnosis and differential diagnosis of a condition so well-known as purulent pleurisy, but my attention has been called to the difficulty which attends the diagnosis and localization in certain cases. Earlier diagnosis would be favored if we were as keenly on the lookout for suppuration in the thorax as we are in the abdomen. No case of pneumonia should be regarded as properly treated when in the process of resolution one is not constantly watching the temperature, physical signs and leucocytosis for the possible accumulation of serous or purulent fluid. There is no doubt that empyema is more often diagnosed as resolving pneumonia than that the signs of the resolving lobe are mistaken for pus. To doubt the ability of the average doctor to detect fluid in the thorax would be an attack upon the fundamentals of his training, and it is more reasonable to doubt his persistence in searching for a focus to explain a rise in temperature, an increased leucocytosis, a chill or night sweat, vomiting, abdominal pain or other latent symptoms in the convalescence following the crisis of pneumonia. Though convinced that pus is present in the chest, we are often guilty of lack of diligence in its pursuit. Flatness in place of dullness, absence of râles, an absent or much diminished respiratory note, should aid in differentiating a pyothorax from an area of consolidation. Localized tenderness to pressure on the thoracic wall (Musser) may aid in diagnosis, but whether certain or in doubt as to the presence of pus, exploratory thoracentesis should be done in every case, not only to convince the internist of its presence, but to guide the operator in his thoracotomy. Such diagnostic punctures are, to be sure, frequently negative, even after repeated effort. Granted sufficient persistence, I have never known this method to fail in positive cases except when the pus was between the diaphragm and the under surface of the lower lobe, or encapsulated between the pleural surfaces of an interlobar fissure.

Needle diagnosis is often neglected for one of two reasons. There may be no suitable needle within easy access, or it is in no condition for use. Some practitioners hesitate to employ a needle puncture, either doubting their ability or dreading to suggest a semi-operative procedure to the septic patient and discouraged relatives. No surgical procedure impresses me as more brutal that the *stabbing* method of thoracentesis. Even with a

* Rib-trephining was suggested to me by Dr. Hugh Cabot, who states that the method has been employed by a Norwegian (written in connection with Dalton Scholarship, 1910-11), whose name he does not recall. In an extensive review of the literature I find no reference to this subject.

preliminary incision in the skin, with or without ethyl chloride, the needle is jabbed through the sensitive soft parts, including the parietal pleura, and, even in the hands of the expert, not infrequently pierces the lung. The procedure is distressing to the patient, and this fact alone may deter one from employing a second, third or fourth puncture when the first is negative. In a series of thirty-five thoracenteses performed on phthisis patients for the establishment of nitrogen artificial pneumothorax, I have succeeded in avoiding discomfort to the patient by a method which should be more generally employed. After freezing the skin with ethyl chloride, a ½% solution of cocaine is injected in the skin covering a area of ½ cm. Through this the hypodermic needle is inserted perpendicularly, the solution being forced gradually ahead of the needle as it passes through the layers of the chest wall. In the resulting absence of sensitiveness, the upper border of the rib below can be carefully made out, and more of the solution forced through the intercostal muscles against the sensitive pleura, which absorbs the cocaine slowly from the adjacent tissues. Puncture of the pleura then causes no pain. If the hypodermic needle is not used for aspiration, an aspirating needle can be inserted through the same channel with no discomfort. If aspiration is negative, by this anesthetic method of thoracentesis the usual fear of the patient of another *stab* is avoided, and the persistence of the operator to search further is not discouraged. If abscess of the lung has been excluded by the absence of sputum, as is invariably justifiable, and the presence of pus is still suspected, it is fair to presume after a series of negative punctures in the suspected areas that the pus is encapsulated in a fissure, or on the diaphragmatic surface. In three of my cases pus was found at operation in this latter situation and occupied the costo-diaphragmatic angle, which in the stabbing method is avoided for fear of injury to the diaphragm and opening of the abdomen. I have found more than a pint of pus retained in this angle at a point below the usual safe limit of exploratory needle puncture, namely, the eighth intercostal space. Experience has shown me that, by the cautious method above described, the diaphragmatic angle may also be explored in its entire circumference. The last case of this kind upon which I operated had survived six negative needle punctures. These discouraging results, in spite of continued leucocytosis and night temperature, resulted in a delay of eight weeks, as a result of which the pus increased over the diaphragm and forced the lung upwards, holding it there until its firm adhesions were formed. At operation an exploratory resection of two ribs was made at the safe level, where the pleural layers were found adherent. Separating them with the examining finger in a downward direction eventually permitted the escape of pus, although a new drainage point had to be established in the costo-diaphragmatic angle, evacuating a liter of pus. Convalescence of the patient has been unsatisfactory, and a large cavity corresponding to the volume of the pus still persists; in other words, a chronic empyema has developed as the result of the eight weeks' delay which will later necessitate a thoracoplasty for its obliteration.

Doubt frequently arises in the convalescence of pneumonia as to whether suppuration exists in the form of an abscess or of empyema. The presence of sputum in small or large quantities should be the main guide. Pure empyemata are ordinarily purulent pleuresies in which the infection has traversed the lymphatics through the basement membrane of the visceral pleura, and a sputum is rarely present. If, on the contrary, in the resolution of pneumonia an abscess has developed near the periphery of the lung, the visceral and parietal pleuræ may become adherent. The physical signs when the abscess cavity is full are those of localized empyema, and if the abscess is connected with a bronchus, and a purulent sputum is present, and if, furthermore, the exploratory needle, without going to any apparent depth, draws pus, the case is regarded as one of "empyema which has broken into a bronchus." I am yet to be convinced that a true empyema often finds its way through the visceral pleura and thence into a bronchus. The reverse, on the contrary, is often true.

The previously existing abscess has, through protective adhesions, obliterated the pleural space and thus prevented an empyema; and, being unable to find an exit through the chest wall, has broken centrally into a bronchus. Cases are reported of spontaneous cure of empyema by rupture into a bronchus. The considerable evacuation of sputum which gives rise to such conclusions can only escape through bronchial branches of a considerable diameter. Such are not found at the periphery of the lung. In other words, if a true purulent pleurisy of lymphatic origin reaches a large bronchus, it must first produce an abscess of the lung, which in turn perforates the wall of a bronchus. Who can deny that the abscess occurred previously, that the local or true empyema followed by extension of the abscess to the periphery, with adhesions to wall it off, or a direct rupture into the unprotected pleural cavity? The abscess, however, continues its parenchymatous necrosis, and a bronchus is entered. The clinician may have failed to note the pre-existing abscess and, having later discovered signs of empyema, concludes at the time of rupture that the empyema has burrowed into the lung. Autopsies frequently reveal necrotic lung tissue connecting with a bronchus and also with a pleural empyema, but I see in such post-mortems no evidence as to whether the abscess or the empyema was primary in origin. Morison states that interlobar empyema is the variety which most commonly ruptures into a brouchus. The two cases of interlobar empyema which I have seen at autopsy were both accompanied by adjacent abscesses of the lung. Of three cases of so-called localized empyema upon which I have operated, there was necrotic lung tissue at the base of the cavity and twice with a bronchial connection. It is

conceivable, therefore, that the terms "localized" and "interlobar empyema" are often misnomata. Adhering to the definition of empyema, "pus within a cavity," the term should only be applied when two layers of pleura, either visceral and parietal, or two visceral layers form the opposing boundaries of the cavity. If thoracotomy is done for localized empyemata, and lung parenchyma is at the pulmonary side of the cavity, it is evidence that the visceral and parietal pleuræ are adherent as one layer incised in the thoracotomy. The condition is really one of abscess of the lung. If the inner wall of the cavity, on the contrary, presents visceral pleura with a fistulous opening to the lung, the condition is justly called a localized empyema secondary to abscess of the lung. It is this latter condition which is often unrecognized and which when undrained exteriorly may lead to rupture into the bronchus. Localized empyemata on the lateral walls of the chest are more commonly pure peripheral lung abscesses or restricted empyemata connecting with and secondary to an abscess. Those at the base of the pleural cavity are generally true empyemata limited by adhesions.

We have considered purulent pleurisy which is associated with pneumonia to emphasize its frequency as a sequel to this disease, but its diversity of origin must not be overlooked. Another group of empyemata is that which is associated with inflammatory conditions beneath the diaphragm which by lymphatic extension involve the diaphragmatic pleura and the adjacent visceral layer of the lower lobe. Abscess of the liver, subdiaphragmatic abscess and perforated duodenal ulcers not infrequently lead to this condition with or without perforation of the diaphragm, and the attention of the physician is distracted from the pleural involvement and the necessity of drainage by his anxiety concerning the abdominal conditions.

Infections of the pleura by blood metastasis are sometimes seen in scarlet fever, measles, typhoid and whooping-cough and other systemic infection. A careful chest examination should be made when the progress of these diseases is accompanied by signs of additional septic absorption. Trauma and local disease of the chest wall as causes of pneumonia are less often overlooked because of the direct association of the pleura with such conditions. I am convinced that infection of a pleuritic effusion by needle puncture is of extremely rare occurrence, and should not be considered as among the probable causes of empyema. The fact that the first needle puncture withdraws a sterile fluid and a later puncture pus ordinarily indicates that the fluid has for other reasons in the meanwhile become purulent. When the withdrawn fluid of a primary puncture contains bacteria, the approach of empyema may be suspected. Martin even recommends the aspiration of such non-purulent infected effusions to anticipate the added difficulties of a subsequent empyema. Griffiths, on the contrary, found but two of one hundred and fifty-one cases of aspiration in which the fluid became purulent, one of which was complicated with tuberculosis and the other with erysipelas.

In a series of ten cases of bronchiectasis which have come under my observation, two had been previously diagnosed as empyema. There is no real excuse for this confusion. The chronicity of the usual case of bronchiectasis perhaps originating with influenzal pneumonia, with its exacerbations in the winter season simulating attacks of grippe, together with the presence of a definite and characteristic sputum containing influenza bacilli, should persuade the diagnostician to give less regard to the local signs usually present in the region of the lower lobe, which may somewhat resemble the signs of empyema.

A group of cases to which we have not referred is that in which a differential diagnosis between thoracic and abdominal involvement is often quite impossible. In such cases thoracic or abdominal breathing are often useful in determining whether the peritoneum or the pleura are involved. In a child recently seen at the Massachusetts General Hospital, both thoracic and abdominal symptoms were present. Abdominal pain had been present, and when appendical involvement was suspected, although the abdomen was not distended or rigid, and presented but a vague tenderness in the right half of the abdomen, the chest examination revealed slight dullness in the lower right chest, approaching flatness in the axillary line. The respiratory note was not clear, but the signs were so near the diaphragm that a diagnosis of pleural involvement was doubtful. I was sufficiently convinced that the chest signs were abnormal not to recommend a laparotomy. The latter was done, however, and although the appendix was normal, a small amount of thin sero-hemorraghic fluid was found in the peritoneal cavity. The child made a normal convalescence, and on the second day after operation the signs in the thorax were somewhat more marked. The surgeon who operated was guided to a great extent by the pure thoracic breathing. Although the pathological report of the fluid was negative, it is conceivable that this was an infection which involved both the pleura and peritoneum, and that the signs in the chest were due to a similar slight amount of fluid within the pleura. It should not be forgotten, however, that abdominal symptoms are frequent when purely secondary to pleural involvement. The abdominal breathing may be in such cases helpful at times, but I suspect that this symptom should be reserved as a late resort in doubtful cases and not as a pathognomonic indication.

The x-ray should be considered as a contributing means of diagnosis of purulent pleurisy. In a series of some seventy thoracic cases which I have followed, including bronchiectasis, empyema, abscess of the lung, pneumonia, malignant disease, syphilis and pneumothorax, I have come to believe that, as a means of differential diagnosis between purulent pleurisy and some other conditions, it is very unsatisfactory. If the empyema fluid is surrounded by pleura sufficiently thickened to cast a shadow, the extent or localization of the

empyema is not definite. If the pleura is thickened and an effusion is absent, a similar shadow is frequently seen in the plate. The shadow of a consolidated or resolving pneumonic process is frequently not unlike that produced by empyema fluid through the thickening of the pleura. The shadow of an interlobar empyema which is invariably associated with the thickening of the adjacent pleural layers again fails to aid in the localization of the septic material. The French method of slanting the rays in such a way as to throw the interlobar fissure into a linear shadow crossing the plate transversely is helpful in differential diagnosis, but with the usual anteroposterior direction of the rays the shadow of an interlobar empyema may be indistinguishable from an anterior or posterior localized empyema. It would seem, therefore, that the x-ray fails in those doubtful cases in which we need its help. The presence of pus can generally be demonstrated by a thoracentesis and other methods mentioned above, but in the differentiation between intrapulmonary and extrapulmonary pus, and between thickened pleura, fluid and pus, the radiograph may be very misleading. I have a group of plates from which one ignorant of the history and physical signs would be unable to differentiate between the various conditions which they were found to represent, and this because the shadows present were in most respects similar.

The history of the patient, in addition to the physical examination, should be the guide of the operator in determining the special form of treatment which is indicated, and it is important to decide what particular form of empyema is present before the most suitable procedure is determined. Frequently this decision is in doubt until pleurotomy has been performed.

BACTERIOLOGY.

I believe it to be a mistake to regard the bacteriology of purulent pleuritic effusions as an important factor in the selection of treatment. The fact that pure metapneumonic empyemas sometimes are cured spontaneously should be disregarded, and it would be well, furthermore, to forget that repeated aspirations of pneumococcus pus have also resulted in cure. Every unilateral empyema should be drained by an operation, whether the material obtained in diagnostic thoracentesis is pure pneumococcus, streptococcus, staphylococcus or the three combined. In reviewing the statistics of eight writers on the bacteriology of this subject, I am convinced that their conclusions regarding the relative frequency and virulency of the different infections are of interest in prognosis, but of no significance as regards treatment. Undoubtedly the pneumococcus infections are the most benign, but free drainage should nevertheless be employed. A streptococcus empyema secondary to streptococcus infection of the abdomen or elsewhere in the body is more virulent and more unfavorable in prognosis, but all forms of empyemata, regardless of their origin and bacteriology, should be recognized promptly and drained freely, re-expansion of the lung being the main purpose from the outset.

TREATMENT.

No better argument can be offered in behalf of early recognition of purulent pleurisy than the speedy recovery of most cases operated in the early stages. Patients so handled, though provided with inefficient drainage and lack of any kind of suction, frequently recover promptly for the reason that the lung is yet mobile, and can aid in the evacuation of residual pus. The literature on this subject abounds in reports of small groups of cases with uninterrupted recoveries of short duration, treated with or without particular methods of drainage or suction, and the recovery of such cases should be credited to their early recognition more than to the method of handling.

If a localized empyema or peripheral abscess is suspected and the combined methods of diagnosis intimate that the general pleural cavity is protected by adhesions, drainage and obliteration of the small cavity need alone be thought of. I prefer in such cases to resect a large enough area of ribs to enable free access to the cavity to stimulate growth of granulations or to suture in a skin and muscle flap to the base. If a true general empyema is present and promptly detected, as in the early stages of resolution of pneumonia, there is reason to believe that the lung not only retains its expansibility, but is not sufficiently adherent to prevent ready expansion. In such cases, it must be admitted that, with good drainage at the lowest possible point, prompt recoveries are common without artificial methods of expansion. I feel assured, on the contrary, that if such cases were drained with a tube and no dressing were applied covering the tube, in other words, were so handled that air could pass freely in and out of the chest, re-expansion of the lung would be impossible and that such a case would necessarily result in the permanent cavity formation—chronic empyema. If the diameter of the tube is equal to or greater than the diameter of the laryngeal opening, by the well-known principles of physiology the normal negative pressure within the thorax will be lost, and if atmospheric pressure exists within the chest, the normal elasticity of the lung in the absence of adhesions (which we assume in this group of cases) will result in its retraction. The explanation of the recovery in such cases without artificial suction, seen most commonly in children, rests in the fact that the drainage orifice is always covered with a pus-soaked mass of gauze which covers the opening more completely at inspiration, resulting in a partial negative pressure between the pleural layers which inflates the lung. All expiratory efforts with the glottis closed, as in coughing, produce a positive pressure within the lung of the unoperated chest, which, in turn, partially inflates the lung of the diseased side, at the same time forcing intrapleural air out of the drainage opening. When the latter is partially or completely closed at the next inspiration, the lung is more and more expanded, until adhesions

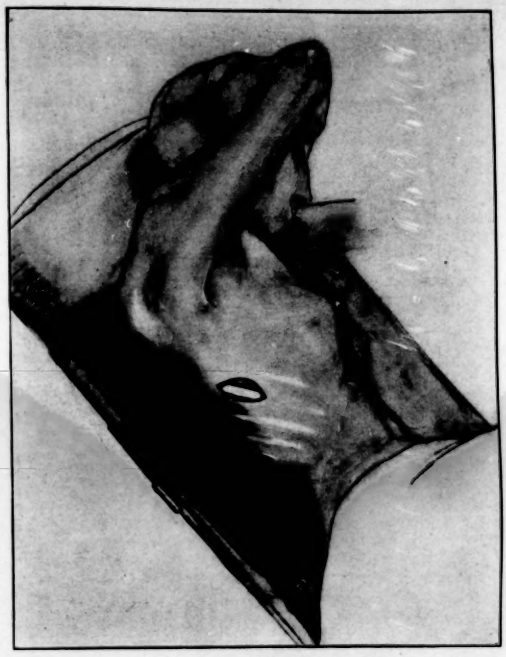


FIG. 1. To show semi-recumbent sitting position for empyema operations. Note sand-bag.



FIG. 2. Trephining the rib.



FIG. 3. Anesthetising the posterior periosteum and parietal pleura before removing bone button.



FIG. 4. To show author's threaded metal drainage tube screwed into the rib with lion forceps.

form in the expanded condition, thus gradually obliterating the pleural cavity, from which by the same process the pus has slowly been evacuated.

Granting, then, what I regard as an indisputable fact, that all cases of acute empyema with a drainage opening of 1 cm. would result in partial retraction of the lung and the existence of a permanent cavity if the thoracotomy wound is not partially or completely closed at inspiration, we are forced to admit that either a valvular action must be provided at the point of drainage, or actual suction applied. Many operators who disclaim the necessity of artificial suction are unmindful of the fact that in all of their cases the normal suction effect of the expansion of the chest wall has been preserved to a greater or less degree by the mere application of a gauze dressing to the drainage orifice. Some surgeons, including Cabot and Schede, recognizing the impossibility of utilizing chest wall suction and not relying upon the valvular action of the gauze dressing, have employed mackintosh or rubber bandages outside the gauze to make secure the air-tight closure of the opening at the time of inspiration. Despite the efficiency of gauze alone with a firm swathe in a certain number of cases, I believe that every case of acute empyema, though recognized early, should have at least this artificial support to the suction power of the chest wall.

A second group of empyema cases are those in which the acute stage has been neglected and the pus allowed to remain undrained for a longer period of time. Such cases may have a large accumulation of pus, and are ordinarily provided with free drainage, and the surgeon, conscious of his many successes with earlier cases without artificial suction, applies the usual gauze and binder dressing which, though constantly soaked with pus, does not aid in the re-expansion of the lung, and a chronic pus cavity results. Cases of this group are constantly being discharged from hospital wards to local physicians, the surgeons often remaining blissfully ignorant of the prolonged convalescence and necessity of further operation which frequently attend such cases.

To this group of cases belong those which may have been promptly recognized but insufficiently drained. It is the general practitioner and not the surgeon who is usually responsible for cases which come to further operation after a preliminary but incomplete drainage by the local physician. By this I mean that the drainage point selected has been too high to empty the cavity, and perhaps too small to allow the free escape of pus and fibrin. Frequently, too, an intercostal incision has been made without the introduction of a permanent trocar or tube, which incision often closes before the drainage is complete. In this way an acute, early detected empyema may be converted into our second group, and the lung, although originally non-adherent and expansible, has become adherent and is approaching the chronic form. Through the history and duration of the case information may thus be obtained as to which group of cases is to be dealt with by the operator. When this point remains yet in doubt, a conclusion should always be arrived at by introducing the finger into the thoracotomy wound to see if the lung is palpable. If, as is usually the case in early cases, the lung is felt touching the finger at inspiration or in gagging or coughing under light anesthesia, it may be assumed that the lung is not firmly adherent in a retracted condition. If, on the contrary, the lung is not felt when the examining finger plugs the chest wall opening, it is conclusive evidence that the lung is prevented from expanding and that simple methods of aiding the chest-wall suction must be supplanted by artificial suction and breathing exercises in the attempt to force the lung to its normal position. In the above different conditions I find the explanations of the much-disputed question as to why the lung can sometimes be felt partially refilling the pleural cavity as the pus escapes, and why the lung remains out of reach. It must not be forgotten that the size of the opening makes a difference in this digital exploration. If air can pass the examining finger freely, negative pressure at inspiration is practically lost and there is no force acting to re-expand the lung. In a recent discussion one surgeon took the view that the lung could always be felt "coming down" towards the opening. Another replied that he had not had this experience. These different views raise the question of how long had the pus been present before operation; did the examining finger plug the opening; and was there any source of inflation from the opposite lung by closure of the glottis in the spasms of light anesthesia?

If the history and digital examination prove a definite failure to re-expand, a curved instrument, such as a uterine sound, should be inserted to establish the position of the retracted lung, and to determine the extent of the cavity. Drainage adequate both as to size and position of opening is then of first importance. If the examination reveals that the bottom of the cavity is more than an inch below the level of the first opening, a second should be made at a dependent point guided by the examining finger within the thorax. Drainage from two openings may thus be obtained, or the upper one may be closed, though infection in the latter is likely to occur. I am not in sympathy with Fowler, who states that adhesions may occur in the costodiaphragmatic angle raising the level of the bottom of the cavity so that the drainage need not be at the lowest point. This advice is dangerous and more harm has been done by high drainage and the persistence of residual pus below the opening than by low drainage which may become occluded by adhesions.

When thus confronted with one of this group of cases in which the lung fails to re-expand, the nature of the difficulty should at this time be determined. If the duration of the disease and neglect of drainage have not been sufficient to classify the case as one of chronic empyema, and if exploration of the cavity indicates that the lung has not lost its expansibility and may not be permanently adherent, the indication is to remove the septic material. A second and equally important indication is the effort to encourage the

re-expansion of the lung. In certain cases the latter will be successful, while in others it may fail, but before concluding that the case must come to further operation for freeing the lung or obliterating the cavity, the patient should at least have the benefit of the doubt. If it is evident from the outset that artificial suction would be of no avail, the indication is drainage with a resection of ribs too great to permit of suction, but free enough to prevent the accumulation of a residual pus and to allow free introduction of large tubes, gauze and instruments by which the whole cavity may be cleansed. Such procedure is but preparatory for later operations which cannot be discussed in this paper on acute empyema; but whether these future operations be decortication of the visceral and parietal pleuræ to enable expansion of the lung, or extensive thoracoplastic operations to cave in the chest wall, or the Beck treatment by bismuth and vaseline injections, a free opening is essential to a sterilization of the cavity and a means of escape for an excess of bismuth in the Beck treatment. Such open evacuation results in a marked improvement in the patient's condition and resistance for further proceedings. But this very method of handling this group of cases to which chronic empyemas strictly belong is, alas, too often employed in our second group, which are by no means beyond the possibility of re-expansion by methods of artificial suction. To such treatment we shall now refer.

We have advocated in the early cases of the first group a persevering maintenance of the suction provided by the chest wall which is at least partially accomplished by a gauze dressing and a binder and better by the mackintosh dressing. These pseudo-suction methods are only advocated in those instances where better facilities for suction are not at hand. If the case is suitable for the use of negative pressure, and any suction device is available, its utilization is the best treatment.

Methods of suction which leak are the predominant ones in hospital clinics, but are better than no suction at all, such as is seen in the use of a spool drainage tube covered with a frequently renewed light gauze dressing and a loose cheesecloth swathe. One can often hear air rush in and out of the tube during the respiratory movements, and except in cases which we have classified in our group of chronic empyemas awaiting further operation, this sound is evidence of neglect.

The method of Buelau is an instance of a definite effort towards re-expansion. A certain amount of negative pressure is undoubtedly maintained by this method. The intercostal introduction of a large trocar which is replaced by a close-fitting tube is open to criticism because of the small caliber of the trocar which could be introduced between the ribs of certain cases. He furthermore depends entirely upon siphonage or suction by immersing the long pus-filled drainage tube in a basin of antiseptic solution on the floor. Although no actual suction is employed except the weight of the pus columns, air certainly cannot enter the thorax at inspiration, provided the tube connection with the chest wall is air-tight. A prevalent and justifiable opposition has developed against intercostal drainage of empyema, but if done by Buelau's trocar method it is less open to attack than when a simple intercostal incision is made and a tube carelessly inserted. Such drainage invariably results in leakage around the tube which renders the suction less adequate. It must be admitted that the tissues punctured by a large trocar, for the very reason that they tend to prevent leakage, at the same time tend to compress the tube. It is a simple method with some advantages, and must at least at the outset favor drainage and re-expansion.

The method of Perthes has attracted much attention and is commonly used in European clinics. Three to 5 cm. of one rib are resected, a rubber tube supplied with a collar is inserted, the region of the wound around the opening is smeared with lanoline to favor the adhesion of the collar to the skin, and wide flannel strips stitched to an occlusive dressing of rubber membrane are brought around the thorax. Lenhartz has favored the adhesion of the collar by sticking it down with gauze and collodion. A more rational method of rendering the thoracotomy air-tight is that of Cotton of cementing a rubber collar to the skin with gutta-percha paste. Perthes, in addition to abandoning the intercostal method of Buelau, is not satisfied with siphon drainage, but employs actual suction by means of a Bunsen air-pump. Perthes, by rib-resection and larger wound, sacrifices the tendency of the tissues to hug the drainage tube, as in Buelau's method, necessitating a somewhat complicated technic of applying an air-tight collar to hermetically seal the edges of the opening, nevertheless is able to introduce a larger tube which is undoubtedly more efficient in removing fibrin and lymph accumulations. Operators in this country who are convinced of the necessity of some method of artificial suction frequently excise a rib, insert an ordinary tube or spool, stitch the skin and muscle close to the drain, and attach some sucking device, such as a Politzer bag or a series of water-bottles for hydrostatic suction. But those who have followed the convalescence of cases so treated will doubtless agree that from a mechanical standpoint, to say nothing of surgical results, these methods have failed. I venture to suggest that the cases so treated which have not resulted in permanent cavities, and doubtless there have been many, were cases which would have resulted in drainage and re-expansion by the gauze and binder dressing. In other words, the apparatus has been given the credit of the cure when its mechanical action has usually been worthless.

We have not mentioned a method of valvular closure of the drainage tube at the time of inspiration. It should be borne in mind that all methods which we have considered are supposed at least to accomplish inspiratory closure, although the tube remains patent; but the resistance of the suction or siphon negative pressure being greater than the intrathoracic pressure, the end result is like unto the complete closure of the tube as in the valvular methods. Suction and siphonage,

however, continue during expiration aiding in the escape of pus, while in the valvular method gravity or forced expiration are alone depended upon to remove the fluid. Three English writers, Baylor, Hutton and Williams, have employed the valve idea. A gutta-percha nipple slit at the end and enclosed by a piece of glass tubing is employed by Hutton. Williams uses a rubber valve such as may be obtained from the air-bag of an ordinary spray-producer. Baylor employs a rubber valve enclosed within a metal casing.

Thiersch has simplified this valvular method by attaching to the Nélaton catheter, which is introduced between the ribs by the trocar method described by Buelau, a thin rubber tube which is easily collapsible by the negative intrathoracic pressure which is produced at inspiration.

To recapitulate, these and innumerable other devices have been employed in the drainage of empyema, all of them embodying one of three principles, — siphonage, suction and valvular action. Intercostal trocar puncture, and rib-resection "with or without" the use of a rubber collar, constitute the two main divisions in the method of thoracotomy.

In scrutinizing the various methods of siphon and suction drainage, some of which we have mentioned, it is evident that the key to the situation is the amount of leakage which may occur outside of the thoracotomy wound. Leakage elsewhere in the apparatus will also lead to unsatisfactory results, but we may presume that the usual point of leakage is around the drainage tube, a condition which I have repeatedly seen in different methods employed, and which doubtless occurs at the end of a greater or less period of time in all methods of drainage. Statistics given by the advocates of siphon drainage with a trocar puncture show that leakage may begin to occur within a week, necessitating the removal of the tube and its replacement by a larger one to fill the gap in the tissues which has resulted from the prolonged presence of a foreign body. *The permanency of the air-tight closure is undeniably the crux of the situation.* It is well known to those who have performed rib-rescetion and introduced tubes protected by rubber collars, rubber dam, adhesive plaster, lanoline, zinc ointment, gutta-percha, cement and other agents, that leakage is of frequent occurrence and that at best it can only be prevented by the most painstaking and continuous effort. The personality of the patient frequently determines the success. In a restless individual it is often impossible to maintain the intercostal tube or the larger tube through resected openings with their protective devices.

RIB-TREPHINING; A NEW METHOD.

The importance of maintaining air-tight suction leads me to advocate a method of rib-trephining, which I have employed in cases belonging to the first and second groups to which we have referred with greater success than with any of the other methods. When first employing this treatment, after trephining the rib I inserted a rubber tube selected to fit as tightly as possible, holding it in position by adhesive plaster and safety-pin or with a stitch through the skin. This prevented leakage for a number of days and was a great improvement on all other methods which I have employed. Even this leaked too early, and to prolong the period of air-tight closure I substituted a metal tube with a thread cut on one end and corrugated for the attachment of rubber tubing on the other. (Fig. 4.) These tubes are made in different sizes and of different lengths to suit the individual case, depending on the size of the rib and the depth of the chest wall tissues to be traversed. The less the tube projects beyond the skin, the better, as it receives better support by the soft tissues and the skin. It is not necessary to allow the corrugated portion to project beyond the skin sufficiently to support the end of the rubber tubing, for this may be applied to a depth within the soft tissues before the latter are sutured around it.

The position of the patient on the operating table has been the subject of considerable dispute. It is, of course, important that position should limit the excursion of the unoperated chest as little as possible. If, however, it is impossible to employ this position and at the same time have good exposure of the point selected for drainage, freedom of expansion of the unoperated lung should be sacrificed to good exposure. Operators have described cases in which they believed that death or collapse occurred because of the cramped condition of the sound side. I am of the opinion that the accidents in these cases have not been due to this fact, but rather to the method of anesthesia, or to the sudden introduction of air into the operated thorax. This sudden production of pneumothorax may cause no symptoms provided adhesions prevent the complete collapse of the lung. In most cases of purulent pleurisy, adhesions exist and the mediastinal pleura is thickened, rendering the mediastinum less prone to the oscillations which occur under normal conditions and which I have previously described.[1] A normal mediastinum may, following a sudden pneumothorax, bulge to the sound side at inspiration, thus restricting the expansion of the healthy lung. At expiration it may deviate to the opened side and retain an excess of residual air. Symptoms of dyspnea or collapse may thus come on in certain early cases of empyema, and although such cases are extremely rare, owing to the usual adhesions, it is conceivable that this rather than the cramping of the unoperated side during an empyema operation may explain the above fatalities.

As a safeguard against the ill-effects of sudden pneumothorax in patients susceptible to it, differential pressure may be used. In this series of thirty-four empyema operations I have employed a positive pressure cabinet in three cases and have always had apparatus at hand to use if necessary. When apparatus is not available for facilitating the work of the unoperated lung, and symptoms occur, the thoracotomy wound should be closed at the end of expiration with the hand

[1] "Experimental Surgery of the Lungs," Ann. Surg., February, 1908. "Surgery of the Lungs under Positive and Negative Pressure," Surg., Gynec. and Obstet., March, 1909.

or finger until a suction device can be applied. As will be seen later, the possibility of this pneumothorax accident is obviated by the rib-trephining method.

In a series of one hundred and fifty thoracic operations on animals in which for one reason or another the function of one lung has been seriously impaired, I have taken great pains to lay the convalescing animal on the operated side to enable the free expansion of the remaining lung. To my surprise the animals have generally rolled over to the opposite position when sufficiently recovered from their anesthesia, and have frequently lain upon the sound side from preference. I have operated on many thoracic cases in the human in which I have disregarded the sound chest by placing the patient in a lateral or even semi-prone position in order to have free access to the operative field, and with the intelligently applied anesthesia by Dr. Freeman Allen I have never seen dyspnea or cyanosis such as would occur if the unoperated lung were not functionating sufficiently for oxygenation of the blood. Doubtless a combination of ready accessibility of the operative field and an unrestricted attitude of the opposite chest is to be desired. Fig. 1 illustrates the position which I am in the habit of using with an ordinary operating table when no special table for thoracic surgery is available. The head of the table is raised both to favor respiratory function and to prevent the regurgitation of sputum. Inasmuch as the point of attack is ordinarily posterior to the anterior axillary line, the straight dorsal position hampers the operator. The patient is first placed in a lateral position, the lower buttock resting upon transversed sand-bag which is kept from sliding by tapes attached to the head of the table. While in this position the second long sand-bag is placed against the inclining portion and the patient allowed to fall back in a semidorsal position. Efforts to obtain this position by the use of rolled sheets and blankets are futile, and within a short time the patient's position is no longer the one desired.

ANESTHESIA.

General anesthesia is indicated in nervous patients unsuited for local anesthesia, but should, I believe, be avoided in most cases. When general anesthesia is indicated, the skilled anesthetist will choose that which seems the best suited to the particular patient. Nitrous oxide and oxygen I do not consider appropriate in thoracic conditions because of the tendency to cyanosis, which may be misleading, and because the already restricted air-supply should not be further reduced. Dr. Allen has convinced me of the success of the preliminary use of anesthol followed by ether and perhaps interrupted with chloroform. Under this selective anesthesia, with the concurrent use of oxygen applied to the end of the ether cone, in a series of thoracic operations I have not noted the least unfavorable symptom, thanks to its intelligent application by a skilled anesthetist.

Although general anesthesia when it is not abused rarely complicates the prognosis in empyema cases, local anesthesia is the methd of election. Cocaine can rarely be used in such operations even in mild solutions without causing some evidences of toxic absorption, and for this reason I prefer novocaine. The rib-trephining operation is especially adapted for local anesthesia as described below.

In selecting the point of drainage, no definite rules can be laid down, especially when limited areas of purulent pleurisy are to be drained. If, on the contrary, the empyema appears to be a general one, the drainage should be established at the point best adapted to the upright and not to the recumbent position. Thus the posterior or even the anterior axillary is preferable to the scapular line, provided the opening is made at the lowest possible point in the region of the costo-diaphragmatic angle. The eight rib in the posterior axillary line is a safe point, but the same rib in the scapular line is too high and may be encroached upon by the lower angle of the scapula, causing great inconvenience in the maintenance of tube or the changing of dressings. The region of scapula should never be selected in the rib-trephining method, inasmuch as the metal tube may be pressed upon accidentally or dislodged.

TECHNIC.

The skin is anesthetized, incised for two inches over the selected rib, dissection is then carried on under further local anesthesia. With gentle retraction of the edges of the wound a novocaine compress is applied to the periosteum with pressure for at least thirty seconds; this can then be scraped away for a length of 2 cm. without causing pain. A cranial trephine of the exact outside diameter of the tube to be inserted is then applied directly over the center of the rib (Fig. 3). Care should be taken to leave a bridge of rib at least 3 mm. in width above and below the trephine opening. In one case I neglected this and a fracture of the rib with dislodgment of the tube resulted. No pain is experienced by the cutting of the trephine until the posterior periosteum is reached. If pressure on the rib causes pain, it is because the empyematous area in that region with its concurrent pleurisy is in itself tender to pressure, as it is often found to be even by percussion. When this is the case, the rib may be supported by counter-traction; but with a sharp trephine gently applied the button may be removed with very slight pressure on the rib. When it is evident that the posterior periosteum is reached at any point in the trephine's circle, the needle should be inserted in the crack (Fig. 3) and the periosteum and over-sensitive pleura anesthetized, even if the solution is allowed to leak into the pleural cavity. Traction on the pleura caused by removal of the button is thus rendered painless, as is also exploratory puncture. After removing the button with mouse-tooth forceps, a Cabot trocar should be inserted into the pleural cavity to verify the selected point of drainage. This should be done with caution so that only a drop or two of pus escapes and does not come in contact with the superficial tissues. One of the metal tubes is then screwed

with the fingers into the trephine opening, and in spite of a lack of female thread the bone tissue is yielding enough to accept and hold the male thread, and for the last few turns the tube should be gripped with lion forceps. (Fig. 4.) It is quite surprising to find that the tube with its quarter-inch grip on the rib is held firmly and cannot be dislodged with the fingers. The muscles and skin, which should have been spared infection, are now sutured. A collodion dressing with a circular opening is then applied, and with the wound thus protected the complete opening of the pleura is indicated. This can best be done by the use of a pointed or blunt bistoury or a long-bladed scalpel, which is passed through the metal tube to the pleura. Great care should be taken to do more than merely incise the pleura, the knife being used for the purpose of excising a section of pleura the size of the tube. During this process, pus, of course, escapes freely, but runs directly into a basin and need not come in contact either with the skin or sterile sheet or even drench the floor. A rubber tube some six inches in length with a clamp at its outer end is then slipped over the corrugated portion of the metal tube and tied. No outside dressing or swathe is needed, and after sufficient removal of the pus contents at the time of operation the clamp is reapplied to the rubber tube and the patient sent to the ward.

It may be noted that by this procedure infection of the soft parts can and should be prevented, and that this avoidance of infection favors the tighter closure of the soft tissues around the tube, even when necrosis may commence within the rib.

An advantage of some importance which should be mentioned in this connection is that while pus is allowed to escape and aided in so doing by the subsequent methods of suction, air has at no time been allowed to enter the cavity. In other words, pneumothorax does not occur. In most of these cases the pus is under some tension, especially at expiration, and it will continue to fill the tube both at inspiration and expiration until the retained pus is no longer under pressure. For this reason it is advisable to discontinue the drainage of pus through the metal and rubber tube in the operating-room just as soon as its free flow is established, and before the tension is lost and air can enter at inspiration. The tube is clamped and the patient returned to bed, the clamp not being removed again until either siphon or suction drainage is established.

Having thus established an air-tight thoracotomy wound, a great effort should be made to avoid leakage in any part of the apparatus. In most forms of suction drainage a reservoir bottle is inserted between the tube leading to the chest and the suction device. This apparatus has failed because of leakage at this reservoir due to the fact that bottles with air-tight tube openings are not easy to procure. A common method is to bore two holes in a rubber cork wired into a wide-mouthed bottle, or to use a two-necked Wolff bottle with afferent and efferent tubes through air-tight corks. These forms of apparatus are habitually unsatisfactory in a hospital clinic, and in my cases I have substituted a piece of glass tubing two inches in diameter and ten inches long tapered to nipples at either end over which rubber tubing may be slipped. This device has the added convenience of keeping out of harm's way and of being applicable to ambulatory patients.

Having now two segments of the suction apparatus air-tight, any form of suction may be attached to the distal end of the reservoir. The choice of mechanism should depend upon the means at hand. If a water faucet is handy, a Bunsen air-pump as employed by Perthes is a steady and excellent means. A straight tube leading from the reservoir to a bottle of water on the floor can be attached producing a siphon suction. A small bivalve hand-pump, such as employed in aspirators, can be connected with the reservoir. With such a pump attached, sufficient negative pressure will be maintained within the reservoir to accomplish suction drainage. A small, noiseless, rotary air-pump can be likewise attached with electric connections to the lamp socket, providing a low but constant negative suction. Another commonly used suction device is a pair of bottles in which hydrostatic pressure is produced by allowing water to flow from one to the other, the two being at different levels. If the corks and tubes in such bottles are air-tight, the water will exert its suction but remains at a given level, thus avoiding the constant reversal of the bottles when one is filled and the other empty. If such bottles are used, the importance of their being hermetically sealed cannot be too strongly emphasized.

The shortest duration of convalescence which I have obtained by this method has been four weeks. In one case the tube remained fixed without leakage for three weeks, in which time the expected results will have been obtained. In the one fatal case thus treated in which death was due to an erysipelas infection two weeks after operation, an autopsy was obtained. The lung was found to be entirely re-expanded and adherent to the chest wall in its normal position. In this case previous to operation the chest was flat to percussion as high as the fourth behind and the third rib in front. Three pints of pus were evacuated at operation and during the two subsequent days. The air-tight suction has been sufficiently effective to withdraw through the tube clots of fibrin four inches long, and although occlusion of the tube may occur, there is less danger of it than in any other method.

CONCLUSIONS.

Cases of purulent pleurisy may be divided into three classes: Acute, subacute and chronic, the the first and second corresponding to the two groups which we have considered in this paper.

Suction or siphon drainage aid in the re-expansion of the lung in all cases of the first group; in most of the second; probably in none of the third.

Suction even though inefficient is better than no suction provided suction is constantly applied.

Prevention of leakage requires above all things

an air-tight thoracotomy wound. This is best obtained by the rib-trephining method with the application of a threaded metal tube.

The particular form of suction device applied to the air-tight wound will depend upon the means at hand.

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SCOLIOSIS.

BY E. H. BRADFORD, M.D., AND ROBERT SOUTTER, M.D.

THE practitioner of medicine is in need of definite information as to the results to be obtained in the treatment of scoliosis, as well as to the best method of management of scoliotic cases. Textbooks instruct students; monographs, reports of investigations, aid specialists, but the practitioner needs to know what to advise a mother as to the management of the case of a daughter, afflicted with a crooked back, as to the expectation of benefit which can be offered and the necessary cost of treatment in time or money.

For practical purposes cases with curvature of the spine can be classed as: *First*, the weak backs; *second*, the curved backs; *third*, the twisted backs.

It is the latter class, or true scoliosis (i. e., spinal curve with structural change in cartilage, ligaments or bone), which is of special importance. The questions in regard to this class are:

(1) Whether a scoliotic case is likely to grow worse if untreated;

(2) Whether it is likely to grow better if untreated; and

(3) Whether the curve can be corrected under treatment.

In answer to these questions, it can be stated definitely that every case of true scoliosis, i. e., a twisted back in a young growing girl, is in danger of an increase of the deformity, the danger being in proportion to the extent of the existing deformity, the youth of the child, i. e., the num-

ber of growing years. The general condition of the patient is also a factor; the weaker the child, the greater the danger.

It can be said that the curve will not grow better if untreated. The superimposed weight of the head, arms and upper part of the trunk with structural changes of bone already established.

The nature of scoliosis has been accurately defined by Nicoladoni, and it may be well for the practitioner to bear in mind his definition: "Scoliosis is a deformity caused by excentric weighting

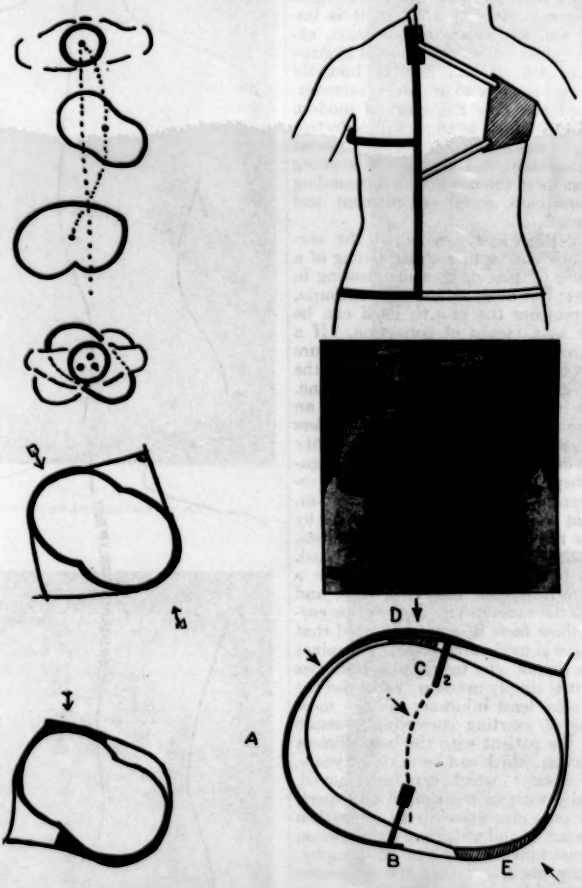


FIG. 1.
Illustrating points of pressure required for correction in an ordinary case of structural scoliosis.

presents always a force which tends to aggravate the deformity. The weight falls wrong, the spine being out of line, and it is difficult if a twist in the spine is present, and the patient is active, to prevent the superimposed weight from falling wrong.

The tendency to correct growth inherent in health may prevent an increase of the curve, but it is not sufficient to overcome a curve and twist of the spinal column; this leads to a twist as a result of the sides yielding or twisting, which consists of a movement in rotation of the individual vertebræ to the convexity of the curve. Finally, there is a distortion of bone structure, disarranging the arrangement of the vertebral planes horizontally, vertically and saggitally, and of the symmetrical shape of the vertebræ."

As Feiss has pointed out, there is, in addition

to the original influence which contorts, a distorting force from the patient's attempt to balance and hold the trunk in line.

In answer to the question whether cases of fixed curve can be successfully treated, many surgeons have been led by the complexity of the mechanical problem to regard scoliosis as not within the region of practical therapy, arguing that as it is impossible to control the necessary condition, expectancy and an observance of the laws of hygiene with gymnastics are all that can be honestly advised. Such an acceptance of defeat, however, is not in accordance with the spirit of modern surgery, nor with the facts as at present collected. It is evident, however, that proper treatment should be a consistent one during the growing years, and must meet the conditions surrounding each case, home care, social environment and financial resources.

Mr. Heather Bigg aptly compared the correction of scoliotic curves to a straightening of a curved cucumber by placing it while growing in a glass cylinder; as long as growth continues, under proper pressure the growth itself can be made to serve as a means of correction. If a young tree is growing crookedly and side pressure is applied, the tree becomes straighter, and the same may be regarded as true of a growing spine. Nor is stiffness in the curve to be regarded as an obstacle to correction, for professional tumblers and acrobats are able to increase the flexibility of the spine at desired points. Even some irregularity in the shape of growing bone cannot be regarded as preventing the possibility of correction. It is known that bone can be changed in shape by pressure, as the flat-headed Indians, and dentists, altering the shape of the jaw, have demonstrated. Experimenters have shown that by pressure a spinal curvature can be developed in dogs, and inferentially by the same means they can be corrected. From these facts it may be claimed that structural changes of moderate degree in the spines of growing girls do not offer insuperable obstacles to correction; it is simply necessary to devise the least objectionable, least injurious and the most effective means of exerting correcting pressure and furnishing the patient with the best efficient pressure apparatus; which can be worn for years, willingly if necessary; which can be removed, and applied daily without the skill of an expert; which permits muscular exercises to strengthen the shrunken muscles, and which will not imprison and weaken important muscles through atrophy. It is particularly important that the apparatus should not be unsightly or uncomfortable, for the factor of the patient's willing co-operation and good will are necessary in a treatment which needs to be carried on for a long time. The natural vanity of a young girl is needed as an aid rather than as an obstacle in treatment, which must be carried on with determination and persistency for years.

There are many appliances which are used for this purpose, of varying efficiency. The writer for the last few years has made use of one which seems to present some advantage. The nature of the appliance can be more readily seen by the illustrations than by any description.

The appliance is light and not at all disfiguring; it can be worn under the clothes, and the amount

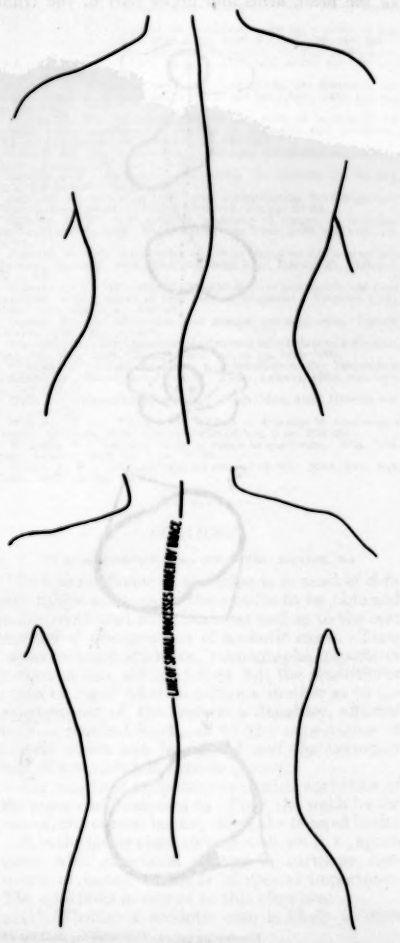


FIG. 3.

Tracings of case shown in Fig. 2 before and after application of brace.

of pressure which can be exerted by this apparatus is more than is ordinarily furnished by a removable plaster jacket.

The appliance is an ambulatory one and can be worn during the day time; in severe cases, however, it is important that there should be cor-



FIG. 2, *A*.
Case of scoliosis before application of brace.



FIG. 2, *B*.
Same case brace applied. Front view.



FIG 2, *B*.
Same case brace applied.

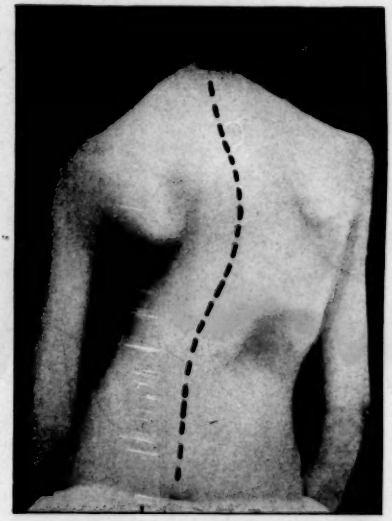


FIG. 4, *A*.
Resistant lateral curvature in a girl of fourteen before treatment with plaster jackets.

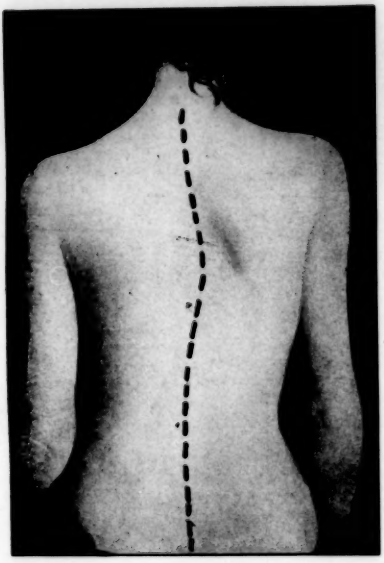


FIG. 4, *B*.

Same case after three month's treatment with two plaster jackets.

rection at night as well as day, and as the trunk changes its shape in the recumbent and standing position to a degree, a night brace can be made to exert a more effective lateral pressure, the patient being recumbent, than is possible with a day brace, while the patient is erect. For this purpose plaster or leather removable appliances with attachments furnishing increased pressure at desired parts made from a corrected plaster cast will serve; they should be made long, holding the pelvis and upper thighs, and should reach to the neck.

The most effective method of straightening a scoliotic curve is undoubtedly that exerting constant pressure by means of a permanently worn corrective plaster jacket. As it is non-removable, it exerts a constant correcting force.

There are many ways in use for the application of corrective plaster jackets. The method preferred by the writer has already been described and need be mentioned here briefly. It consists in placing the patient during the application of the jacket in as corrected a position as is practicable by means of straps pressing upon the convexity of the patient's trunk and connected with the four uprights of a gas-pipe frame, in the center of which the patient is seated.

The amount of correction at any one sitting is to be gauged by the patient's endurance, as well as by the stiffness of the curve.

It is manifest that a plaster jacket should be arranged so as not to press upon the concavities, and, if the curve is not a low one, that the jacket should reach above the shoulder and include the neck. By the judicious cutting of windows, room for expansion of the trunk concavities can be given without interfering with the corrective value of the corset.

It is inadvisable to continue the use of a non-removable stiff corset for longer than three months, but constant pressure correction should be continued in all resistant cases for a long time after the removal of a permanent jacket, usually during the period of active growth.

Removable plaster, leather or celluloid jackets are of service, but the brace mentioned by the writer has certain evident advantages and its efficiency demonstrated to the writer after through trial in the last three years.

The value of daily special exercise is incontestable. Exercises are to be used not only to strengthen the muscles, but also to restore flexibility to contracted portions of the spine. The subject of special exercises, however, is one which does not come in the scope of the present paper. Such exercises can be made so as to require little apparatus, and directions can be given to an intelligent mother or nurse, with change from time to time with the child's growth. The exercises should be taken daily and can be in part done at home. Although these exercises may be simple in execution, they need to be carefully planned for a definite purpose, changing with the changes in the patient's condition. For this reason they require careful direction from time to time from a surgeon of experience in treating of scoliosis in its different stages and development. The directions for changes in exercises in the use or removal of pressure appliances should be given at stated intervals, varying in frequency with the condition of the patient.

During the past thirty years a number of cases of scoliosis have presented themselves for treatment to the writer. In many of these careful record was made as to the progress and results of treatment. In some cases the condition several years after treatment had ended was noted. All known means of treatment were tried in these cases, and in many the value of new and suggested methods was tested. Out of several hundred cases, the following have been selected as illustrative of the different measures which will be found beneficial.

Light case with structural changes treated by exercises:

Case 1. F., young lady sixteen years of age, with curve as indicated in the accompanying measurement record, was treated by flexibility and development exercises for a few times a week, for a year, with exercises at home. The effect is indicated by the measurements. The patient was seen again when a woman of twenty-eight and her back carefully measured, showing that the improvement gained in the year of treatment had persisted. She was in excellent health and was without noticeable deformity.

Case with slight structural change:

Case 2. B., twenty years of age, with slight structural curve, treated for a year by corrective gymnastics and the application of a light brace for a short time. Seen two years after the cessation of treatment, while a college student. The gain in correction from treatment remained after the cessation of treatment.

Slight stiff curve treated by exercises:

Case 3. N., a lady of twenty-eight, with a slightly disfiguring curve causing projection of the right hip and a slight prominence of the shoulder, with the annoyance in the fitting of the dress and the necessity of wearing a pad. This patient desired every effort to be made to bring her figure to as near a normal standard as possible. As the curve showed structural changes no expectation of benefit from treatment was entertained, but flexibility exercises were tried as an experiment and carried on with assiduity by the patient, except with such interruptions as were occasioned by summer travel. At the end of two years marked improvement was indicated by the measurements which were taken. This was so evident that it was noted by a dressmaker, who furnished her with a dress after an interval of two years, a marked change in the measurements being needed for the hip and shoulder. No padding was required, though needed two years before this, and the patient, both on inspection and measurement, showed apparent perfect equality of the hip lines; the shoulders became even, and the figure, even to a critical observer, was admirable when seen in the ordinary costume without pads. The treatment was helped by some arrangement of the corsets which were worn part of the time each day. Correction would not have been possible without the pertinacity of the patient, who devoted herself to the correction of the figure with an assiduity comparable to that of a professional dancer, or an athlete anxious to preserve agility and form. The case is of interest as showing what can be done in exceptional instances. The benefit persisted several years after the cessation of active treatment, the patient keeping up daily light home gymnastics.

Rigid fixed curve in an adult, temporarily benefited by correction exercises:

CASE 4. Mrs. H., forty years of age, afflicted with a severe curve with marked rotation, causing great disfigurement, and limiting comfort and activity, with pain when superimposed weight was applied. The patient for a few months submitted herself to correction treatment, chiefly with the use of a recumbent correction with a lever pressure applied two or three times a week. Marked temporary benefit was obtained, as was shown by the relief from discomfort and pain in walking. The benefit was temporary and followed each treatment. This benefit persisted for a short time after the cessation of treatment, which was not carried on for more than a few weeks. The patient was seen two or three years later and her condition of disability had not been permanently relieved.

Correction by plaster Paris jackets:

CASE 5. W., a girl of fourteen with bad structural curve, treated for four months by corrective plaster jackets with the result indicated in the accompanying illustration. Four jackets were applied, the first with a certain amount of force. At the end of this time a leather jacket was worn for a short time and her treatment was discontinued. The patient was seen two years later and had relapsed to nearly though not into quite as bad a position as before treatment. The subsequent course of the case was not known.

Gymnastic treatment of scoliosis:

CASE 6. W., a strong girl of fourteen, was presented with a marked lumbar curve with some structural change. The patient was treated purely by gymnastics, which were carried on for several years with care. When older, heavy gymnastics, the use of 20- and 40-lb. dumb-bells, was carried on for several months The condition of the patient, when seen three or four years later, just before marriage, showed that the back was in excellent condition, with slight projection of one hip. There had been no increase of the lumbar curve. The patient's strength and carriage was excellent, without noticeable deformity except when the bare back was examined. This case illustrates the fact that structural curves may not increase and that the back may be strengthened and a practical benefit obtained by gymnastics.

CASE 7. P., a girl of twelve, rapidly growing, was treated in the same way as above, dumb-bell gymnastics being enforced and carried out for two years at home, under occasional direction, changing the exercises from time to time. The curve was a scoliotic curve with rotation, and the growth was rapid. The patient was seen four years afterwards and there had been an improvement in the figure, both in strength and contour. Her back was strong and in good condition, without noticeable deformity except when the bare back was examined.

Curve in a growing boy improved during growth, without treatment:

CASE 8. P., a boy of twelve, growing rapidly, presented an habitual curve without evidence of structural change. As treatment was not feasible, he was told to report occasionally for examination. At the end of two years his figure by the natural process of growth and the increased strength due to growth, or athletic activity, had changed in a way so that the curve had become less noticeable and was not sufficiently serious to demand treatment.

Cases treated by means of constant use of corrective braces:

CASE 9. B., a girl of fourteen, with marked curve, treated by means of the application and constant use of light apparatus such as is shown in the accompanying illustration. After a year's treatment improvement was noticeable, but the use of some form of pressure apparatus was continued.

CASE 10. R., a child of six, with bad scoliotic curve with structural changes. Treated by means of a pressure apparatus for six months, showing at the end of that time improvement in figure. The case is still wearing apparatus, which is changed as the figure improves.

CASE 11. P., badly deformed girl of eight; treated by the constant use of plaster and leather jackets for years. The deformity in this case followed some muscular distrophies of a nervous origin. Under the constant use of plaster and leather jackets for years, the patient's figure improved decidedly. Forced correction with plaster jackets was tried for a month, with the patient placed in bed, wearing a recumbent plaster correcting jacket, with improvement. The patient presents an illustration of improvement rather than cure of scoliosis.

CASE 12. G., a growing boy of sixteen, healthy and strong, with a bad curve, treated by means of corrective plaster jackets and leather jackets for a year, followed by the application of a brace, with marked benefit, which persisted six months after the cessation of treatment.

These cases are sufficient to indicate that a certain amount of benefit can be obtained in almost all cases of scoliosis by treatment; that in growing children benefit can be promised by assiduous treatment, even in the marked types of deformity, such benefit being permanent.

The essentials in treatment of scoliosis can be mentioned as follows:

First: A careful examination of the condition of the back, not only as to the curves and contour, also to the normal rigidity and lack of strength of the back muscles.

Second: Where needed, the use of such exercises as will strengthen the muscles, and such flexibility exercises as will correct abnormal stiffness. These flexibility exercises must be carefully applied so as to stretch at the part of the maximum stiffness, and not increase the flexibility of the flexible portions of the spine.

Third: In the more severe cases the constant use of some form of pressure appliance, with the pressure applied to the convexity of the curve, and without pressure on the concavities.

Fourth: These cases need oversight and direction at stated intervals during a long period. That is, during the rapidly growing years such oversight and direction should be given by some one familiar with the course of affections of this class. Such patients also need the constant direction of a parent or nurse or physician who will enforce strict and persistent attention to the details of treatment, and of a family physician who will pay attention to the observance of the laws of health, diet, metabolism, etc.

Fifth: The affection is not to be regarded as a disease, but as a fault in growth, and for this reason care is needed for the patient during the growing years.

The combined efforts of a family physician and expert specialist are of benefit in cases with this distortion and gratifying results may be expected to reward persistent efforts.

ON THE ABSORPTION OF PROTEIN AND FAT IN PULMONARY TUBERCULOSIS.

BY A. E. AUSTIN, MABEL ORDWAY AND RUTH MONTAGUE, BOSTON.

COMPARATIVELY few efforts have been made to study the metabolism of phthisical patients, possibly because of the fact that before the institution of sanatoria for the treatment of this class of patients it was difficult to control the food and excretions for analysis; since the establishlishment of these sanatoria, however, these difficulties have been overcome and, furthermore, we have had an opportunity to study the effects of what may be called supernutrition, since, in the efforts to overcome the emaciation associated with this disease, a dietary containing 5,000 calories is often offered the patient in twenty-four hours. Among the earlier efforts in this direction was one by Goodbody, Bardswell and Chapman in which, while the average daily food contained 3,500 calories, in some instances it was carried to 4,187 calories, and in one instance to 5,026. Fat was unusually well utilized; in one individual, with an ingestion of 231.32 gm. of fat during twenty-four hours, 96.41% was absorbed. It was found that when a largely increased amount of fat was given a healthy individual, used as a control, the feces showed a large increase in this ingredient, but this was not true of the tuberculous. Vannini and Collina have also investigated the metabolism of three sufferers from pulmonary tuberculosis and found that when the gastro-intestinal tract was unaffected, the absorption did not differ much from that of the normal individual; there was, however, in two cases, a greater loss of nitrogenous material in the feces than is customary, but they were only using a diet containing 70 gm. of albumin and a calory content of only 1,800. The fat in the feces varied from 8.91% to 14.45% of that contained in the food, a result much inferior to that found by the previous authors, who found a loss of only 3.59%; the difference depends on the amount given, and we may conclude that with an increase in the amount of fat ingested there is apparently a less percentage of loss.

NATURE AND PERIOD OF EXPERIMENT.

Owing to the courtesy of Dr. Dunham, three patients in the Massachusetts State Sanatorium at Rutland were placed at our disposal, and apart from some change in diet, all other features pertaining to the regimen there as to exercise, baths, etc., were observed by the patients under investigation. F. G., one of the patients in question, weighed at the beginning of the investigation 64.7 kgm. and had a temperature of 100.5°. At its close his weight was 68.07 kgm. and his temperature, 98.4°. The second, A. C., began with a weight of 67.5 kgm. and a temperature of 98.6°, and concluded with the weight of 67.6 kgm. and a temperature of 98.6°. A record of McI.'s weight and temperature was apparently not kept. All three were placed on the ordinary house diet for a period of eleven days in order to accustom the individuals to the increased food, but the portion of every article was weighed which was eaten by each individual in its cooked condition, and from the tables of Atwater its protein, fat, carbohydrate and calory value determined. The average of these eleven days was a daily amount of protein, 172.39 gm.; of fat, 176.45 gm.; of carbohydrate, 420.85 gm. and 3,774.12 calories. Then followed a period of five days when the protein was increased and all portions carefully weighed and their constituents calculated as before; during this period, the urine and feces were collected and the nitrogen of the former and the nitrogen and fat of the latter quantitatively determined; the nitrogen was determined by Kjeldahl and the fat by extraction of the dried feces with ether in a Soxhlet apparatus and the residue weighed; double estimations were always made and the average of only two fairly closely corresponding results taken. Unfortunately in the transportation of the urine from Rutland to the chemical laboratory of Tufts Medical School, more or less decomposition of the urine took place and nitrogen was lost as ammonia, so that in this respect alone the results were valueless and are omitted. The diet was now changed, and, by means of olive oil, the amount of fat given was increased without lowering the amount of nitrogen, and, after two days on this diet, a collection of urine and feces was made which were analyzed quantitatively as before for five days. During this period, in order to increase the amount of fat, olive oil was given daily in amounts from 45 to 60 gm. The patients were kept upon this diet until Feb. 25, when another period of five days was inserted during which, by the use of olive oil, cod-liver oil emulsion and butter, the fat ingested was largely increased and again the feces examined quantitatively for fat and nitrogen. During the second period, hyocholalic acid which is prepared and sold by Rufus Crowell Co. under the name of Colalin, and included in the list of new remedies by the Council of Pharmacy of the American Medical Association, was given in doses of 1½ gr. daily. Thus we have the opportunity of comparing the absorption of fat in this period of moderately increased fat consumption with slightly increased fat in the first period and excessively increased fat in the third period. v. Fuerth and Schuetz have shown that the favorable effect that the bile salts have upon the splitting of fats is due to the cholalic acid. It has also been found that 50% to 80% of the cholalic acid which enters the intestine from the bile duct is reabsorbed. Whether the hyocholalic acid, which is unlike in many respects the bovine cholalic acid, follows this law, it is difficult to say; at least in two individuals with biliary fistulæ established for the cure of cholelithiasis, no cholalic acid could be precipitated from the bile which was secreted, nor after the ingestion of hyocholalic was there any more evidence of the presence of a cholalic acid; of course it would not be safe to say that it was not present, but it must have been very largely diminished, and certainly the evidence was against the absorption of the foreign bile acid whatever may happen to the native acid. In order to present the protein, fat, carbohydrate

and calory value of the food of these three patients during the three periods mentioned of five days each, the following table is appended:

C. (L. M. Annex.)

Average per day.	Proteins.	Fats.	Carbohydrates.	Calories.
Period 1. Feb. 2 through Feb. 6.	207.63	162.02	558.743	4632.9153
Period 2. Feb. 8 through Feb. 12.	199.16	192.83	533.58	4797.553
Period 3. Feb. 25 through March 1.	197.77	354.88	541.83	6332.744
G. (Ward E.)				
Period 1. Feb. 2 through Feb. 6.	206.76	160.57	477.58	4299.095
Period 2. Feb. 8 through Feb. 12.	223.00	214.65	413.6	4577.305
Period 3. Feb. 25 through March 1.	186.97	425.88	461.66	6619.067
McI. (Ward E.)				
Period 1. Feb. 2 through Feb. 6.	185.72	158.71	427.3	3989.385
Period 2. Feb. 8 through Feb. 12.	181.02	212.375	312.23	3997.412
Period 3. Feb. 25 through March 1.	159.52	371.2	276.2	5238.59

The amount of albumin to be given to a healthy individual is stated as from 1 to 5 gm. per day, and kilo and the calories as 35, based upon the same factors, so that upon this standard, calculated upon C.'s weight, the upper limit of protein feeding would be 307.5 gm., a limit reached by none of the patients during this series of experiments. The patients were allowed to satisfy their appetites as far as quantity of food went, being restricted only in the character of the food, but each article was carefully weighed, so that the amounts vary; for instance, A. C. consumed more food than his companions, but the increase consisted in the greater amount of carbohydrate of which he partook. Furthermore, while the amount of protein remains practically the same in all three periods in A. C.'s dietary, the other two compensated for the increase in fat by diminishing their protein, and McI. by taking less carbohydrate as well. In the extraction of fat from the feces no effort was made to separate the fatty acids from the neutral fats, but the mass was always made acid before the extraction, so that the fatty acids in the shape of soaps should be included. The lecithin, too, of the food, a portion of which escapes absorption, is also included, but this portion must always be small since the major part of the phosphorus which it contains is always found in the urine, showing its disintegration and absorption.

The eliminated nitrogen, too, in the feces comes from two sources, — the residue of the digestive secretions and the desquamated intestinal epithelium as well as from the unabsorbed protein of the food, but it is practically impossible to separate one from the other, so that it is usually reckoned in the nitrogen from waste food products. No attempt was made to determine the weight of the moist feces, but the entire five days' quantity was placed in a weighed evaporating dish and, with the aid of alcohol, was dried to a constant weight and then aliquot parts were taken for the separate estimations. This method has been recently criticised because there is danger of losing a portion of the volatile nitrogenous products, chiefly ammonia; this was avoided as much as possible by the addition of acid when strictly alkaline; the weighing and separation of moist feces is associated with so many difficulties, and from the unequal distribution of the water is so inaccurate, that the former method, in spite of the loss, is the more accurate. A table of the average daily elimination of fat and nitrogen in the feces for the five days is appended. As is well known, the percentage of loss of fat and protein or, rather, nitrogen, varies very largely with the character of food, its preparation and amount; taking first, for instance, the nitrogen loss in the feces, though the nitrogen comes both from the food remnants and from the intestinal secretions as well as from the desquamated epithelium, it is very difficult to separate these two factors, so that it is permissible to compare the intake with that which is eliminated. Compared in this way, it is found that the percentage of

C. (L. M. Annex.)

Average per day.	Feces.	Nitrogen.	Fat.
Period 1. Feb. 2 through Feb. 6.	19.836	.3925	1.8308
Period 2. Feb. 8 through Feb. 12.	9.810	.3606	2.0002
Period 2. Feb. 25 through March 1.	8.209	.3960	1.6647
G. (Ward E.)			
Period 1. Feb. 2 through Feb. 6.	34.36	.4933	5.0820
Period 2. Feb. 8 through Feb. 12.	18.50	.5469	3.9003
Period 3. Feb. 25 through March 1.	41.298	1.2612	5.565
McI. (Ward E.)			
Period 1. Feb. 2 through Feb. 6.	37.960	.6473	4.9217
Period 2. Feb. 8 through Feb. 12.	30.715	1.0316	6.4562
Period 3. Feb. 25 through March 1.	25.812	.9108	4.8149

loss is much greater when the nitrogen intake is small than when it is large; furthermore, with a diet containing a large amount of nucleo-proteids like liver and sweetbreads, the comparative nitrogen loss is much greater, and finally on the same diet Von Noorden found variations of from 4% to 10%, and the loss also might vary from time to time in the same individual. Magnus-Levy found that on a mixed diet, containing 100 gm. of protein, the loss in the feces was from 1 to 2 gm., making a loss of 6% to 10%. In the cases reported here, however, it is impossible to compare the loss with that of average protein ration for the reason stated above, and we must look for examples of increased protein feeding; such an example can be found in the experiments of Luethje and Berger on an individual convalescing from typhoid fever who ingested protein daily containing 54.6 gm. of nitrogen with a loss in the feces of 3.4 gm., or a procentual loss of 6.2%; of free fatty acids tend also to increase the absorption of fat, but the suggestion of Von Mering that free oleic acid be added to fats is not absolutely necessary, since as far as is known the healthy intestine is able to hydrolize fat in unlimited quantities, nor is this power apparently lost in those chronic cases where cod liver oil is used. Even where the steapsin is diminished or lacking through disease of the pancreas, the intestinal bacteria seem able to split a large proportion of the ingested fat. It is only in forced fat feeding that the inability to split the fat would seem to be suspected, and here, where fat to the extent of 425 gm. daily in the case of G. was ingested, there appeared no great increase in the percentage of loss.

A table is here appended showing the percentage of loss in the feces of both nitrogen and fat, arranged according to the succession of periods in each patient. From this we are at first attracted by the astonishingly small percentage of loss in

Period.	Nitrogen intake.	Nitrogen in feces.	Per cent nitrogen lost in feces.	Fat intake.	Fat in feces.	Per cent fat lost in feces.
			C.			
1.	33.22	.3925	1.18	162.02	1.8308	1.13
2.	31.865	.3606	1.13	192.83	2.002	1.03
3.	31.64	.396	1.25	354.88	1.664	.47
			G.			
1.	33.081	.4933	1.49	160.54	5.082	3.65
2.	35.504	.5469	1.53	214.65	3.9003	1.81
3.	29.915	1.2612	4.21	425.88	5.1565	1.21
			McI.			
1.	29.715	.6473	2.17	158.71	4.9217	3.1
2.	28.963	1.0316	3.56	212.375	6.4562	3.04
3.	25.523	.9108	3.56	371.2	4.8149	1.29

the increase of weight of the individual during a period of seven days was 900 gm., while C. in a five days' period with 33.22 gm. of nitrogen in the daily intake of protein, and a loss of 0.392 gm., put on 659 gm. weight; the daily amount taken on by C. was 131 gm., and by the convalescent from typhoid, 127 gm. With the fat, too, there is no disappearance during fasting; during a prolonged fast Cetti eliminated 1.3 gm. of fat per day and Breithaupt, 0.57 gm. Rubner as well as Klemperer has found that if the fat be in assimilable form, like butter, olive oil or cod liver oil, a human can take 200 gm. of fat with a loss of only 2 to 3%; Landergren also found that as much as 340 gm. of fat could be taken by a human, if mixed with a little alcohol and mucilage, with a loss of only 4%. The percentage of loss of fat also follows the same law as that of protein; that is, as the amount of fat taken increases, the procentual loss becomes less and less up to a certain point which has apparently been never fully determined. It has been established that if the day's ration contain but 25 to 40 gm. of fat, the loss may be from 10 to 15%; if, however, the amount be increased to 80 to 100 gm., the loss will be only 2 to 4%. The melting point of the fat also affects its absorbtion; the fluid oils are much more absorbable than the solid fats and, what is more important, the addition of a fluid fat to a solid increases the absorption of the latter. The amount

general both of nitrogen and fat, showing that the absorptive power of the pulmonary tuberculous not only equals that of the healthy adult, but even exceeds it. Still, an individual peculiarity can be seen particularly in the utilization of protein; C. has the best absorptive power, though taking much more protein than McI., his loss is only about one half as much. Of course we cannot say absolutely that the former has the better absorptive power until we place them both upon the same amount of protein, as we have already learned that the percentage of loss diminishes with the increased amount of daily consumption. Any changes which may occur in the absorption of the tuberculous is due to the disease *per se* and not to the accompanying temperature, for Von Noorden's patient, suffering from tuberculosis, but with no temperature, when taking 11.6 gm. of nitrogen daily in the form of albuminous food, showed a loss of 8%, and of the 85 gm. of fat taken daily, a loss of 7%. Six days later, with the same diet, but with a high temperature produced by the effect of tuberculin, the loss of nitrogen in the feces was 8.4% and of fat, 7.3%; this variation is so slight that it may be neglected. This principle is universally true, so that, as v. Hoesslin remarks, the presence of temperature in tuberculosis, if pulmonary, need not deter us from trusting the intestinal canal to elaborate and absorb these enormous quantities of food necessary to

maintain the body weight. When we take the absorption of fat into consideration, we find a slight diminution in the loss in the case of C. as well as in that of McI., while in G. the diminution is very marked; how much of this is due to the use of hyocholalic acid is difficult to say, since there is found a much more marked diminution of loss between the second and third period. Two other factors come into play here; in the first place an increased ingestion of fat, as above stated, always diminishes the procentual loss, and the increase here is very marked, being respectively 62, 211 and 159 gm. Furthermore, this increase was made up largely of olive oil, an easily digestible fat, on account of its low melting point, and this undoubtedly rendered the other fats with higher melting points, like beef and mutton tallow, to be more readily absorbed and hence in larger quantities. For instance, of stearin alone, with a melting point of 60°, there is lost in the feces 86 to 91%, but when it is given with almond oil with a melting point of 55°, there is a loss of only 10.6%. Cod liver oil, which has no inherent value in phthisis, but which must have had some basis for its long popularity, probably acts in the same way on account of its low melting point. This admirable absorption of nutriment under the regimen of the sanitarium treatment of the tuberculous, although such enormous amounts of food are given, is probably due to two reasons: First, the ration is well balanced, and it is well known that under this condition the absorption of any one form, protein, for instance, is much better when given with a corresponding quantity of fat and carbohydrate than when given alone in large quantities; secondly, the human body, provided that the intestinal tract is normal, absorbs nourishment according to its needs, much as a sponge takes up water according to the state of dryness existing within it. In only one instance was there any appreciable increase in weight, a condition only to be explained by the fact that, in spite of the great absorption, barely enough tissue building material was obtained to replace that which was destroyed by the action of the disease upon the tissues.

A RAPID PRESUMPTIVE TEST FOR DIARRHEA CAUSED BY THE GAS BACILLUS.

BY ARTHUR I. KENDALL, PH.D., AND RICHARD M. SMITH, M.D., BOSTON.
(From the Boston Floating Hospital and the Department of Preventive Medicine and Hygiene, Harvard Medical School.)

DIARRHEA in infants may arise from a variety of causes. Micro-organisms play a part in the production of diarrhea in many cases. The action of the dysentery bacillus in this connection is well known. It has been definitely shown by other observers that the gas bacillus also, or B. Welchii as it is more properly named, may be the causative factor in some cases of diarrhea. There has been no simple method applied, however, to the detection of this organism in the stools of suspected cases, and it has, therefore, been difficult and almost impossible for clinicians to arrive at a definite diagnosis. This difficulty of diagnosis is further complicated by the fact that certain cases in which the past history is uncertain, present, at the time of examination, stools characteristic of bacillary dysentery, i. e., they contain blood, pus and mucus.

In order to throw light upon the distribution of the gas bacillus in the stools of children with diarrheal diseases, we have utilized the abundant material upon the Boston Floating Hospital. The method employed in detecting the gas bacillus is simple, rapid and certain.

The method consists essentially in inoculating sterile tubes of whole milk with a small portion of the suspected stool, thoroughly emulsified in it, and immersed in a water bath to above the level of the top of the milk and heated to 80° C. for twenty minutes, incubating at body temperature for eighteen to twenty-four hours. As an alternative procedure, the infected milk tube may be gradually brought to the boiling point of water in a water bath, kept there for three minutes, then incubated as above. By so doing, all bacteria not in the spore state are killed, and the development of the spores into vegetative cells is unrestricted by the presence of non-spore-forming organisms. Those cultures containing gas bacilli present at the end of the period of incubation three prominent features: (*a*) The casein is largely dissolved (usually at least 80%); (*b*) the residual casein is slightly pink in color, and filled with holes, the result of the stormy fermentation; (*c*) the culture smells strongly of rancid butter, due to the formation by the gas bacillus of butyric acid. Gram-stained preparations made from such growths show rather thick, short bacilli with slightly rounded ends. Controls suitably studied culturally have shown that cultures presenting this complex are in reality gas bacilli.

Very frequently "pseudo-reactions" occur; there is, as above, a decided liquefaction of the casein, but the shotted appearance of the residual casein is absent, and there is no odor of butyric acid. These growths have been found to contain *B. subtilis*, or members of the subtilis group, and are not to be regarded as even suggestive of B. Welchii.

We have examined by this method the stools from 231 infants presenting a variety of intestinal disturbances and a few other diseased conditions. It was possible to isolate the gas bacillus from 22 cases. Six of these cases had apparently normal stools; 2 had thin watery stools with a few curds and a little mucus; the remaining 14 showed blood and mucus and many of them pus in the stools. The clinical diagnosis of these 14 cases was uncertain, but suggested bacillary dysentery.

It was not possible in any case in which the gas bacillus was recovered from the stools to isolate simultaneously the dysentery bacillus. It would appear from these cases, and from bacteriological studies upon dysentery cases, to be reported later, that the conditions favoring the development of the gas bacillus in the intestinal tract are unsuitable for the growth of the dysentery bacillus.

The gas bacillus is present in small numbers in the stools of some older bottle-fed babies which are apparently in perfect health, and this might at first sight be construed as an argument against the specificity of the organism in cases of diarrhea. It will be found, however, that this inconsistency is more apparent than real, for it is well known that other pathogenic organisms, e. g., the pneumococcus, may exist as apparently harmless saprophytes in the body. Those cases in which we regard the presence of the gas bacillus as significant and as the etiological factor of the disease give a history of diarrhea of greater or lesser severity, and usually of rather long standing, so that the intestinal tract has had ample opportunity to rid itself of the majority of its bacterial flora. The fact that the gas bacillus finds a suitable environment for its rapid proliferation in a certain number of these cases lends additional evidence to the etiological relationship of the organism.

The diagnosis of diarrhea due to an infection with the gas bacillus can be made by the means described above within twenty-four hours, at the end of which time it is possible to begin treatment with a definite idea as to the etiology of the condition. The management of all acute diarrheas during this period of twenty-four hours while the cultures are developing and while the diagnosis is being made is practically the same, namely, purging and starvation.

Thus far the application of the method as outlined above and the subsequent treatment with buttermilk has been limited to relatively few cases, but the results obtained have been uniformly satisfactory and would seem to justify the belief that the gas bacillus is the etiological factor in a small group of the acute diarrheas in infants.

Clinical Department.

TWO CASES OF COMMON SPEECH AND VOICE DEFECT AND THEIR TREATMENT.

BY ABRAHAM MYERSON, M.D., BOSTON.

Medical literature so often concerns itself with rare conditions and difficult therapeutic problems that one feels like apologizing for reporting cases that are common and whose treatment is along well-known principles. The only excuse the writer has for taking up space with the two following cases is that they represent conditions that on the whole are neglected by the medical profession of America. Speech and voice defects have an importance to the patients suffering from them that gives dignity to their consideration, and they are so frequently associated with nervous disorder as to make a proper working field for neurologists. A profession that claims the whole range of human pathology as its field cannot consistently neglect conditions of this kind. Our duties as physicians so often end with naming the ill we cannot cure that we ought pay particular attention to those diseases in which patient effort is rewarded with brilliant success.

The first case is that of a young woman of twenty-eight, referred to the writer by Dr. E. A. Crockett. The patient has a good family history, was born at full term and in a normal manner. Aside from the matter of speech, her development, including the time of teeth eruption, walking, dextrous use of hands, learning of cleanly habits, was normal. She learned to speak at the usual time, but, as related by her mother, never talked plainly, a defect which became more marked as she grew older. However, she did not seem mentally deficient, for she went through grammar school without trouble and was in every way decent and well behaved.

Examination showed that ears, nose and throat are normal. Intelligence is up to the average of servant girls, that being her occupation, and she can spell and write very well, in fact, better than the average. In other words, she is neither deaf nor feeble-minded, the usual causes of defective speech, and one can only account for her unintelligible speech by stating that some acute illness which came and went unnoticed left a defect which was neglected, grew worse with the years, and mal-directed her whole life.

Unintelligible is a short description of her speech. Its three main defects arose from her consciousness of inferiority, and represent compromises between her need of speech and her wish to avoid it. First of all she spoke in what was almost a whisper, so that, for example, there was little difference between such sonants as *b*, *d*, and the correspondng surds, *p*, *t*. Secondly, she used only the tip of her tongue, her teeth and lips, in speech, so that sounds like *l*, *r*, *k*, *g*, *ch*, etc., were entirely missing, and *t*, *p* and *b* obtruded themselves continually. Third, she opened her mouth as little as possible, and so there was a disagreeable nasal tone to her voice.

The treatment was and still is re-education. She has been under the writer's care for four months, appearing on an average of once a week, which, of course, is utterly inadequate for quick results. Nevertheless, her progress has been satisfactory, for while some sounds, notably *ch* and consonant *j*, are still very difficult, she can use all the others sufficiently well to frame an ordinary conversation. There is no doubt that in time she will not be markedly different from her neighbors so far as speech is concerned.

The details of her speech training are not interesting, representing as they do the utilization of well-known principles. Perhaps it is of value to state that the writer has found it much easier and more expedient to place instrumentally tongue, lips, teeth, etc., in the places proper to any sound than to show where to place them by diagram or by looking-glass. In other words, the motor memories are more valuable than the visual as the basis for learning the reproduction of speech sounds, while the fact that such defects as these arise in a community of normally speaking people proves that auditory memories, the usual basis of speech, are by no means the best to utilize in re-education.

What is here necessary to emphasize is this: that the chances of "outgrowing" speech defects, the usual consolation offered to parents of such children, are few as against the chances that the trouble will get markedly worse. And where so socially important a function is concerned, where defect

means occupying an isolated and inferior position throughout life, with its accompanying distress, there is a moral issue involved in such advice as well as one purely medical.

The subject of re-education, as well as phonetics in general, is well covered in the writings of A. Graham Bell,[1] E. W. Scripture,[2] H. Gutzmann,[3] and particularly in the French [4] and German [5] periodicals which concern themselves almost entirely with speech.

The second case, one of partial aphonia, concerns a lady of fifty, a well bred, cultured woman of wealth and high social standing. Her occupation, the dispensing and directing of charity, compelled her to speak a good deal, but is only in part responsible for her trouble. About ten years ago she commenced to suffer from "sore throats" and hoarseness, which at first appearing only in the winter, finally came in the summer as well. Routine laryngological measures directed to nose, pharynx and larynx were of no avail, and finally her voice became very weak and practically devoid of laryngeal tone, — in other words, aphonic.

The examination disclosed no abnormalities beyond the following:

1. A very slight imperfection in the adduction of the chords, the larynx being otherwise normal.

2. On phonation, the shoulders were raised and the upper chest and neck muscles became rigid, meaning that expiration became spastic.

3. Writer's cramp of the right hand, of a flaccid type, and so marked that the typewriter was her usual means of correspondence.

The treatment was directed toward establishing correct habit of managing the column of air necessary for phonation. On the theory that the defect involved the whole of the respiratory act during speaking, she was directed to make her breathing of the type known as lower costal and to lengthen the expiration while practicing graduated vocal exercises. With the looking-glass as her guide, she learned to speak without drawing up her shoulders and with the upper chest relaxed. The result of a month's persistent training was that she was enabled to pass the following winter without a cold, and she could speak freely and with ease, although her voice remained low, but not aphonic.

The literature regarding such cases dates back for many years, and there are some writers whose opinions are of interest and value. That the laryngeal condition is an effect and not a cause was emphasized by Piorry [6] as far back as 1822, but even to-day laryngological treatment is mainly directed to the local condition, without regard for the fact that "function can undermine itself and its organ," as Meyer [7] puts it. Since Piorry's time many eminent laryngologists have considered the condition carefully both as regards its etiology and treatment. Thus Holbrook Curtis [8] regards it as resulting from the wrong management of the column of air, of a vicious and "upper chest" type of respiration. Lenox Browne,[9] and his co-worker in voice culture, Behnke, agree with this, but differ in regard to the therapeutics. They hold that diaphragmatic breathing is the only proper kind for all vocal effort, while Curtis believes that lower chest respiration is better, as being more amenable to the will, and states that most great singers breathe in this way while singing. Gutzmann,[10] who regards the trouble as spastic, and whom the writer [11] has quoted elsewhere, agrees with Curtis, quoting Sewall and Pollard [12] as having conducted experiments to prove this. As a matter of fact, these laboratory workers prove as much for one side as for the other, since they show that diaphragmatic treatment is more favorable to air mixture and high tone production than is costal respiration, while this latter brings more air into the lungs and is better for low tones. Olivier,[13] in a fine comprehensive article, lays the trouble to insufficient inspiration and, therefore, directs his attention towards increasing the breathing capacity of his patients.

The noted laryngologist B. Fraenkel [14] declared that these patients were suffering from a laryngeal condition allied to writer's cramp for which he proposed the names "mogiphonia" or "phonasthenia." He stated that there were spastic, paretic and tremulous types of writer's cramp and similar types of this laryngeal trouble. As in the hand affection, he regarded as the etiological factors the excessive use of the part in a neuropathic individual; in other words, bringing it into what is nowadays classed as the "occupation neuroses." [15] On the whole he considered that the prognosis of these cases was unfavorable.

As a matter of fact, excessive use of the voice will bring about aphonia in any individual. Such cases are simple; they are not neuroses, but are states of chronic fatigue of a part. But in the case here reported, and in many others, there is no such history, for her troubles came on without real excessive speaking or singing. Nor do people as a whole have to learn to speak correctly, for while almost every untrained person has defective control and tone, he uses his respiratory apparatus in a manner which training only perfects. But the person who is intense in all that he or she does, who is exceedingly earnest, brings about an excessive innervation of the part he is to use. This excess brings about muscle spasticity; this spasticity brings on quick fatigue, which in its turn, when long continued, brings about loss of function. Thus ordinary people, not "neuropathic," when engaged in heated argument, speak in high-pitched voices, and examination will show that the upper chest is engaged in squeezing out the sounds, while the shoulders are raised and the abdomen is hard and tense. And the type above referred to not only constantly speaks tensely, but shakes your hand excessively, "goes into everything," as we say, with great zeal, and a use of musculature that is almost always spastic.

So at least a certain proportion of functional aphonia, greater than most laryngologists recognize, is due to misuse of the entire speech apparatus and not to changes in the larynx. It is necessary to emphasize the fact that the entire apparatus is misused in these abnormal speech efforts, just as it is normally used in its entirety in normal speech effort. Diaphragm, chest and larynx are all involved in the spasticity, — but the larynx suffers most. Moreover, infla nmatory and other organic changes in throat and larynx which are associated with pain and hoarseness are often not the causes of the changed functioning of the parts involved, but with the pain and

hoarseness are symptoms of the wrong use of the parts. Medical science is adding to the cellular interpretation of disease, the physiological or dynamic interpretation, and therapeutics can most profitably apply the lessons of pathology. The method of using any part that is normally operated by the will can be changed if it be a a wrong method to a correct one, at least in most cases. With that change will come a readjustment more or less complete of the parts to the normal. This is as true in laryngology as in orthopedics, and its recognition has an important bearing on the therapeutics of the future.

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Medical Progress.

REPORT ON DERMATOLOGY.

BY JOHN T. BOWEN, M.D., AND HARVEY P. TOWLE, M.D.

1. Ecthyma Térébrant de l'Enfance.
2. Purpura Hemorrhagica Due to Benzol Poisoning.
3. Grain Itch.

ECTHYMA TÉRÉBRANT DE L'ENFANCE.

Welander[1] describes in an interesting fashion the case of a child of three who was admitted to the hospital suffering from peculiar ulcerations of the scalp, right hand and the buttocks. The history was that the first appearance was that of a pustule near the right thumb nail, from which an ulcer quickly developed. Two weeks later ulcers appeared, also near the anus and on the buttocks, as well as on the scalp. They extended, especially those upon the scalp, while new ones appeared in the vicinity. The ulcers were covered more or less with yellowish-brown crusts. Two months after the first appearances the child was admitted to the hospital.

When admitted the scalp presented a number of large and small ulcers partially covered with a crust. Some of these ulcers showed by their contours that they had arisen from the confluence of several smaller ulcers. Most of these ulcers were sharply defined, as if punched out. Small flat vesicles were to be seen in the vicinity of these ulcers. Similar ulcers were seen upon the right thumb, which had coalesced to practically one ulcerated surface, which extended to the back of the hand. On the buttocks and the lower part of the back similar ulcers were seen, not so sharply defined as those upon the head. The child's condition was very bad, with a rise of temperature.

[1] Welander, Stockholm: Arch. für Dermat. und Syph., xcix Band, 3. heft.

Soon after the child's entrance, staphylococci were found in the vesicles of the head with partially pustular contents. The Von Pirquet reaction was positive, the Wassermann reaction negative. No reaction from the injection of tuberculin.

In the further course of the affection it was shown that the first appearances were semi-transparent vesicles which extended peripherally, became necrotic and changed into flat ulcers with sharp edges, which quickly extended both in depth and peripherally.

Under applications of cyanide of mercury the ulcers gradually healed and the child made a good recovery.

The writer confesses that it would have been very difficult to make the diagnosis from the ulcers on the head alone had there not been present those of the buttocks which corresponded completely with the pictures of *ecthyma térébrant de l'enfance*. The evolution of the ulcers enables one to exclude tuberculosis as their cause. That the child also had tuberculosis was proved by the positive results of the Von Pirquet test, and later enlarged glands and a tubercular affection of the joint developed. The child's tuberculosis was said to have only an indirect action on these ulcers by lowering the child's power of resistance toward the action of the pathogenic bacteria which were the cause of the affection. This affection has been usually found upon the buttocks, although others than Welander have described its occurrence on other places.

It is clear that this affection is caused by some form of micro-organism. In some cases streptococci have been found; in others, the bacillus pyocyaneus. In Welander's case no positive result was obtained from the bacteriological investigations. Staphylococci were found in the vesicles. Streptococci were never found in an early stage. Once small short rods were found in the cultures made from the vesicles. On the whole the writer is inclined to believe that the staphylococci were the cause of the affection in his case. Certainly neither streptococci nor the bacillus pyocyaneus could be regarded as causative.

Whatever may have been the form of micro-organism that caused the affection, it can be confidently maintained that it began as a local lesion with infection from without, and that the pathogenic micro-organisms were carried from one place to another, causing the new infections. Absorption from the toxic agents caused the constitutional disturbance and the rise of temperature.

In conclusion, the writer asserts that the cyanide of mercury is much preferable in such skin affections to corrosive sublimate, in that its action is effective without having the strongly irritating properties of sublimate.

PURPURA HEMORRHAGICA DUE TO BENZOL POISONING.

In a preliminary report Selling[2] relates a number of cases of purpura hemorrhagica which occurred

[2] L. Selling: Johns Hopkins Hosp. Bull., Febuary, 1910.

at a factory in the suburbs of Baltimore engaged in the manufacture of tin cans. From the mode of occurrence, and from the results of experimental work, it is probable that they belong to the group of toxic purpuras.

The factory employed about three hundred and twenty-five people, and was divided into several departments. The cases were all confined to one department, and, indeed, to one room in this department, the so-called "coating room." In this room a substitute for solder was used which was a mixture composed of rubber, a rosin and a coloring matter dissolved in commercial benzol. The cases occurred among fourteen girls between the ages of fourteen and sixteen, who worked at the coating machines. After the can covers had been coated about the margin with the mixture which has been described, they were piled in trays and allowed to dry by the evaporation of the benzol. Ten gallons of benzol a day were evaporated in this room. There was a well-marked odor of benzol in spite of good ventilation and open windows throughout the room.

Three cases are then described, two of which were fatal. The symptoms were quite similar in all cases. The first appearances were those of a purpuric eruption, followed soon after by hemorrhages from the nose and mouth. In one case there was a very severe hemorrhage from the throat, which was with difficulty controlled by local applications. The patients who died gradually lapsed into a toxic condition for some time before death.

In the case of the patient who recovered there were marked gastric symptoms and the purpuric eruption was much less extensive than in the other cases. The condition of the blood in these cases has been described as the picture of aplastic anemia. There were only slight changes in the appearance of the red blood cells; there was an absence of regenerative forms, quantities of platelets and a diminution of the granular types of white blood cells, with a relative increase in the mononuclear elements.

A series of cases quite similar to these was reported from Stockholm in 1897, which occurred at a factory engaged in making bicycle tires and where benzol was used as a solvent for the rubber. Experiments made by Santesson, who described this epidemic, demonstrated that hemorrhages into the internal organs could be produced by wrapping the bodies of rabbits in cloths soaked with benzol and chemically pure benzene, as well as by subcutaneous injection.

Some other experiments were made by Selling by injecting fractional distillations of the mixture into rabbits, with the result that a great diminution in the white blood cells with the outpouring of a large number of abnormal forms occurred.

GRAIN ITCH.

Schamberg[3] publishes an interesting article on this subject based on a number of cases observed in Philadelphia. He first observed the affection in epidemic form in the spring of 1901, and it was then described under the title, "An Epidemic of a Peculiar and Unfamiliar Disease of the Skin." The cause of this disease was at that time obscure.

In the spring and summer of 1909 this same affection became very prevalent in and about Philadelphia. The discovery of its cause was due to an outbreak that occurred among twenty sailors on a private yacht in the Delaware River. Dr. Goldberger was detailed by the United States Public Health and Marine-Hospital Service to investigate the matter, and Dr. Schamberg and he continued the investigation together.

After examining the twenty sailors who had been sent to the hospital, they then turned their attention to the yacht and found that a number of new straw mattresses had been received and that the disease was confined to those who had slept on these mattresses or who had put their clothes on them. Eleven people on board the ship who had not slept on the new straw mattresses had not acquired the disease.

At the same time it was found that there was a similar affection among the sailors of four other boats in the vicinity, and it was found on examination that these boats had also obtained new straw mattresses. Many other cases were also investigated in different parts of Philadelphia, in which the affection could be traced in the same way to a new mattress.

It was found that all of the manufacturers who had furnished these straw mattresses had obtained their wheat straw from a dealer in southern New Jersey.

Schamberg and Goldberger then made a careful examination of the straw and were able to detect the presence of a mite of very minute size. This was declared by Mr. Banks, of the Bureau of Entomology, to be very close to, if not identical with, the pediculoides ventricosus.

It was proved that this was the cause of the affection by the production of characteristic lesions upon people who voluntarily slept on the mattresses for experimental purposes. Portions of the straw were also applied to the skin of volunteers and resulted in producing the same lesions.

The characteristic appearance is that of wheals which have a central small vesicle. The vesicle soon becomes a pustule. There are also two other types described as the varicelloid, with a large central vesicle or pustule, and the erythema multiforme type.

The eruption is usually profuse, involving the neck, chest, abdomen and back, and to a less extent the arms and legs. The trunk is the part most affected. The hands and feet are usually free.

The eruption is usually accompanied by intense itching, which is worse at night and leads naturally to violent scratching and resulting excoriations.

At first there may be some slight constitutional symptoms and at times a moderate enlargement of the lymphatic glands.

Examination of the blood showed:

(1) That there was in most cases a moderate leucocytosis during the acme of the disease.

[3] Schamberg: Jour. Cutan. Dis., Febuary, 1910.

(2) That the eosinophilia was well marked at the height of the affection.

(3) Both the leucocytosis and eosinophilia subsided with improvement of the symptoms.

(4) That the other leucocytic elements showed no particular changes.

The histological changes are essentially those of an urticarial lesion.

It is comparatively easy to get rid of the parasite. Schamberg uses an ointment of betanaphthol and sulphur. The clothing should be disinfected by boiling or fumigation. In the case of the mattresses they may be freed of the mites by exposure in a closed chamber to steam and sulphur fumes or formaldehyde.

Ordinarily the itching will cease within twelve to thirty-six hours, and the eruption disappear in a week or ten days. From his observation Schamberg believes that the affection dies out of itself after a time.

The writer found upon looking into the matter that an affection probably of the same nature has prevailed from time to time in different sections of the United States. A series of cases published in England last year under the title "Barley Itch" may possibly belong in this category; also a study of the literature reveals many instances of cutaneous affections occurring in people who had come in contact with some sort of grain that were very probably due to this mite. As far back as 1829 "Fessenden's New England Farmer" published a communication regarding a disease of barley straw which was produced by the puncture of insects.

The pediculoides ventricosus is parasitic upon the larvæ of soft-bodied insects, and it is of importance from the fact that it is hostile to the grain insects, and, therefore, favorable to the preservation of the grain. It was also found that straw used for packing purposes and sacks of wheat and barley and other grains constitute additional sources of infection.

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

Meeting at Washington, D. C., May 3, 4, 5, 1910.

OPERATIVE TREATMENT OF TUMORS OF THE HYPOPHYSIS.

A. E. Halstead, M.D., of Chicago: A survey of the literature on the operative treatment of tumors of the hypophysis discloses the fact that many of the procedures proposed are based not on clinical experience, but on observations made in the post-mortem room; therefore, the merits of these methods are still unproved. The routes of approach previously advocated have been the intracranial and the extracranial. Halstead proposes what he terms the oro-nasal route, which he employed successfully in one case. It is a modification of the infranasal method of approach, but is without the trauma and disfiguration which must follow the Koenig operation.

Halstead presented a patient showing the extremely good result obtained by this method of procedure. He also reported a fatal case.

DISCUSSION.

Dr. S. J. Mixter, of Boston: I wish to present a case operated on by the route suggested by Kanavel. There was a large cyst in the hypophysis filled with cholesterin and holding about 1½ to 2 oz. of fluid. Patient made a good recovery after the operation and his vision, which before was extremely poor, has been much benefited.

Dr. Harvey Cushing, of Baltimore: The various means of approach to the hypophysis do not make so much difference as does the matter of dealing with the structure when it is brought into view. The growth often becomes malignant, as is true of long-standing trouble with the thyroid, and it is conceivable that it cannot be entirely removed. In fatal cases it has often been found that only a mere fragment of the growth has been taken away. The operation in the first place has for its object the relief of pressure; these symptoms can be combatted by the mere removal of the lower part of the sella turcica and the splitting of the capsule of the gland. Whether many of these adenomas are merely hypertrophies of the gland, comparable to various diseased changes in the thyroid, we do not know, but if so, partial removal is indicated.

Dr. A. B. Kanavel, of Chicago: Concerning the technical procedure in Dr. Halstead's cases, in the first one particularly, the view could not have been better. The operation was very quickly done, the anterior wall of the sphenoidal sinus quickly removed and the bulging sella turcica opened, and a tumor protruding into the sinus was removed without difficulty. In the second case the sella turcica did not bulge into the sinus; it was seen with more difficulty and was arrived at by anatomical deductions. In two cases there was considerable hemorrhage, and I would suggest the elevation of the head during the operation. In the majority of cases it will only be necessary within the nose to remove the vomer and the anterior portion of the sphenoid in order to come down on the sella turcica.

Dr. Dean Lewis, of Chicago: The tissue removed from the first case contains no elements which are ordinarily found in the anterior lobe or the pars intermedia. The tumor is composed of stratified epithelium with a papillary arrangement. The lower cells rest upon the stroma of the papillæ and are cylindrical, while the cells of the succeeding layers differ in shape, the differences apparently being due to variations in pressure. As the cells of the anterior lobe and the pars intermedia are not reproduced in this growth, we must assume that the tumor has probably developed from an epithelial inclusion, which has not gone on to complete differentiation. The growth corresponds histologically to a group of tumors which occur about the infundibulum and extend down to the sella and up to the third ventricle.

The tissue removed from a second case came from the anterior lobe. In some sections the cell columns are cut parallel, long rows of cells resting between rather thick connective tissue trabeculæ. In other fields the cell columns are larger than normal, the connective tissue between the different columns having broken down, thus permitting of fusion. In still other fields the fusion has become so marked that large groups of cells are found, hyperplasia apparently having ended in adenoma formation. Karyokinetic figures may be seen in a number of different fields.

It is important to recognise the complex structure of the hypophysis in making the anatomic diagnosis of tumors of this gland, and to remember that the cells of the anterior lobe, when growing rapidly, tend to

reproduce the structure of a sarcoma. Stains which differentiate granules should, therefore, be used in the study of all growths apparently originating in the hypophysis.

BENIGN BONE CYSTS, OSTITIS FIBROSA, GIANT-CELL SARCOMA AND BONE ANEURYSM OF THE LONG PIPE BONES. A CLINICAL AND PATHOLOGICAL STUDY, WITH THE CONCLUSION THAT CONSERVATIVE TREATMENT IS JUSTIFIABLE.

JOSEPH C. BLOODGOOD, M.D., of Baltimore, Md.: In many lesions technic is ahead of diagnosis.

The development of technic is more rapid, because the results of faulty technic are immediate, while the development of diagnosis is more difficult, especially in tumors, because the results are more remote.

Treatment of tumors which will assure the patient the greatest possibility of a permanent cure with the least mutilation will only be accomplished when surgeons have a better conception of the local growth of neoplasms, both benign and malignant. This is especially true of the three lesions of the long pipe bones which I wish to present in this contribution.

The so-called benign bone cyst may present itself in five forms: First, as a medullary cyst without any definite gross lining; second, as a similar cyst with a definite connective tissue lining which is easily stripped from the bony capsule; third, as a medullary mass of fibrous tissue with a small cyst; fourth, as the same medullary mass of fibrous tissue without any cyst formation; and, fifth, as multiple medullary cysts.

Among 89 cases, of which 20 were personally observed, 69 belong to the variety of true localized bone cyst or ostitis fibrosa. The other 20 cysts have different etiological factors, for example, cysts in enchondroma, in pure myxoma, in giant-cell sarcoma, in ostitis deformans; cysts due to subperiosteal ossifying hematoma, and callous cysts.

The true benign bone cysts are pathologically identical. In the cases with no definite lining there is found under the microscope between the bone lamellæ of the bony shell the same connective tissue seen in the gross in the other four types. This connective tissue has a definite histological appearance which has been, but should not be, mistaken for spindle-cell sarcoma. In a certain number of cases areas of giant cells are found, but they should not be interpreted as giant-cell sarcoma. Also, one will find, in the gross and with the microscope, islands of cartilage.

At the exploratory incision there is always a thin shell of bone; the contents of the cyst is usually of a dark-brown color and thin; it has never been distinctly hemorrhagic with large blood clots as the contents of the so-called bone aneurysm. The character of the fluid and the gross appearance of the fibrous tissue should allow one to differentiate this lesion, whether it appears as a cyst or a completely solid area. This lesion has been and can be cured by simple incision and curetting. It is distinctly benign, and from an experience over many years with sixty-nine cases it has shown no tendency to malignancy.

The giant-cell sarcoma, of which I have studied personally nineteen cases, can also be recognized at the exploratory incision. The medullary cavity is filled with a soft, hemorrhagic tissue resembling granulation tissue mixed with whitish areas which, when removed with the curette, come away in masses of irregular shape. This tumor also has been cured by curetting. It is eight years since I curetted from the medullary cavity of the upper end of the tibia such a tumor, and this patient has no evidence of recurrence to-day. Among my personally studied cases, and in the literature, I have so far been unable to find metastasis from a giant-cell sarcoma. Cases have been cured even after repeated curetting; amputation is only indicated when the patient has allowed the tumor to grow to such a size that it has perforated the bone capsule and infiltrated the soft parts to such an extent that its complete removal would leave a functionless limb. Even in such cases I believe it will be justifiable to first attempt curetting, use the Paquelin cautery, followed by x-ray treatment. But such extensive cases are unusual. The point that I wish to emphasize is that giant-cell sarcoma can and should be recognized at the exploratory incision, and in the majority of cases an attempt should be made to cure the disease with the curette.

The so-called bone aneurysm is a much less frequent tumor. It is distinctly malignant. It is a hematoma due to hemorrhage in the most malignant form of medullary spindle, round or mixed-cell sarcoma, and I am of the opinion that in this stage of this tumor metastasis has already taken place, so that no harm could come from mistaking such a tumor for a bone cyst or giant-cell sarcoma. I have seen 3 cases. In 2 the diagnosis was not difficult, one patient was not saved by the highest amputation; in the second case amputation was refused; the third case was first treated as bone cyst; amputation was done later, but the patient died of metastasis.

DISCUSSION.

DR. RUDOLPH MATAS, of New Orleans: I would call attention to a case in which, after removal of a giant-cell sarcoma from the humerus, there was such a large cavity that I used about 1½ oz. of mosetic cement, and the patient later developed extreme symptoms of iodoform poisoning, as was but natural from the large amount of the cement used. In ten days, however, he recovered from its effects and the arm healed with a perfect contour of the bone. I believe that in Beck's paste we have a most valuable means of filling up cavities, it being superior in my mind to any other paste.

DR. WILLIAM L. RODMAN, of Philadelphia: I recall a case operated upon in 1889 for large giant-cell sarcoma of the lower jaw by free chiselling and curettement, but without removal of the maxilla. The patient lived for more than ten years after this operation, and may be alive to-day.

DR. JOSEPH A. BLAKE, of New York: I had a case of sarcoma of the bone, the fourth finger of the patient being diseased. A simple operation in this case proved most satisfactory, and now, three years since operation, there is a normal phalanx.

DR. HARRY M. SHERMAN, of San Francisco: I would say that in my experience salt solution poured into these cavities a little in excess just before the last stitches are taken is as good as any other material for filling; it is replaced by blood and obviates the necessity of putting in any foreign body such as iodoform or bismuth.

DR. DUDLEY P. ALLEN, of Cleveland: Some years ago I removed the lower jaw of a patient for giant-cell sarcoma, leaving but a small portion of the substance of the jaw. I used a splint to hold the teeth in place. The patient recovered entirely and is now well.

DR. WILLIAM S. HALSTED, of Baltimore: I am reminded of a patient with a myxoma of the humerus; although the disease involved the bone from one end to the other, there was no cyst and no fibrous tissue. The bone was excised excepting for a strip posteriorly and at the lower end, and the entire cavity carefully swabbed out with carbolic acid. The patient made a good recovery and had a strong humerus, but there were implantation recurrences in the soft parts on two occasions. It has now been four years since the first operation, and the patient at present is perfectly well.

Dr. Nathan Jacobson, of Syracuse: In reference to giant-cell sarcoma of the jaw, I recall one case still living in whom I did a partial excision of the upper jaw for giant-cell sarcoma about twenty-five years ago. There was never any recurrence. In my experience in those cases of giant-cell sarcoma where there is reasonable cleaning out, there is seldom a recurrence of the growth.

Prof. A. von Eiselsberg, of Vienna: In such cases as these mentioned by the reader of this paper we are in the habit, before finishing the operation, of pouring boiling water into the wound in order to destroy all the germs, and have found it a most satisfactory method.

Dr. Joseph C. Bloodgood, of Baltimore (in closing): Dr. Halsted's case of exostosis with involvement of the humerus brings out the point that pure myxoma is a benign tumor, that recurrence after operation may be due not so much to leaving a portion of the tumor growth behind as to infecting the wound in removal of the tumor. In such cases it would be well to use boiling water, pure carbolic or Paquelin's cautery to disinfect the wound.

DIAGNOSIS AND SURGICAL TREATMENT OF ESOPHAGEAL DIVERTICULA.

Charles H. Mayo, A.M., M.D., of Rochester, Minn.: Diverticula of the esophagus, described by Rokitansky in 1840 and classified as *pressure* or *pulsion* sacs, and traction sacs. Most cases are pharyngo-esophageal, determined by the origin of the diverticulum.

The condition is confined to adults. Dysphagia is the most common symptom; cough and dyspnea are common. Distended sacs are often visible in the neck, and can be emptied by pressure. Condition is disclosed by probing and by radiograph of bismuth-distended sac.

H. S. Plummer's method of diagnosis is a combination of the technic of Mixter and Dunham, as used in stricture. The patient swallows a silk thread which passes into the intestine. The Plummer perforated acorn probe passed on the thread gives depth of pocket and location of its neck. By alternating the tension of the thread, elevating the probe to the distal opening of the esophagus, a pocket and its depth can be ascertained and tubes passed for feeding. Gastrostomy for temporary feeding may be necessary.

Operation is as follows: Lateral oblique incision; blunt dissection; exposure of sac and excision; closure by suture; rubber tissue drain.

There have been 8 cases in the Rochester clinic; 6 operated upon successfully and 2 which were not operated upon.

REMOVAL OF A TACK FROM THE LEFT BRONCHUS.

N. B. Carson, M.D., of St. Louis, Mo.: Annie Y., aged four, came to my service in the St. Louis Mullanphy Hospital Jan. 18, 1909. All that could be learned was that a month before entering the hospital she was supposed to have swallowed an upholsterer's tack, which was followed by a severe spell of coughing, and later by a very serious illness. Physical examination showed the child to be very pale, anemic, emaciated and weak. She swallowed either liquids or solids with difficulty, and coughed almost constantly, with an expectoration of white mucus, and the coughing was accompanied by a very severe pain on the left side of the sternum. The left lung was dull in the middle portion, while the upper and lower portions were more or less resonant.

A skiagraph of the chest showed the tack in the median line with the head down, and the point upwards, the point being lodged in front of the body of the fifth dorsal vertebra. Examination of the sputum was negative, as was also Von Pirquet's test.

On Jan. 27 tracheotomy was done, and an attempt made by means of the bronchoscope to remove the tack, which failed. On Jan. 29 a skiagraph located the tack about the beginning of the left bronchus. Jan. 30, under rectal anesthesia, a section of about an inch of the seventh rib on the posterior axillary line was removed, and an opening made into a small abscess cavity in the lung, which discharged about an ounce of yellowish pus. At the same time the bronchoscope was reintroduced into the tracheal opening, and the left bronchus was found to be entirely closed. On account of the inability to get permission to operate sooner, nothing was done until the 27th of July, when an opening was made in the chest over the sixth rib and about three inches of the rib removed, and the pleural cavity opened. The lung was entirely solidified, and upon exploring the left bronchus at its entrance into the base of the lung an abscess cavity was located which when opened discharged about a dram of fetid pus. The tack was found in this abscess cavity and removed.

At 7.30 of the same evening there was a twitching of the left side of the face, arm and hand, which was followed by a partial hemiplegia. After this the patient improved steadily until the evening of Aug. 2, when there was a gush of blood from the nose and mouth which was speedily followed by death. Post-mortem showed that there had been an extensive inflammation involving the entire lung and the pleura of that side. Between the left bronchus and the pulmonary artery was an abscess cavity in which the tack had been lodged after it had forced its way through the bronchus. A small opening was found in the pulmonary artery as a result of the erosion caused by the head of the tack.

DISCUSSION.

Dr. Samuel J. Mixter, of Boston: I have operated upon three cases of esophageal diverticula. Where operation is not done by the passage of very large bougies or probangs by means of a string guide, a sufficient dilatation of the spur can be caused to allow the passage of food, and food sufficient to keep the patient alive. I have about half a dozen such cases now.

Dr. George W. Crile, of Cleveland: I wish to record two cases of operation for esophageal diverticula, both of which recovered.

Dr. John B. Murphy, of Chicago: The enucleation of the sacs of diverticula is not a difficult matter in itself, but it leaves a large cavity, and it is difficult to avoid the danger occurring from leakage at the suture, infection from the mouth and particularly the action of the salivary glands upon the loose connective tissue of the mediastinum. I believe not opening the sac at all is the only safe procedure.

With reference to foreign bodies in the bronchus, I think more care should be taken to corroborate the history in such cases, as not infrequently on operation no foreign body is found, but some pathological condition which accounts for the symptoms.

Dr. George E. Brewer, of New York: I would call attention to one symptom in esophageal diverticula which is characteristic, that is, the presence frequently during the day, perhaps every hour or half hour, of an accumulation of thick, tenacious mucus which the patient will regurgitate to get relief. My own experience has been limited to 3 cases and 1 operation. This patient was a woman eighty years of age who had lost 50 lb. through starvation. She made a perfectly good recovery from the operation.

Dr. De Forest Willard, of Philadelphia: Surgeons should always remember the possibility of enlarged thymus in sudden deaths in young infants under ether. In such cases one is very likely to be misled by the

statement that the child has swallowed some foreign body.

DR. WILLIAM L. RODMAN, of Philadelphia: I believe in cases of foreign bodies in the air passages great risk is incurred in delaying the period of operation, and would urge that all such cases be operated upon immediately upon being seen.

DR. NATHAN JACOBSON, of Syracuse: I simply wish to refer to one case of a fifteen months' old child who swallowed a bean. By a tracheotomy the bean was gradually removed and the child made a good recovery. Regarding misleading histories, I was called to see a child suffering from complete obstruction of the trachea. I was told he had swallowed a piece of bone. Subsequent history showed, however, that the child had inherited syphilis, and evidently had gradually increasing disturbance, and the history of the swallowing of the foreign body was purely an assumption.

DR. ALBERT VANDER VEER, of Albany: With reference to esophageal diverticula, I would like to mention two cases, one in a physician who refused to have an instrument passed and who subsequently died of an acute pneumonia; the other occurring in a woman about fifty years of age. In this case it was impossible to get into the stomach with any form of instrument, and I, therefore, did a gastrostomy and the patient made a splendid recovery. She now alternates between tube feeding and the natural method.

In regard to foreign bodies in the bronchi and in the air passages, I wish to urge that the bronchoscope be made the last resort in such cases and only be employed in the hands of experienced and careful men.

DR. JOSEPH RANSOHOFF, of Cincinnati: I had a very interesting case of abscess of the lung living four or five weeks after operation, the result of the inhalation of a peanut shell.

I would like to mention a case of a foreign body in the air passages which was unsuspected. Some two or three months after doing an intubation for laryngeal croup in a little child, the patient expectorated a small triangular tag such as is used to stiffen the corners of pasteboard boxes; the presence of this foreign body had not been suspected at the time of operation.

DR. N. B. CARSON, of St. Louis (in closing): I cannot too strongly urge the observance of the rule that the bronchoscope should only be used by competent and skillful men. I consider it a dangerous instrument when generally used.

SOME OBSERVATIONS REGARDING THORACIC SURGERY ON HUMAN BEINGS.

WILLY MEYER, M.D., of New York, N. Y.: Dr. Meyer has so far operated upon 10 cases with the help of his differential pressure apparatus for affections of the pleura, lung and esophagus. After discussing the effect of differential pressure, in more rapidly bringing to a close the empyema cavity, as well as its usefulness in the after-treatment, he dwells particularly on the cases of two young patients, six and eleven years old respectively, who had suffered for years from bronchiectatic abscess symptoms; both were bad risks. He extirpated a lobe of the lung in each case, but neither recovered.

Three times exploratory thoracotomy was done for cancer of the esophagus, with recovery. In order to do good surgical work when operating for a malignant stricture of the esophagus, he found it necessary to get the scapula out of the way. He, therefore, proposes as a preliminary operation the Schede-Friedrich flap operation, by which the entire shoulder girdle is turned up, thus permitting the surgeon to make his incision into the thoracic cavity wherever required; often two incisions are necessary. Dr. Meyer prefers the intercostal incision to resection of the rib or ribs. He presented illustrations which demonstrated the procedure.

On March 31, 1910, Dr. Meyer for the first time proceeded in this way for a cancer of the esophagus in a patient forty-three years of age. It was found that the malignant tumor extended from about 1½ inches above the cardia to the aortic arch. After division of the esophagus and inversion of the lower stump through the sixth intercostal, the third interspace was opened and the healthy portion of esophagus reached, outside of the common carotid artery, after proper division of the costal pleura; then the entire diseased portion was shelled out and brought in front of the aortic arch. To the operator's dismay it was found in the course of this latter part of the operation that the growth involved the right pneumogastric nerve; it was impossible to push the nerve off; it had to be divided at the lower end of the tumor, and again interfered with in amputating the esophagus above the upper border of the tumor. The proximal end was also inverted by a double purse-string suture, the intention being to do gastrostomy two or three days later. The interference with the pneumogastric nerve had a deleterious effect upon the heart action, which up to this time had been splendid. The operation was well completed, but in spite of intravenous infusion given, the patient succumbed shortly afterward.

It is pointed out that the only hope of operative success in these cases lies in *early* operation, certainly before the intimately adjacent pneumogastric branches are involved, and the first step of such operation should be to prepare free these nerves. Their involvement will more or less decide the operability or inoperability of the given case.

Additional experimental work is required in order to determine how far we are permitted to divide the pneumogastric on one side of the esophagus should the growth within the latter have encroached upon the nerve. Involvement of the nerve on either side is an absolute contra-indication to going ahead with the operation. Interference with the pneumogastrics during the operation greatly affects the heart's action as well as the respiration. The ordinary stimulants, inclusive of intravenous infusion, are of no avail. Sudden changes in differential pressure, however, have been found of great value. The author briefly discussed how best to carry out in such emergency artificial respiration, which he is able to do also with his differential pressure apparatus.

Up to the present time resection of the esophagus has a mortality of 100%.

END-TO-END INTESTINAL ANASTOMOSIS BY THE INVAGINATION METHOD.

C. L. GIBSON, M.D., of New York, N. Y.: End-to-end intestinal anastomosis by telescoping one segment into the other has been practised from time immemorial, but at present has no recognized position in surgery. As a result of animal experiments and 5 successful cases the author believes that with his present technic it furnishes a method for which there is a demand, particularly in the surgery of the lower end of the colon. The technic is as follows:

The upper cut edge of the gut is seized with two Kocher clamps and introduced by these into the lumen of the lower end and maintained there by an assistant. The extent to which it is feasible to accomplish this invagination will vary. The gut is rotated about a quarter circle so that the non-peritoneal covered surfaces do not entirely approximate in the circumference. Eight to twelve interrupted silk sutures are introduced thus. A Lembert suture is begun on the lower segment,

the needle issuing just short of the cut edge, on the upper segment the needle is introduced just above the line where the cut edge of the lower segment lies against the intact wall of the upper. When the knot is tied, the free cut edge has been turned inward and only the peritoneal surfaces are in contact. A continuous running suture is applied over this area, further invaginating the first ones, the Kocher clamps being previously withdrawn.

POST-OPERATIVE INTESTINAL OBSTRUCTION.

GEORGE WOOLSEY, M.D., of New York, N. Y.: *Importance of subject.*—Common occurrence by reason of frequency of abdominal operations, in spite of improved technic. Frequency of septic or paralytic cases much reduced by improved technic. Fifty cases collected in past five years in the Presbyterian Hospital, only 6 of these paralytic obstruction, 9 due to strangulation, 2 to volvulus, and most of the remainder to angulation. Nine of these in my service (mortality 12.5% in 8 operations). An equal number in practice elsewhere.

Classification.—Early and late (Broca), mechanical and dynamic (Mikulicz). Mechanical ileus comprises strangulation and obturation. Dynamic, or, better, paralytic, obstruction, most often due to sepsis, some cases due to post-operative atony, others to disturbance of innervation.

Etiology. — Two great factors, septic and mechanical.

A. Mechanical.—(*a*) Strangulation, usually due to band or volvulus, or both. When blood supply cut off, paralysis of gut is added. (*b*) Obturation commonly depends on angulation. Distended proximal arm of loop presses on distal arm and closes it like a trap, the adhesion of the end of the loop preventing it from being straightened out by peristalsis. Adhesions most often in or near pelvis. Most adhesions disappear in time. Factors determining obstruction by adhesions: (*a*) Adhesions of gut in an abnormal position; (*b*) idiosyncrasy to the formation of many and firm adhesions. Other causes of mechanical obstruction: (*a*) Secondary abscess, causing pressure and usually a valve-like closure, as in cases of adhesions; (*b*) Trendelenburg position; (*c*) pressure of root of mesentery on duodenum, causing arterio-mesenteric ileus or acute dilatation of the stomach.

B. Paralytic obstruction. — A similar result (paralysis) due to (*a*) sepsis, the most common cause; (*b*) handling of intestine causing atony, or (*c*) to trauma of nerve supply, as in extraperitoneal operations, etc. Sepsis probably acts mostly by a reflex paralysis on Auerbach's plexus. Peristalsis may be reflexly inhibited through splanchnic nerves (Cannon and Murphy). Overdistention may arise from the atony due to handling or traumatism of nerves or plexus. Overdistention may cause obstruction by causing (*a*) paralysis, (*b*) angulation, (*c*) volvulus.

Obstruction most often follows appendicitis or appendectomy (32 in 50), next most often pelvic conditions (13 in 50), especially ovarian cysts. Mortality of the 50 cases (48 operations), 37.2%.

Pathology of fatal result. Death due to bacteriemia in septic peritonitis. Where no peritonitis, death attributed to auto-intoxication (neurin, putrescin, etc.). Braun denies this and claims terminal sinking of blood pressure due to basal anemia from great blood stasis in splanchnic area, and that drainage of bowel favors cure by relieving congestion in splanchnic area, not by avoiding auto-intoxication. Several experiments confirm this.

Diagnosis easy from symptoms in late cases. If morphine has to be repeated for pain, operate for obstruction. In many cases we can distinguish between strangulation and obturation by "peritoneal shock," intensity of onset and symptoms. In some cases we can locate position of obstruction by position of early pain, distention, exaggerated peristalsis, character and onset of vomiting, Von Wahl's sign, etc.

In *early cases* diagnosis not so easy, obscured by peritonitis, operative trauma, sequelæ of anesthesia. Where peritonitis was or is present, must distinguish between it and obstruction. Many of the symptoms identical. Diagnostic symptoms given. Rigidity the important sign of peritonitis; absolute constipation, of obstruction. If latter cannot be relieved, diagnose obstruction. Some early causes of mechanical origin. Important but difficult to distinguish them. Presence or absence of pain, peristalsis, distention and other signs help to determine question. Possibility of acute dilatation of stomach (symptoms enumerated), and of obstruction with many symptoms lacking must be remembered.

Treatment.—*A.* Prophylaxis, great importance and success of it. Problem is to prevent sepsis, operative trauma and adhesions, to which nearly all cases are due. Hence operate all cases of appendicitis as soon as diagnosis is made. When septic peritonitis present, modern technic (Murphy's) will cure most cases and prevent paralytic ileus. Opposite plan advocated by some, i. e., excitation of peristalsis to distribute germs, increase hyperemia of peritoneum and thereby the autolysis and resorption of the pus. Physostigmine or atropine used by some before and after operation. The real field for this is in post-operative atony. To prevent the atony, avoid rough and undue handling of intestines. When early distention is marked and increasing, gain early action of bowels by enemata of various kinds, with or without physostigmine. Stupes and lavage also very useful. Careful post-operative treatment of diet, digestion and bowel movement very essential prophylactically.

Adhesions a prolific source of obstruction. Can we prevent them? Not altogether. It is largely a matter of careful technic. Operate early, rapidly, yet carefully; avoid drainage. If drains necessary, the kind of drains and their position of great importance. Remove source of infection, avoid displacing of bowels, cover denuded peritoneum if possible, encourage early peristalsis and frequent change of position after operation. Can we prevent the re-formation of adhesions? No, we may minimize them. Great variety of substance interposes between raw surfaces. No one a panacea. Many enumerated. Mucilage apparently the best.

Treatment of actual obstructions is *operative*.

Late obstructions. — Ample incision over site of obstruction if known, otherwise exploratory. Operate early. Collapsed and distended coils guides to obstruction. Relieve cause. If gut not viable, resect and anastomose.

Early obstructions. — Palliation by enemata, physostigmine, lavage, etc., should not be persisted in too long. Most cases operated too late. If mechanical cause suspected, laparotomy and relief of cause. If paralytic obstruction, enterostomy with flushing and syphonage. Technic of enterostomy. Objections to enterostomy. It should be done earlier to avoid the present poor results. In the early obstructions prophylaxis has given best results and made them much less frequent.

DISCUSSION.

DR. CHARLES H. MAYO, of Rochester, Minn.: I want to testify to the invagination method being a good one in the removal of tumors low in the sigmoid, at the upper rectum; in fact, it is about the only way you can

get a union, — to invaginate the upper end into the lower.

DR. JOHN B. DEAVER, of Philadelphia: I wish to report the following cases in this regard. The first is as follows: In the early part of last winter an artificial anus caused by ulcerative separation of the lower sigmoid at junction with rectum, due to pressure necrosis consequent upon the presence of an old appendiceal abscess, evacuated through the linea alba some weeks previously. Spencer Wells forceps passed up rectum and sigmoid brought down to anus and stitched to freshened margin of anus. Patient made a good recovery. The second case occurred three weeks ago, being one in which the lower sigmoid was damaged in removal, by pan-hysterectomy, of a uterine tumor involving the bowel. Patient recovered.

DR. ALBERT J. OCHSNER, of Chicago: If immediately upon the appearance of nausea or gaseous distention gastric lavage be instituted, there will be fewer instances of intestinal obstruction following shortly after operation. As regards intestinal obstruction due to conditions appearing many weeks after operation, our observation has been that we have practically no mortality excepting in those cases coming under our treatment after having received cathartics.

DR. E. WYLLYS ANDREWS, of Chicago: End-to-end anastomosis implies for success that we get our lumen at once, and this is not true with the McGraw ligature; but if we can devise a method by which all the advantages of this ligature can be strengthened by obtaining the open lumen immediately, we will have an ideal method.

DR. ALEXANDER H. FERGUSON, of Chicago: In regard to operative obstruction and the prevention of adhesions following operations, I would say that for four years I have used subgalate of bismuth, smearing it over all raw surfaces, with most complete satisfaction.

DR. ARPAD G. GERSTER, of New York: If we want to make headway against obstructions caused by adhesions, we must first know the cause of the adhesions, and this we do not know at present. Many causes have been exploited, the use of packings, the handling of the intestines and other mostly traumatic lesions to the peritoneal coat, but we have seen in the presence of the greatest traumatism that could be inflicted on the intestine that adhesions did not form. Here the pathologist and experimental surgeon must come to our aid. I believe that the cause must be looked for in certain conditions of the blood of the patient.

ABNORMAL POSITION OF THE DUODENUM.

G. E. ARMSTRONG, M.D., of Montreal, Canada: The duodenum is singularly constant in its relations, course and length; any exceptions are exceedingly rare and worthy of note.

In the anomaly reported, the duodenum ran to the right and then turned downwards external to the hepatic flexure, ascending colon and cecum, and, merging into the jejunum, passed from without inwards below the cecum into the small intestine area. The duodenum was completely surrounded by peritoneum. It had a long mesentery throughout and could easily be held two or three inches in front of the abdominal wall. The head of the pancreas, closely applied to the duodenum, was visible and palpable between the layers of the duodenal mesentery, and readily followed the duodenum when the latter was brought outside the body.

Instead, therefore, of passing across the second lumbar vertebra and behind the transverse colon and superior mesenteric artery, it retained an early embryological position. There was, of course, no ligament of Treitz and no fossa duodeno-jejunalis. The condition is clearly one of arrested development. The cecum in this case did not mount upwards to the lower hypochondrium and did not pass in front of the loop of the duodenum. The cecum did not descend to its usual final resting place in the right iliac fossa. It was high, completely surrounded by peritoneum, very movable and could be brought out through the epigastric incision and held eight inches in front of the body.

DISCUSSION.

DR. MAURICE H. RICHARDSON, of Boston: I would report a case in which the appendix, the gall bladder, the liver and the ileocecal valve were on the left side, the spleen on the right side, and the heart on the right side.

DR. EMMET RIXFORD, of San Francisco: I would like to put on record a case of failure of rotation of the primary gut. The explanation of this condition is probably to be explained on the basis of adhesions of the cecum to the parietal peritoneum, the result of a fetal peritonitis.

DR. LEONARD FREEMAN, of Denver: I had a case in which acute dilatation of the stomach followed an unimportant pelvic operation, and which at autopsy showed the duodenum passing directly beneath the liver and firmly attached to the posterior abdominal wall and around the right side as far as the hepatic flexure of the colon.

DR. JOSEPH A. BLAKE, of New York: I have met with two cases of abnormal position of the duodenum in my practice. I do not think there is apt to be dilatation in such cases, as the mesenteric vessels do not cross the duodenum, and the duodenum, instead of being bound down, is usually free.

DR. ALEXANDER PRIMROSE, of Toronto: I would like to emphasize the fact that these conditions of abnormality in the position of the duodenum may occur without giving rise to the slightest symptoms.

DR. JOSEPH C. BLOODGOOD, of Baltimore: I would like to record one other anomaly of the intestinal tract which I think must be very unusual, namely, absence of the appendix.

(To be continued.)

Book Review.

Diseases of Infancy and Childhood. Their Dietetic, Hygienic, and Medical Treatment. A Text-Book Designed for Practitioners and Students in Medicine. By LOUIS FISCHER, M.D., Attending Physician to the Willard Parker and Riverside Hospitals; Attending Pediatrist to the Sydenham Hospital, etc. Third edition. Pp. 980. Three hundred and three illustrations several in colors, and twenty-nine full-page half-tone and color plates. Philadelphia: F. A. Davis Co. 1910.

This, the third edition of this well-known work, has been thoroughly revised and enlarged, but, as before, the work is far from being a satisfactory one. It is badly arranged, some conditions being given far more attention that they deserve, and others being slighted. It contains a great deal of valuable information very poorly classified. While, of course, a useful book, it is far inferior to several other American textbooks on the same subject.

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SOME PUBLIC ABOMINATIONS.

ATTENTION has recently been called in the daily press to the non-enforcement of our law against spitting in public places. The evils of promiscuous expectoration are sufficiently obvious to need no comment. The trouble is that there is not yet a sufficient public sentiment against spitting to compel its discontinuance. There is something in the irresponsible and defiant lawlessness of the habit which makes it appeal to the undisciplined independence of the American temperament. The wilful spitter, — and most offenders are of this class, — by the act proclaims his contemptuous disregard of others, like the upstart millionaire who boasted, on returning from his travels, that he had spit tobacco-juice on the floor of every palace in Europe. Spitting is a public abomination, an offense against hygiene, against decency, against good manners; but it will not be abolished from among us until education leads people to realize its vulgarity as well as its dangers.

A further evidence of the slowness with which real civilization progresses may be observed in the common drinking cup, whose banishment we have only just essayed, and to which many persons still cling with the blind obstinacy of Ephraim wedded to his idols. Nothing in the world dies so hard as a fetish, or so easily as the people whom it kills. The common roller-towel is another abomination whose abolition should go hand in hand with that of the public drinking-cup. One reason for its continued persistence is the expense of laundering many individual towels. Recent report from Milwaukee states that the Board of Education in that immaculate and famous city has adopted, for use in the public schools, individual paper towels, which are very cheap and are intended to be used once and then burned. This substitute seems satisfactory and worthy of general adoption. In the matter of towels, however, we may at least flatter ourselves that we are even now a step in advance of Europe, where in every lavatory the towel that hangs upon the wall, far from soap and water, suggests possibilities of uncleanliness and disseminated infection almost too disgusting for even a physician to contemplate.

Such observations on the "ways and works of man" are enough to show that in some respects he is still "very little changed from the semi-apes." Perhaps, indeed, it was a dubious compliment to call him "the paragon of animals." Howbeit, it were better to look on the other side of the picture and reflect that we have already begun the relegation of these abominations to the limbo of outgrown infirmities. If the habit of spitting be in our community

> "The dram of eale
> Which doth the noble substance often dout
> To his own scandal,"

its abolition should be one of the desiderata which Boston may hope to attain in its approaching year of perfection.

CHOLERA SITUATION.

THE European epidemic of Asiatic cholera has continued with little change during the past week. In Russia conditions are as bad as ever. Genuine efforts are, no doubt, made by the government to combat the disease, but these are to a great extent thwarted by the ignorance and superstition of the peasantry, who, believing that the cholera is an evil spirit that can be appeased only by having his glut of victims, refuse all aid and instruction, mob the doctors, nurses and sanitary officials, and persist in drinking polluted water and in disregarding all measures for the prevention of infection. Moreover, the primitive hygienic provisions prevailing in many parts of Russia make such measures largely unavailing. Of the 762 cities of European Russia, it is stated that only 149 have a municipal water-supply and only 27 any system of drainage. Under such circumstances it is no wonder that the people die like flies. It is estimated that in the past six weeks alone there have been, in Russia, 150,000 cases and 75,000 deaths of cholera.

In Italy, where the epidemic is on a smaller scale and should be much more controllable, there seems little sign of cessation of the disease. The

record of incidence and mortality for the week of Oct. 1 to 8, as nearly as can be learned from available reports, is as follows: In the city of Naples, 54 new cases and 24 deaths; in the province of Naples, exclusive of the city, 43 cases and 13 deaths; in Apulia, 3 cases and 3 deaths; in the province of Sassari, 2 cases; at Torre del Greco, 1 death; and in the provinces of Avellino, Bari and Casserta, 12 cases and 5 deaths. The disease has also appeared in the island of Sardinia, where 4 cases and 1 death were reported on Oct. 3. As yet the infection has not invaded France, though 3 cases were found on board the steamer *Bosphore* in port at Marseilles.

In the United States, stringent precautions to prevent introduction of the disease continue to be observed. Every immigrant from an infected port is detained five days under quarantine before sailing and every steerage passenger five days on arrival. These measures have resulted in the detection of several suspicious cases, three of which in New York appear to have proved to be genuine Asiatic cholera. One of these patients has since died; the two others at latest accounts are still in the Swinburne Island Hospital. The rigor with which these precautions are enforced has aroused protest from the Italian government, which objects also to our inspection of merchandise and foodstuffs for exportation to the United States from infected districts. Our government has, however, not yet thought it necessary to lay an embargo on such goods. Notwithstanding, the United States Public Health and Marine-Hospital Service has doubled its detail of officers on duty at every port in Russia, Italy and Germany from which emigrants sail in large numbers. These measures need excite no popular apprehension in this country; they are merely evidence of the vigilance which constitutes our safety. The same is true of the meeting of the Advisory Public Health Board, called in Washington on Oct. 10, presumably to consider the cholera situation. We have as yet no report of the action of this meeting, but there is no reason to regard its convocation as evidence of particular danger. Our health officials are zealous and intelligent, and intelligence and zeal afford ample protection against such a disease as Asiatic cholera.

DANGERS OF SCANTY WATER SUPPLY.

In spite of the statement recently made that the water-supply of Boston is sufficient to last for nine months in the entire absence of rainfall, it remains true that a long-continued drought, like that of the past summer, seriously reduces the quantity and may impair the quality of the water-supply of smaller cities and towns less fortunately circumstanced. It is reported, for instance, from Palmer, Mass., that of the three reservoirs used by that city, two are dry and the third very low. An engineer sent by the Massachusetts State Board of Health to inspect these reservoirs is said to have reported on Oct. 6 that, owing to exposure of their shores, the condition of the remaining water is such as to render it unsafe for drinking unless boiled. There is now barely sufficient water for drinking and bathing, and not enough to fight a serious fire, should such occur.

The importance of adequate and pure water-supply for the health and safety of a community is self-evident. Moreover, as emphasized by the recent statistics of Sedgwick and MacNutt in the *Journal of Infectious Diseases* [reviewed in this JOURNAL, vol. clxiii, p. 524], there is a much less obvious but none the less apparently definite relation between purity of supply and the incidence of diseases not commonly thought of as water-borne. The causes on which this relation is based are not yet clearly understood, and the morbidity statistics of Palmer for the current and succeeding year might reasonably be expected to throw interesting light on the question. Meantime it is desirable that not only Palmer, but other cities similarly situated, should make every effort to secure a water-supply which shall guarantee them from recurrence of the present unfortunate conditions.

CHOLERA THEN AND NOW.

WHEN, in 1892, the news came that cholera had entered the port of New York, something like a general panic resulted. "Flustered officials, state and municipal," to quote a lively description of the state of affairs, "rushed into action in such haste that the measures they took came near starting a little war. Indeed, soldiers, or near-soldiers, of various sorts had to be ordered out to enforce the governor's orders, and a lot of money was spent for beach land with which nothing was ever done." Now, by reason of the progress which has been made in sanitary science since then, and the reliance on its protective efficiency, a similar announcement has been received by the authorities and the public with perfect composure. On the steamer *Sant' Anna*, of the Fabre Line, which arrived recently from Europe, a steerage passen-

ger died from cholera during the voyage and was buried at sea, and on Oct. 4, Health Officer Doty made public the fact that one suspect who arrived on Sept. 26 on the steamer *Germania*, also from Italian ports, had died from the disease three days later. Six of the passengers on the *Germania* who were reported in the ship surgeon's journal as having applied for treatment for minor troubles, but were well on arrival, were removed to Swinburne Island for observation. Two days later one of these, a Greek aged twenty-eight years, was taken ill again, twenty-four hours afterwards he was in a condition of collapse, and in twelve hours more he died. In commenting on this case Dr. Doty has made the following interesting statement: "Although the autopsy showed no evidence of cholera, the examination of the secretions of the intestinal tract showed the presence of suspicious organisms. Specimens were sent to Dr. Wm. H. Park, of the Health Department of this city, and to Dr. Anderson, the bacteriologist of the United States Marine-Hospital Service, and the results indicated that the patient died of cholera. This is a practical demonstration of what is known as 'cholera carrier'; that is, persons who may carry organisms of the disease without any symptoms to indicate its presence. In this case it was demonstrated that the extreme precautions taken were fully justified. As the *Germania* case gave practical proof of the fact of 'cholera carriers,' it indicates that in the future additional measures must be put in force." On Oct. 6 it was announced that a coal trimmer on the steamer *Moltke*, which arrived on the 5th, was suffering from genuine Asiatic cholera, as shown by the bacterial examination. This was a comparatively mild case, and the latest reports are to the effect that the patient is in a fair way to recover.

THE BOSTON HOSPITAL SCHOOL.

It was recently voted by the trustees of the Boston Consumptives' Hospital to close the Hospital School maintained by the city at Franklin Park. A committee appointed by the Boston Association for the Relief and Control of Tuberculosis to investigate the value of this school has reported unanimously in favor of its continuance, and in a letter to the mayor the Association strongly urges reconsideration of the action of the trustees. The committee finds that, of 161 tuberculous children who have been sent to the Hospital School, 51 have been discharged, of whom 35 have been returned to the public schools, 28 with their disease arrested or improved. Moreover, the children, while in the Hospital School, have not only benefited in health, but have shown as good progress in studies as those in the regular schools. The committee, therefore, believes that the Hospital School is of value not only for the good it does to individual children, but as an educational agency and a means of gaining the confidence of the public in municipal efforts for the relief and control of tuberculosis.

The work of such an institution is an object lesson in the possibilities of intelligent treatment. Accordingly the association recommends that the Boston Hospital School be not discontinued, and that the trustees of the Consumptives' Hospital build and maintain, in addition, a cottage sanatorium at Mattapan for such tuberculous children as are too sick to attend the Hospital School, or who are mentally defective.

It is sincerely to be hoped that this counsel of experts will be heeded. The success of the Massachusetts Hospital School at Canton might be cited as additional evidence of the possibilities of such institutions, and as argument against the closing of the Boston school. Education and early treatment are the two essentials of ultimate victory in the campaign against tuberculosis, and nowhere can these be better combined than in such an institution as the Boston Hospital School.

PSYCHOLOGY FOR PHYSICIANS.

Under the auspices of the Harvard University Extension Course it is proposed to offer work in psychology under the direction of Prof. Robert M. Yerkes, of the Psychological Department of the University, the course to be an introduction to the study of the principles, methods and values of the science of mental life. The prospectus announces the course as follows:

"The primary aim of the course is to acquaint each student with his own mental life and to arouse interest in the observation of individual mental traits and tendencies.

"By means of lectures, demonstration experiments, conferences, reading and written exercises students in this course are introduced to the study of consciousness. The lectures and demonstration experiments together serve to exhibit the characteristics of the materials, aims, methods and values of psychology. From them the student should gain a knowledge of the chief facts and laws of mental life and an intelligent appreciation of scientific method. The conferences and exercises are planned as aids to the acquisition of the introspective attitude and the development

of skill in self-observation. It is essential that every beginner in psychology should learn to study consciousness for himself."

In view of certain definite and, we believe, highly salutary tendencies in present-day medicine, it is altogether desirable that medical students should have a much more definite knowledge of the laws of mental life than is at present obtainable in any of our medical schools. Opinions may differ as to the desirability of prescribing such courses in the already overcrowded medical curriculum, but certain students whose interest lies essentially in disorders of the nervous system, and in the field of mental disease in particular, should have an opportunity, while pursuing their medical studies, to acquire such psychological knowledge. This University Extension Course offered by Professor Yerkes is admirably adapted to this end and should certainly receive the support of students interested in the difficult and important problems now before the medical profession relating to the nervous system and the mind.

MEDICAL NOTES.

THE COST OF RADIUM. — Report from London states that the present market price of radium is at a rate representing a cost of $2,100,000 an ounce.

YELLOW FEVER IN MEXICO. — It is reported that yellow fever has again broken out in Mexico, and there are said to have been two deaths from the disease at Campeche during the past week.

DEATH OF A FORMER ARMY NURSE. — Mrs. John Mason Loomis, a former army nurse, who died at Chicago on Oct. 7, was born in Shelburne, N. Y., on Aug. 15, 1829. At the outbreak of the Civil War she went to the front with the regiment of which her husband was colonel, and served throughout the war at the head of a company of Red Cross nurses. She leaves no children. Her entire fortune, amounting to about $1,250,000, is bequeathed to the Loomis Institute, of Windsor, Conn., for the foundation of a technological school.

TWO CENTENARIANS. — Mrs. Mary Boss, who died last week at Schenectady, N. Y., was locally reputed to be one hundred and four years of age. She was born in Germany.

William Macabee, who died last week at Philadelphia, is said to have been born in Baltimore on Sept. 22, 1803. At the time of his death he was the oldest veteran of the Civil War, and he was the last survivor of the crew of the frigate *Constitution*, on which he enlisted shortly after the War of 1812, and on which he served for many years. He fought as an able-bodied seaman throughout the Civil War, and continued in the navy afterwards until age compelled his retirement.

OFFICERS OF THE ROENTGEN RAY SOCIETY. — At the annual meeting of the American Roentgen Ray Society, recently held at Detroit, Dr. Percy Brown, of Boston, was elected president of the society for the ensuing year; Dr. Walter C. Hill, of Cleveland, Dr. Willis Manges, of Philadelphia, and Dr. A. C. Skinner, of Kansas City, were elected vice-presidents; Dr. F. H. Baetzer, of Baltimore, secretary; and Dr. Charles F. Bowen, of Columbus, treasurer. Dr. Fedor Haenisch, of Hamburg, the delegate of the German Roentgen Association to the meeting, is in Boston this week on his way to return to Germany.

THE HARVEY SOCIETY. — The lecture course of 1910–11 under the patronage of the New York Academy of Medicine is as follows: Oct. 15, 1910, Prof. H. Chiari, University of Strassburg, "Die Bedeutung der pathologischen Autopsie und sonstiger pathologisch-anatomischer Untersuchungen." Nov. 5, Prof. W. E. Castle, Harvard University, "Unit Characters in Heredity." Nov. 19, Prof. Jacques Loeb, Rockefeller Institute for Medical Research, "The Prevention of the Toxic Action of Various Agencies through the Prevention of Oxidation in the Cell." Dec. 10, Prof. Harvey Cushing, Johns Hopkins University, "Certain Clinical Aspects of Dyspituitarism." Jan. 14, 1911, Prof. Arthur R. Cushny, University of London, "Therapeutics of Digitalis." Feb. 4, Dr. Thomas B. Osborne, Connecticut State Agricultural Experiment Station, "The Chemistry of the Proteins." March 25, Prof. H. Gideon Wells, University of Chicago, "Calcification and Ossification."

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Oct. 11, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 22, typhoid fever 33, measles 9, smallpox 0, tuberculosis 61.

The death-rate of the reported deaths for the week ending Oct. 11, 1910, was 16.33.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 8, 1910,

was 220, against 201 the corresponding week of last year, showing an increase of 19 deaths, and making the death-rate for the week, 17.11. Of this number 100 were males and 120 were females; 216 were white and 4 colored; 143 were born in the United States, 74 in foreign countries and 3 unknown; 43 were of American parentage, 156 of foreign parentage and 21 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 32 cases and 6 deaths; scarlatina, 29 cases and 1 death; typhoid fever, 32 cases and 3 deaths; measles, 10 cases and 0 deaths; tuberculosis, 61 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 20, whooping cough 2, heart disease 28, bronchitis 0. There were 12 deaths from violent causes. The number of children who died under one year was 52; the number under five years, 72. The number of persons who died over sixty years of age was 52. The deaths in public institutions were 77. Cerebrospinal meningitis, 4 cases and 1 death. Anterior poliomyelitis, 3 cases and 3 deaths.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases. Diphtheria, 1 case. Typhoid fever, 7 cases and 1 death. Scarlet fever, 2 cases.

Deducting deaths of non-residents, the total is 200 and the death-rate is then 15.55.

Bequest to the Dorchester Home for Consumptives. — Among other charitable bequests in the will of the late Margaret Horrigan, of Cambridge, Mass., which was filed last week in the Middlesex Probate Court, is one of $200 to the Free Home for Consumptives, Dorchester.

Sale of Impure Vinegar. — In the Boston municipal court last week, a corporation engaged in the manufacture and sale of vinegar in this city was fined $100 "for having in its possession on July 18 last, with intent to sell, and for selling on Sept. 23, vinegar containing caramel coloring matter," in violation of the regulations of the Board of Health.

Poliomyelitis in Rhode Island. — The epidemic of poliomyelitis in Rhode Island continues. On Oct. 7, three new cases of acute poliomyelitis were reported to the Rhode Island State Board of Health, one in Providence, one in Cumberland, and one in Anthony. In Providence there was also one death from the disease on the same day. This makes a total of 166 cases reported in Rhode Island since June 1, and 194 cases with 22 deaths since the beginning of the current year.

Endowment Needed for a Tuberculosis Camp. — Two years ago Mrs. Theodore K. Gibbs purchased for $20,000 a tract of land in Middletown, R. I., and offered to erect on it and present to the Newport (R. I.) Hospital a tuberculosis camp. This offer the hospital refused until adequate endowment for the camp should be provided. That endowment is not yet forthcoming and the enterprise still awaits the generosity of some philanthropist for its completion.

Work of the Boston Floating Hospital. — The Board of Trustees of the Boston Floating Hospital publishes the following statement of the work done by the hospital during the season of 1909. "Last summer 384 different permanent patients received care for an average of 19 days of twenty-four hours each, or a total of 7,367 full days' service; 667 day patients made 4,683 day trips; mothers who accompanied their sick children and received instruction in nursing, helping in their care, made 4,874 day trips; 831 day trips were made by well children too small to be left at home by their mothers. This represents a service to the beneficiaries of this work of a total of 17,755 days for the summer of 1909." This record gives strong enforcement to the appeal made by the trustees for donations to meet the expenses of the season just ended and make possible the continuance and extension next year of this valuable medical charity.

"Ether Day" at the Massachusetts General Hospital. — In our issue of last week we announced that "Ether Day" at the Massachusetts General Hospital on Oct. 15 would be addressed by Dr. Geo. W. Crile, of Cleveland, Ohio. This fact in itself should lead to a large attendance on the part of the medical profession in this vicinity. It may not be generally known, but for some years past the meeting commemorative of the discovery and practical use of ether at the Massachusetts General Hospital has assumed a somewhat formal character, with an address from a man distinguished in some walk of life, though not necessarily in medicine. This year the address is to be made by a surgeon of originality who has done much to forward the science of medicine in his line, and it is not to be doubted that his address will be of vital interest, particularly to the medical profession. It is to be hoped the attendance will be generous.

Physical Examination of City Laborers. — The Civil Service Commission has recently adopted a regulation providing for compulsory physical examination of all applicants for employment as laborers by the city of Boston. This regulation, which becomes operative on and after Dec. 5, 1910, requires examination by a physical inspector as part of the test for general fitness of every candidate. The physical defects enumerated as deemed sufficient cause to warrant rejection are: Serious defects of sight or hearing, cardiac or pulmonary disease, paralysis, serious spinal deformities, stiff joints, loss of limb such as to impair present or future usefulness, marked flat foot, severe varicose veins or ulcers. In addition every man will be required to pass a strength test by demonstrating his ability to lift, shoulder and carry a 'sack containing 75 pounds' weight. It is surprising to find that such a regulation has not previously been in existence. Its adoption now should not only increase the physical efficiency of the city's labor force, but should to a certain extent lessen the opportunity for graft in the employment of those incapable of rendering the service for which they are paid.

NEW YORK.

Open-Air School at Montclair, N. J. — On Oct. 3 it is proposed to inaugurate an open-air public school for children not of good health in Montclair, N. J. A tent will be used for the purposes of the school, with arrangements for a maximum of fresh air. A wooden floor will be provided and regulation school desks. The clothing to be worn is to consist of woolen garments and a bag made of warm material which may be drawn over the feet in cold weather. Heated soapstone is to be used to keep the feet of the children warm. No decision has yet been reached regarding the food, and until this question is decided there will be only one session of the school daily.

The Lobster and Typhoid Fever. — While the lobster has been accused of giving rise to many "ills," it has not hitherto been regarded, like the oyster, as a source of typhoid fever. This charge has now been brought against it in the case of a number of persons who partook of a dinner given on Sept. 7 under the auspices of a certain political and social club of Elizabeth, N. J., at which lobster salad was a prominent feature. It is, of course, quite possible that the typhoid infection may have been contracted from some other ingredient of the salad, or from some other viand than the salad, but it is an unquestionable fact that a considerable number of those at this dinner have been attacked with the disease. On Sept. 27, there were sixteen serious cases, and three others had already proved fatal, while the bacteriological tests have shown that the affection is genuine typhoid fever. In the meanwhile Health Officer Richards has secured the names of all who attended the dinner and of all dealers who furnished the food served at it, and has commenced an investigation which it is to be hoped will definitely settle the source of infection.

International Pure Milk League. — "The International Pure Milk League" has been incorporated in the county of New York by a number of prominent women. The objects of the league are stated to be, "to foster and encourage the production, distribution and consumption of pure milk and pure food generally; to foster and promote the common interests of producers, dealers and consumers of milk and all other articles of food; to foster and promote methods of cleanliness in the handling of milk and all other articles of food, from the producer to the consumer, throughout the civilized world; to foster and promote local and foreign organizations of a similar purpose, with or without the league as a central or parent body."

"A Budget Show." — A "Budget Show," a novelty in municipal undertakings, in which all the various departments of the city's administration have exhibits, was opened in a commodious building on Broadway on Oct. 3. Mayor Gaynor, who appeared at the City Hall on that day for the first time since his attempted assassination, was expected to have charge of the opening ceremonies, but as it was deemed inadvisable for him in his present state of health, President Mitchell, of the Board of Aldermen, officiated in his place. The work of the Health Department in combating disease and promoting sanitation is admirably represented in this exhibition, and on Oct. 4 Commissioner Lederle made an address in which he set forth the special needs of the department. In the Division of Child Hygiene an increase of $316,145 for next year is asked for, and this includes provision for the employment of 266 nurses in addition to the present force of 142, and 49 medical inspectors in addition to the present number, 161, in order to admit of the physical examination of the children attending all the free schools of the city, instead of, as at present, the public schools only, and to continue throughout the year the instruction of mothers in the care of

their infants, instead of, as at present, during the summer months only. The largest increase, $487,796, is asked for the Division of Hospitals in order to provide one physician to every forty patients, one day nurse to every ten patients and one night nurse to every fifteen patients. The present appropriation makes allowance for only one physician to every ninety patients, one day nurse to every sixteen patients, and one night nurse to every twenty-one patients.

Current Literature.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

SEPT. 17, 1910.

1. YOUNG, G. B. *The Proposed Enlarged National Public Health Organization.*
2. REED, C. A. L. *Extra-Capsular Fixation of the Movable Kidney.*
3. PARKE, T. D. *Further Report on Ileocolitis Complicated by Acidosis.*
4. HUMMEL, E. M. *Syphilitic Disease of the Arteries of the Central Nervous System, with Report of a Case.*
5. WASSERMANN, S. *A New Method of Vaccination.*
6. MOORE, H. A. *A Modification of the Young Prostatic Tractor.*
7. HUNT, E. L. *Cobweb Brain. A Contribution to the Pathology of Idiocy.*
8. BLEDSOE, A. C. *Unusual Site of Typhoid Perforation.*
9. SUTTON, R. L. *Sporotrichosis.*
10. LEWIS, D. D. *Tumors of the Hypophysis.*
11. *LEVISON, L. A., AND DACHTLER, H. *Clinical and Roentgenographic Study of the Essential Differences between the Physical Findings in Childhood and Adult Life.*
12. ROBERTSON, H. E. *Pathology and Bacteriology of Acute Anterior Poliomyelitis.*
13. SILVER, D. *Surgical Treatment of Infantile Spinal Paralysis.*
14. *MELTZER, S. J. *Bronchial Asthma as a Phenomenon of Anaphylaxis.*
15. PFEIFFENBERGER, J. M. *Vomiting of a Gallstone.*

SPECIAL ARTICLE.

Epidemic Poliomyelitis. A Discussion of the Prevalent Infantile Paralysis.

11. Levison and Dachtler conclude their article as follows: Roentgen examination affords an unexcelled method of controlling the results obtained by physical diagnosis. The teleoroentgenographic method reduces the error by distortion to a negligible quantity and is well adapted to routine work. The anatomic location of the normal thymus renders its differentiation by Roentgen rays improbable. The demarcation of heart borders in terms of bony landmarks does not offer a fair comparison with adults, owing to the continued change in the development of the bony structures. Absolute heart-dullness in children can be quite accurately determined by very light percussion and the results confirmed by Roentgen rays. The relatively great volume of the great thoracic vessels in children offers the greatest difficulty in determining the size of the heart by physical methods only. Extremely light percussion has not given us normal impaired resonance between the upper borders of the great vessels and the clavicle. Roentgen examination has confirmed the absence of a density of tissue which would produce such dullness.

14. Meltzer's excellent article gives a very clear idea of the process of anaphylaxis and is summed up as follows: It is generally agreed that the so-called nervous asthma is due to a stenosis of the bronchioli. It was discovered that the so-called anaphylactic shock is due also to a stenosis of the fine bronchi. The theory is here offered that asthma is an anaphylactic phenomenon, that is, that asthmatics are individuals who are "sensitised" to a specific substance, and the attack of asthma sets in whenever they are "intoxicated" by that substance. It has been proven that the anaphylactic attack is of peripheral and not of central origin. It is, therefore, suggested that the so-called nervous asthma is also due to a peripheral and not a central cause. In other words, "nervous asthma" is not a neurosis.

[E. H. R.]

SEPT. 24, 1910.

1. BECK, H. G., AND STOKES, W. R. *A Case of Diffuse Purulent, Ventriculo-Septal Myocarditis with Adams-Stokes' Syndrome.*
2. LEMANN, I. L. *Study of a Case of Heart Block with Alternation of Systolic and Diastolic Jugular Waves.*
3. HOMAN, G. *Instruction of the Public in Antituberculosis Measures by a Traveling Car Exhibit.*
4. WHITE, C. J. *Alopecia and Seborrhea.*
5. HALLBERG, C. S. N. *The External Preparations of the United States Pharmacopeia and National Formulary.*
6. MUSCANTE, A. S. *Medico-Pharmaceutical Ethics.*
7. WEINSTEIN, J. W. *The New Test for Cancer of the Stomach, with Suggested Improvement.*
8. *WALTER, W. *A Study of the Bacterial Flora of the Nasal Mucosa in the Presence of Rhinitis.*
9. ELTERICH, T. J. *A Clinical Study of a Case of Pseudoleukemic Anemia of Infancy (Von Jaksch).*
10. *SAENGER, A. *Choked Disk in its Relation to Cerebral Tumor and Trephining.*
11. MCEWAN, J. S. *Dislocation of the Shoulder-Joint Complicated by Fracture, with Report of Two Cases.*
12. *FLEXNER, S. *The Contribution of Experimental to Human Poliomyelitis.*
13. *MURPHY, J. B. *The Arsenical Treatment of Syphilis.*

8. Walter, from his bacteriologic investigations, concludes that the diphtheroids, particularly the Bacillus Segmentosus, are concerned in the production of the so-called common cold in its typical manifestation in the nose, and there is much evidence that it occurs in epidemic form. The micrococcus catarrhalis is much more common in its manifestation and is probably also epidemic and productive of more severe inflammation, though mild epidemics occur. It seems likely that a mixed infection of these two types increases the virulence. The pneumobacillus of Friedländer is much more concerned in chronic conditions and is probably identical with the ozena bacillus. The pneumococcus of Fränkel flourishes in any part of the upper respiratory tract. Segmentosus is most likely to be in the nose, seldom in the trachea, and may cause otitis media. Catarrhalis is most apt of all to invade the larynx and trachea. The pneumobacillus is mostly confined to the nose and sinuses. Influenza bacilli are conspicuous by their absence. Pyogenic cocci are nonpathogenic locally, except as secondary invaders.

10. Saenger presents an historical review of the theories of choked disk and advances his own that the main cause is increased cerebral tension. This is substantiated by the rapid disappearance of the condition after decompression in cerebral tumors. He advises decompression at the beginning of visual diminution, before atrophy of the optic nerve develops.

12. Flexner gives a complete review of our present-day knowledge of anterior poliomyelitis, with special reference to recent experimental results. It is a very comprehensive paper.

13. Murphy advises the use of the sodium cacodylate of arsenic in the treatment of all stages of syphilis. It is given in 3 to 6 gr. doses by mouth or 1 to 2 gr. doses daily hypodermically. It is remarkable how quickly the spirochete will disappear from mucous patches or the primary sore under this treatment. This is the safest arsenical preparation to use, and seems to be a specific against the spirochete. [E. H. R.]

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES.

SEPTEMBER, 1910.

1. *HENDERSON, V. E. *The Therapeutic Action of Digitalis.*

2. *FRIEDENWALD, J. *Digestive or Alimentary Hypersecretion of Gastric Juice.*
3. *SAILER, J. *Chronic Pancreatitis.*
4. FULTON, Z. M. K., JUDSON, C. F., AND NORRIS, G. W. *Congenital Heart Block Occurring in a Father and Two Children, One an Infant.*
5. *MCDONALD, E. *The Duration of Pregnancy, with a New Rule for Its Estimation.*
6. BUERGER, L. E. *Further Studies of Sarcoma of Bone.*
7. WILLIAMS, T. A. *Cases Illustrating the Origin of Hysterical and Pseudo-hysterical Symptoms.*
8. *ORBISON, T. J. *Psychasthenic Attacks Resembling Epilepsy.*
9. PACKARD, F. R. *A Fatality Following the Removal of Tonsils and an Adenoid Growth.*
10. COOKE, J. V. *Metabolism after Parathyroidectomy.*
11. *JAMES, W. B., AND WILLIAMS, H. B. *The Electrocardiogram in Clinical Medicine.* 1. *The String Galvanometer and the Electrocardiogram in Health.*
12. WEAVER, G. H. *The Effects of Injections of Killed Streptococci.*

1. Henderson describes the actions of digitalis upon the heart as (1) stimulation of the cardio-inhibitory center decreasing rhythmicity; (2) increase in the power of contractility; (3) increase in tonicity; and (4) depression of conductivity. These effects may be exerted more promptly than by the mouth administration of digitalis by the intravenous use of strophanthin. Cases are reported where strophanthin injections were given and systolic and diastolic blood-pressures were followed to determine the work of the heart by Von Recklinghausen's method, but the clinical improvement showed more striking evidence of the effect than the figures supposed to represent heart work. Henderson believes that the intravenous use of strophanthin is of value in giving prompt benefit where any favorable results are to be obtained from the digitalis group of drugs, and that where it fails recourse must at once be had to other lines of treatment.

2. Friedenwald reports 14 cases of digestive gastric hypersecretion as distinguished from continuous gastric hypersecretion. The condition is defined as one where abnormally large amounts of gastric secretion are obtained after a test meal, although the fasting stomach contains but a few cubic centimeters of juice. The great majority of cases occur in men. The symptoms are largely those of gastric neurasthenia, with sense of fullness, eructations and pains, with occasionally nausea and vomiting, rarely heartburn, and usually extreme constipation. Appetite remains good, but marked loss of weight is present in all instances. Succussion is present even after small meals. The amount of stomach contents obtained after a test meal is always large, separating into two layers, — a deep layer of almost clear fluid with below it a comparatively small stratum of solid sediment. Even after a dry test breakfast, large amounts of fluid are withdrawn, but from the fasting stomach little or nothing can be extracted. The condition may be transient or may pass over into continuous hypersecretion. It is undoubtedly of nervous origin, and in treatment attention is to be directed largely to improving the general health and building up the nervous system by rest, hydrotherapy and massage.

3. Sailer reviews the development of our knowledge of pancreatic disease and its present status. Chronic pancreatitis consists of degenerative changes in cells, proliferation of connective tissue and round-cell infiltration, and is accompanied by insufficiency of pancreatic secretion. Clinically cases fall into three classes. (1) Cases with jaundice, distended gall bladder, emaciation, digestive disturbance and changes in secretions and discharges, sometimes with palpable tumor in the region of the umbilicus. (2) Cases where swelling of the head of the pancreas is the chief clinical feature. (3) Cases where the diagnosis cannot be established clinically, but where pancreatitis is suspected either by the surgeon, who detects unusual hardness at operation, or by the physician as a result of symptoms, signs and laboratory tests. The chief symptoms are malnutrition, disturbed digestion with discomfort or actual pain. Numerous tests of pancreatic function have been employed, but their diagnostic value remains unestablished. In treatment benefit has been reported after various surgical procedures, but medical treatment is not to be neglected. This comprises, in addition to general attention to digestion and nutrition, the use of pancreatic extract in glutoid capsules.

5. McDonald calls attention to the lack of accuracy of the prevailing methods of estimating the duration of pregnancy, and proposes a new method for its determination. The duration of pregnancy in lunar months is found to equal the height of the uterus in centimeters divided by 3.5. After the sixth month this rule has been found to be very exact.

8. Orbison refers to the description by Spiller and by Oppenheim of cases which have been diagnosticated either as epilepsy or as hysteria, but do not properly belong to either disease, being simply manifestations of psychasthenia without relation to hysteria or to epilepsy. It is to be recognized that in certain cases of psychasthenia convulsive attacks may occur which are not of grave prognosis.

11. James and Williams describe the string galvanometer and the electrocardiogram in health. The electrocardiogram is a graphic record of electric currents set up by the heart beat as shown by the apparatus of Einthoven. Certain waves are observed with each beat of the heart, the chief one being definitely associated with the contraction of the ventricle. A smaller wave probably results from the contraction of the auricle, and other events occur the significance of which is not yet established, but which serve to give the electrocardiogram of the normal case a characteristic form. [F. W. P.]

ANNALS OF SURGERY.

SEPTEMBER, 1910.

1. *HUNT, J. R., AND WOOLSEY S. *A Contribution to the Symptomatology and Surgical Treatment of Spinal Cord Tumors.*
2. *STONE, H. B. *Intestinal Lesions Produced by Blunt Force.*
3. *SCHWYZER, A. *Transgastric Jejunal Feeding.*
4. *SUTTON, W. S. *The Proposed Fistulo-Enterostomy of Von Stubenrauch.*
5. LILIENTHAL, H. *Permanent Colostomy.*
6. MATHEWS, F. S. *Myeloma of the Long Bones.*

1. Hunt and Woolsey present a very careful study of thirteen cases of spinal cord tumors, of which 6 were extramedullary. Hunt, after a survey of symptoms and signs for localization, gives the thirteen case histories. These are given first in summary, then in detail, and are finally discussed from point of view of diagnosis, symptomatology and localization. They are highly instructive and forcibly impress the significance of the introductory survey. Woolsey then gives the operative technic, the mortality, the after-treatment and the results, immediate and ultimate. Any group of symptoms indicating a progressive focal lesion of the cord is considered suggestive of the possibility of neoplasm. Much attention is given to the differentiation of extra- and intra-medullary tumors. An absolute diagnosis is not always possible owing to exceptions which occur in the symptomatology of either variety. When in doubt, both authors agree that the patient should always receive the benefit of the doubt and be subjected to exploratory laminectomy without undue delay. Spinal cord tumors generally begin with localized pain due to involvement of meninges or more especially the posterior roots, followed after a valuable period by symptoms of gradual impression of the cord (sensory, motor and sphincter disturbances). With some exceptions vertebral and extradural tumors present bilateral root and medullary symptoms, while intradural tumors present unilateral symptoms. Although a zone of hyperesthesia corresponding to the upper level of compression is far from constant, it is a valuable localizing sign, when present. Rigidity of the spine with localized pain and tenderness, so characteristic of vertebral tumors, may also accompany intravertebral growths. The root pains are segmental in distribution and do not, as in true neuralgia, follow the course of nerve trunks, and are of great value in determining the level of the lesion indicating compression of the segment from which the root springs and not of the root in its intraspinal course. In intramedullary tumors root-pains are often absent or insignificant. Loss of pain and temperature sense (dissociated anesthesia) may be en-

countered in vertebral and extramedullary lesions as well as in central lesions. Atrophic palsies occur in both central and eccentric growths, but atrophy dependent upon extensive longitudinal involvement of the cord accompanied by fibrillary twitchings, especially associated with loss of pain and temperature sense, homolateral and of segmental distribution, is very characteristic of central tumors. In extramedullary tumors of the cervical region Hunt has often observed a distinct girdle sensation at the umbilical or lower thoracic level. Woolsey favors a simple laminectomy, if possible in a modified left Sims' position, always with the part of the spine in question higher than the head and rest of the spine to limit the escape of cerebrospinal fluid when the dura is opened. Urotropin is given before and after operation until wound is healed or until catheterization is no longer necessary. By sight in many cases it is difficult to determine whether the tumor is extra- or intra-medullary owing to the lamellated, edematous condition of the arachnoid over the tumor. This must be incised. At least three successive nerve roots must be divided to produce cutaneous anesthesia. Simple section without suture is practised and advised in all cases of inoperable tumor to relieve pain. The authors' mortality (7 cases) was 14.3%, but, including 2 exploratory operations and 1 case of endothelioma of upper sacral vertebræ, the mortality was only 10%.

2. Stone reports 4 cases of intestinal lesions from blunt force, 3 with rupture and 1 with contusion and bowel paralysis. All were operated immediately upon admission to the University of Virginia Hospital, admission occurring thirty-six to one hundred and one hours after accident. In all cases the small intestine sustained injury. The case of adynamic ileus was in a boy who had been jammed against a gate-post by a charging cow. There was immediate sharp abdominal pain and vomiting. The vomiting soon ceased and did not recur. Belly showed distention without rigidity or marked tenderness, no peristalsis and no free fluid. There was no leucocytosis. Operation showed 14 cm. of contused gut with distended gut above and collapsed gut below. Enterostomy. No drainage. Second operation with mechanical emptying of the bowel after direct application of eserin failed. Third operation, closure of fistula. Recovery. Stone advises exploratory laparotomy in all cases of abdominal blunt injury.

3. Schwyzer reports a case upon which he did a gastrojejunostomy with a Murphy button and then a small gastrostomy. A catheter was passed through the gastrostomy opening *via* the button into the distal loop of jejunum. Through this tube the desperately ill patient was fed. Vomitus or stomach contents from washings were found to be best tolerated and had the advantage of containing some digestive secretions.

4. Sutton reports a case of persistent biliary fistula upon which was performed the fistulo-enterostomy proposed by Von Stubenrauch, "the first application of this method to the human subject." The operation was found to be feasible, but a failure on physiologic grounds. [T. W. H.]

The Lancet.

Sept. 3, 1910.

1. Gibbons, R. A. *Sterility: its Etiology and Treatment.*
2. *McDonagh, J. E. R. *A Report on Twenty Cases Treated with Ehrlich's Specific for Syphilis.*
3. *McIntosh, J. *On the Influence of the New Ehrlich Preparation, Dioxy-diamido-arsenobenzol ("606") on Recurrent Fever in Rats.*
4. *Tod, H. F. *The Value of Ossiculectomy in Chronic Middle-Ear Suppuration, as a Means of Avoiding the Complete Mastoid Operation.*
5. Upcott, H. *Iso-Hemolysis in Relation to Cancer.*
6. Hall, I. W., Roberts, E. M., and Fletcher, J. *Further Observations upon Typhoid Carriers.*
7. Ingram, A. C. *Rhinosporidium Kinealyi in Unusual Situations.*
8. Clarke, J. J. *A Case of Congenital Coxa Valga.*
9. Jones, R., and Pearson, R. W. J. *A Case of Leprosy in a White Person associated with Insanity.*
10. *Williams, R. N., Murray, H. L., and Runole, C. *Further Researches into the Bacteriology of Epidemic Summer Diarrhea, with Special Reference to the Classification by Absorption of Organisms Isolated belonging to the Paratyphoid B., Suipestifer Group.*
11. Emery, W. D'E. *The Technic of a Simplified Form of the Wassermann Reaction.*
12. Hird, A. E. W. *A Case of Cerebellar Hemorrhage.*

2. McDonagh briefly reports his results with the use of Ehrlich's new preparation for the treatment of syphilis. This drug aims to kill definitely this infecting organism. Over-sensitiveness to arsenic should be tested for, prior to the use of the drug, by a conjunctival test. He describes the technic of injection either intramuscularly or intravenously. In addition to remarkable changes for the better in the condition of the local lesion, he records a great improvement in the patient's general condition.

3. McIntosh reports his experiments with the new Ehrlich preparation "606" on recurrent fever in rats. He concludes from his researches that this is a specific remedy for European relapsing fever.

4. Tod urges ossiculectomy instead of a radical mastoid operation in chronic middle-ear suppuration for the following reasons: (1) A large number of cases can be cured or a radical mastoid operation avoided by this comparatively simple procedure. (2) The large proportion in which a good result is obtained in regard to hearing power by this method. (3) There is slight inconvenience to the patient and only a short period of after-treatment.

10. The writers' have isolated from the feces, heart, blood, etc., of cases dying of epidemic diarrhea two distinct groups of organisms producing diarrhea in puppies. These groups are distinguishable from each other and from the Paratyphoid B. They were not present in the stools of one hundred normal children. [J. B. H.]

Sept. 10, 1910.

1. Yearsley, M. *The Duty of the General Practitioner to the Deaf Child.*
2. Starling, H. J. *On the Value of Blood-Pressure Determinations in the Toxemia of Pregnancy.*
3. *McCann, F. J. *Cæsarean Section in the Treatment of Eclampsia Gravidarum, with Notes of a Successful Case.*
4. Goodhart, J. F. *Note on the Central Origin of Some Cases of So-Called Heart Block.*
5. Stott, H. *Enteric Fever Spread by Milk Infection, Probably by Means of a Carrier Case.*
6. Bentall, W. C. *Vesico-Vaginal Fistulæ: A Summary of Twenty-One Cases Operated on.*
7. Stoffel, A. *On the Failure of Nerve Anastomosis in Infantile Palsy.*
8. Burroughs, W. J. *A Case of Chronic Constipation Treated by Faradism of the Large Intestine.*
9. Mummery, P. L., and Bridges, E. C. *A Case of So-Called Chronic Neurasthenia due to Abdominal Adhesions; Operation; Recovery.*

3. McCann is of the opinion that Cæsarean section is the best method of treatment of ante-partum eclampsia. In this condition the best chance of recovery lies in speedy delivery; as Cæsarean section is the quickest method at our disposal, he is in favor of adopting it in all such cases. [J. B. H.]

British Medical Journal.

Sept. 3, 1910.

1. *Bryce, A. *Remarks on Mechanotherapy in Disease with Special Reference to Osteopathy.*
2. Pirie, A. H. *A Lecture on the Interpretation of X-Ray Negatives.*
3. Renner, W. *The Spread of Cancer among the Descendents of the Liberated Africans or Creoles of Sierra Leone.*
4. Neve, E. F. *One Cause of Cancer as Illustrated by Epithelioma in Cashmir.*

The British Medical Association.

Section of State Medicine.

5. Kerr, J., *et al.* *Discussion on the Provision of Medical Treatment of School Children.*
6. *Milne, R. *A Defense of the Home Treatment and Prevention of Scarlet Fever.*

7. HOGARTH, A. H. *The Tuberculosis Problem in Country Areas.*
8. FREMANTLE, F. E. *Part-time Medical Officers of Health.*
9. COLLINS, W., *et al. Discussion on the Reform of Death Certification.*
10. ROBERTSON, J., *et al. Discussion on Town Planning in Relation to Public Health.*
11. REID, G., *et al. Discussion on the Administrative Control of Ophthalmia Neonatorum.*
12. NIVEN, J., *et al., Discussion on the Etiology and Prevention of Summer Diarrhea.*

Section on Medical Sociology.

13. WHITAKER, J. S. *Discussion on State Sickness Insurance as affecting the Public Health and the Medical Profession.*

Section on Odontology.

14. MUMMERY, J. H. *Introductory Remarks.*
15. WALLACE, J. S. *The Effect of Foodstuffs on the Causation and Prevention of Dental Caries.*
16. MACKENZIE, H. *Care of the Mouth during General Disorders.*
17. UNDERWOOD, A. S. *The Influence of Climate on Dental Caries.*

1. Bryce comments on osteopathy as he has studied it in England and America. He explains the cause of the benefit often obtained, and urges surgeons to employ some of the rigorous manipulative methods advocated by osteopaths. On the other hand, he deplores the harm that is often done and exposes the absurdity of the osteopath, who attempts to explain all diseases by subluxation and displacements.

6. Milne does not believe in isolating scarlet fever patients. Commencing at the earliest possible moment during the first four days he rubs the child all over, head to foot, with pure eucalyptus oil night and morning; afterwards this is repeated once a day until the tenth day. For twenty-four hours he swabs out the tonsils with 1:10 carbolic oil every two hours. He claims that by this method secondary infections are unknown, that isolation is unnecessary, and that this method is vastly more economical. [J. B. H.]

SEPT. 10, 1910.

Educational Number.

There are no original articles or addresses in this number. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 36.

SEPT. 8, 1910.

1. KRÖNER, P. *The Justification of Pubiotomy.*
2. HOFBAUER. *Toxemia of Pregnancy.*
3. RIDDER. *Essay on the Knowledge of Bronze Diabetes.*
4. *FLEISCHER, F., AND TAKEDA, K. *The Clinical Value of the Pinoff Levulose Reaction in the Urine.*
5. FRAENCKEL, P., AND HOCHSTETTER. *Origin of Leucocytosis.*
6. LOWENSTEIN, E. *Results of Tuberculin Treatment on 682 Cases of Open Pulmonary Tuberculosis.*
7. BLOCK, W. *Normal Position of the Heart and its Clinical Importance.*
8. *TORNAI, J. *The Influence of the Momburg Constriction on the Heart and Vessels.*
9. PERTIK, J. *Sahli's Pantopon.*
10. GÖRGES. *A New Combination of Iron and Iodide, "Eisensajodin."*
11. KATZ, W. *The Treatment of Granulating Wounds with Amido-Azotoluol Salve.*
12. BASSENGE, R., AND SELANDER, E. *The Disinfecting Effect of a Few Common Tooth Pastes.*
13. HERRMANN. *The Incisor.*

4. Fleischer and Takeda have taken up and studied the test for the detection of levulose in the urine as suggested by Pinoff in 1905. They tried it out on a number of cases and concluded that it was a sharper reaction than the Seliwanoff reaction, but not absolutely reliable, as the result was positive in certain cases where there was no levulose. They hope eventually to find what other substances besides levulose will give the reaction.

8. Tornai warns against the use of the Momburg constriction belt in any except the most suitable cases as he has seen poor results in cases that show any lesion of the heart or kidney. Also in Basedow's disease and plethoric individuals he does not think this method should be used as death may result. [C. F., JR.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 37.

SEPT. 12, 1910.

1. KLOTZ, M. *The Theory of the Oatmeal Cure for Diabetes.*
2. MICHAELIS, L. *One Hundred and Ten Cases of Syphilis Treated by the Ehrlich-Hata Method.*
3. KROMAYER. *A More Convenient and Painless Method of Injecting Ehrlich's Anti-Syphilitic Preparation.*
4. OESTREICH, R. *A New Attempt in the Treatment of Cancer.*
5. KRAUSE, M. *An Arrow Poison of German East Africa.*
6. MOST. *Fracture of the Rib with Intercostal Neuralgia.*
7. SCHULTZ, R. *Severe, Chronic Spasm of the Colon.*
8. *CHRZELITZER. *The Use of Protargol in Warm Solutions.*
9. GRABOW. *A Case of Remarkably Large Sarcoma of the Pleura with Calcification, following Primary Sarcoma of the Tibia.* (Conclusion.)
10. EVLER. *Early Symptoms and the Serum Treatment of Tetanus.* (Conclusion.)
11. KUTTNER, O. *Problems and Results of the New Zoological Investigations.*

8. The author has found that he has obtained much better results both in the abortive treatment of gonorrhea and in the treatment of chronic cases by using protargol 0.5% to 3% at a temperature of about 115° F. than by the use of the same injections at normal temperature. He gives his reasons and describes his technic. He lays emphasis on the fact that the protargol must be freshly prepared as it degenerates very rapidly. [J. L. H.]

Miscellany.

EHRLICH'S NEW PREPARATION (606) IN THE TREATMENT OF SYPHILIS.

DR. HENRY W. CATTELL recently spoke before the Philadelphia County Medical Society on the technic used in Wechselmann's wards of the Virchow Hospital in Berlin for the treatment of syphilis with Ehrlich's Preparation "606" and said: I saw towards the end of July five injections given with "606," and had the opportunity of examining about 100 cases in all so treated.

Our knowledge in regard to syphilis has been increased by:

(1) The discovery of the active agent by Schaudinn and Hoffmann.

(2) The diagnosis of the poison by means of the Wassermann reaction or one of its various modifications.

(3) The inoculation of apes, rabbits and guinea-pigs with syphilis.

The capsule containing the yellowish compound, diamidade-oxyarsenobenzene, is broken and collected in a sterile mortar and dissolved in 1 to 2 ccm. of *concentrated* sodium hydrate. Methyl alcohol is no longer employed. After solution has taken place the preparation is again precipitated by the addition of *glacial* acetic acid. Fifteen to 20 ccm. of sterile water are added, and the whole centrifugated, the supernatant water poured off, more water added, and the whole

brought to neutral by either the addition of a decinormal solution of sodium hydrate or of a 1% solution of acetic acid. The dose used at the time I was in Berlin was 0.5 to 0.6 gm. for an adult and 0.025 gm. for a babe. The preparation is injected in a large syringe beneath the scapula in an area which has first been painted with iodine. One of the strong reasons for choosing the subscapular region is that, in case of arsenicalism, the location is easy of access surgically. A lump is formed which requires some time to disappear. The injections are sometimes followed by pain, fever or malaise, immediately afterwards or coming on after several days. The oldest case of inoculation is now between eleven and twelve months, and Ehrlich must have now nearly 8,000 records, 7 deaths, of treated cases. It is perfectly marvelous to see a patient come into the wards with pronounced evidences of the disease, and to observe the immediate improvement after treatment. The spirochetes begin to disappear the first day, and in forty-eight to seventy-two hours they are no longer to be found. The Wassermann may, however, remain positive for several weeks.

A test similar to that employed in the Calmette or Von Pirquet reaction must always be made to determine whether or not the patient has been treated before by arsenic or is peculiarly susceptible to the drug. Ehrlich insists that everybody before being inoculated should have the eyes examined and to see that there are no complications like grave heart or kidney disease present. This mode of treatment has been done by the best observers that Europe affords, and has been undertaken under control conditions, such as have never existed before. The results so far have been perfectly astonishing, though I saw three cases in Wechselmann's hands which had returned for a second treatment. The reason given for this was that these were some of the earlier cases in which too small a dose had been administered.

The users of this remedy are so enthusiastic that they advise it in practically every case. In one of the wards there were no less than ten syphilitic babies suffering from every manifestation of inherited syphilis.

Correspondence.

CLEAN SWEET MILK AND "VOTES FOR WOMEN."

BOSTON, Oct. 1, 1910.

Mr. Editor: Some days ago I received, as doubtless did many other Massachusetts doctors, a number of highly illuminated cards advocating "clean, sweet milk" and "votes for women." At first thought these two principles seemed to have about as much in common with each other as either would with protection or free trade. But further consideration suggests that there may be a connection, after all, between healthful milk for babes and woman's vote, inasmuch as the domestic woman is rather more likely than her ballot-seeking sister to provide the best food for babies from her own fountains. I have indeed been led to question whether the best product of the lacteal glands was secured when they covered the beating heart of a militant suffragette.

So I replied briefly, in the self-addressed envelope that accompanied the literature, that I did greatly favor clean, sweet milk but *not* votes for women. I have just received the enclosed reply, which for clear, cogent reasoning and delightful English would be hard to equal:

"DR. —

"*Dear Sir:* For your semi-indorsement of my efforts in behalf of Hygiene Milk I am grateful. Please do not do it again, I will forgive you this time.

"Sir, I am really shocked at your inconsistent inference that it would be possible for a woman, backed with the authority of the United States federal government to supervise the production and protection of milk, to contaminate it to any higher degree of efficiency to kill than is done to-day by a man. Its very, very high degree of efficiency to kill is attested by the Boston Health Board's report that fifty-one babies in the city of Boston died during the month of July, 1910, in access of the number in July, 1909.

"Sir, no acknowledgment or reply is required to this note until the scales have been removed from your callous conscience, by the torture and the filling of a permature grave of a dear one to you.

"In consequence of a diet upon a concentrated stewed solution of dirt, tubicolous and bacterial germs.

"Doctor, you may be skillful and in the full possession of the knowledge of medical science.

"Kindly accept the following from a layman, that combined brand of the dairy and milkman's indifference known as the undertakers' delight, that has been supervised by a man often, from the viewpoint of the quality and courtesy of the dairyman's whiskey and cigars is a master piece of production warrented to kill, when taken as a food and is far, far from the scope of known medical science to combat.

"Doctor, pull yourself together, this world moves. Respectfully, ———, Champion of Clean, Sweet Milk, Its production and protection supervised by a woman, backed by the authority of my uncle Samuel of Washington, District of Columbia, United States of America."

Yours truly,

"X."

"THE PATIENT TO THE DOCTOR."

BOSTON, Oct. 3, 1910.

Mr. Editor: For fear you might not otherwise see it, I cannot refrain from sending you this bit of verse, from a recent number of the *Century*, which seems to me thoroughly charming. Its author, Harold Witter Bynner, who has a peculiarly winning and graceful talent, is perhaps best known for his "Ode to Harvard." Since William E. Henley's "Hospital Verses," little medical verse of genuine poetic value has been written. These lines of Mr. Bynner's, though perhaps hardly in the same category, have a very sweet human touch to which the profession should not be insensible. If you feel disposed to reprint them, I hope they may give your readers as much pleasure as they have me.

Very truly yours,

ROBERT M. GREEN, M.D.

THE PATIENT TO THE DOCTOR.

[Witter Bynner in the *Century*.]

Name me no names for my disease
With uninforming breath;
I tell you I am none of these,
But homesick unto death, —

Homesick for hills that I had known,
For brooks that I had crossed,
Before I met this flesh and bone
And followed and was lost.

Perhaps it broke my heart at last,
But name no name of ills;
Say only, "Here is where he passed,
Seeking again those hills."

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 1, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,273	418	Waltham	9	1
Chicago	575	186	Pittsfield	11	4
Philadelphia	—	—	Brookline	7	1
St. Louis	—	—	Gloucester	6	1
Baltimore	—	—	North Adams	2	1
Cleveland	—	—	Northampton	3	0
Buffalo	—	—	Chicopee	4	0
Pittsburg	—	—	Medford	3	1
Cincinnati	—	—	Beverly	5	1
Milwaukee	—	—	Leominster	1	—
Washington	—	—	Hyde Park	3	1
Providence	—	—	Melrose	5	2
Boston	218	72	Newburyport	2	2
Worcester	57	15	Revere	4	1
Fall River	39	15	Westfield	5	3
Cambridge	37	6	Woburn	7	4
Lowell	26	13	Peabody	—	—
New Bedford	30	15	Marlboro	1	0
Lynn	24	8	Attleboro	1	0
Springfield	29	3	Adams	1	1
Lawrence	25	11	Clinton	4	2
Somerville	19	2	Gardner	3	2
Brockton	15	6	Milford	—	—
Holyoke	14	6	Watertown	—	—
Malden	14	2	Plymouth	—	—
Chelsea	16	1	Southbridge	1	—
Newton	8	3	Weymouth	—	—
Salem	—	—	Framingham	—	—
Haverhill	9	1	Wakefield	—	—
Fitchburg	11	2	Webster	4	2
Everett	3	—	Arlington	—	—
Quincy	—	—	Greenfield	2	0
Taunton	15	7			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED SEPT. 28, 1910.

WILLIAMS, L. L., surgeon. Leave of absence for seven days from Sept. 19, 1910, amended to read three days from Sept. 19, 1910, under paragraph 189, Service Regulations.

GARDNER, C. H., surgeon. Leave of absence for one month from Sept. 1, 1910, amended to read twenty-two days from Sept. 1, 1910.

SPRAGUE, E. K., surgeon. Granted one month's leave of absence from Sept. 28, 1910.

RUCKER, W. C., passed assistant surgeon. Relieved from duty in connection with the suppression of plague in California, and detailed for temporary duty in the Bureau, effective Sept. 22, 1910. Sept. 23, 1910.

CREEL, R. H., passed assistant surgeon. Detached from U. S. R. C. "Tahoma" and ordered on shore duty at Unalaska, as fleet surgeon. Aug. 9, 1910.

GUTHRIE, M. C., passed assistant surgeon. Granted one month's leave of absence from Oct. 1, 1910.

HUNT, REID, professor, chief division of pharmacology, Hygienic Laboratory. Detailed to attend the Second International Conference for the Study of Cancer, to be held in Paris, Oct. 1-5, 1910, and the Conference of the International Anti-Tuberculosis Association, to be held in Brussels, Oct. 5-8, 1910. Sept. 22, 1910.

PORTER, JOSEPH Y., quarantine inspector. Granted thirty days' leave of absence from Sept. 20, 1910.

BARNES, W., acting assistant surgeon. Granted thirty days' leave of absence from Oct. 5, 1910, with pay, and one month's leave of absence from Nov. 5, 1910, without pay.

CLARK, E. S., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 13, 1910.

CLERBORNE, A. B., acting assistant surgeon. Granted seven days' leave of absence from Sept. 24, 1910, under paragraph 210, Service Regulations.

GILL, S. G., acting assistant surgeon. Granted one day's leave of absence, Sept. 17, 1910, under paragraph 210, Service Regulations.

KIMMET, W. A., acting assistant surgeon. Granted thirty days' leave of absence from Sept. 25, 1910.

RUSH, JOHN O., acting assistant surgeon. Granted ten days' leave of absence from Sept. 24, 1910, without pay.

SCHUSTER, B. L., acting assistant surgeon. Granted one day's leave of absence, Sept. 10, 1910.

STUART, A. F., acting assistant surgeon. Granted thirty days' leave of absence from Oct. 1, 1910.

WAKEFIELD, H. C., acting assistant surgeon. Granted fourteen days' leave of absence from Oct. 10, 1910.

SCOTT, E. B., pharmacist. Granted five days' leave of absence from Sept. 15, 1910, under paragraph 210, Service Regulations.

RYDER, L. W., pharmacist. Granted four days' from Aug. 24, and thirteen days' from Sept. 1, 1910, extension of leave of absence on account of sickness. Granted seven days' leave of absence from Sept. 14, 1910, under paragraph 210, Service Regulations.

PHYSIOLOGICAL SEMINAR.

PROF. W. T. PORTER will give a physiological demonstration and an informal lecture every Monday and Thursday afternoon in the Harvard Medical School, room 302, Building C, from five to six o'clock.

ERRATUM.

ATTENTION has been called to the fact that in the index of this JOURNAL, vol. clxii, the page number referring to the article "Infantile Paralysis, Methods of Treatment" is incorrect. The number of the page should be 881.

SOCIETY NOTICES.

NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — The New England Hospital Medical Society will hold its regular meeting Thursday, Oct. 20, at the Kensington Chambers, Room 201, corner Boylston and Exeter streets, Boston. Dr. Agnes C. Vietor, chairman. Subject: Gall-Bladder Disease. Papers: (1) "The Pathology of the Gall Bladder," (2) "The Diagnosis of Gall Bladder." By Agnes C. Vietor, M.D. (3) "The Surgical Treatment of Gall Bladder." By James G. Mumford, M.D.

DR. BLANCHE A. DENIG,
Secretary.

NEW YORK AND NEW ENGLAND ASSOCIATION RAILWAY SURGEONS. — The twentieth annual session of the New York and New England Association Railway Surgeons will be held at the Hotel Astor, Broadway and 44th Street, New York City, on Nov. 3-4, 1910, under the presidency of Dr. L. M. Bingham, of Burlington, Vt. Dr. John B. Deaver, of Philadelphia, will deliver the "Address on Surgery," on Nov. 3, at 12 o'clock. A cordial invitation is extended to railway officials, railway surgeons and to the medical profession to attend this session of the association.

GEO. CHAFFEE,
Corresponding Secretary.

RECENT DEATHS.

DR. J. MILLER HINSON, of Brookline, Mass., who died at Saratoga, N. Y., on Oct. 4, was a graduate of the Hahnemann Medical College of Philadelphia. He is survived by his widow and by one son.

DR. CORNELIUS GILMAN TROW, who died last week at Sunderland, Mass., was born in Buckland, Mass., in 1847, the son of a physician. He graduated from Amherst College in 1870 and subsequently studied medicine at the New York College of Physicians and Surgeons. In 1872 he settled with his father at Sunderland, where he continued in practise till his death. He served for many years as chairman of the local school committee and as trustee of the public library. He was a Fellow of The Massachusetts Medical Society. Dr. Trow was twice married, but leaves no children. His widow survives him.

DR. RUDOLF CHROBAK, who has recently died at Vienna, was born at Troppau, in Silesia, on July 8, 1843. He received his doctorate of medicine from the University of Vienna in 1865, and in 1880 was made Professor of Obstetrics and Gynecology. Since 1889 he has been at the head of the Second Obstetrical Clinic in Vienna. He was a prolific writer on subjects in the field of his specialty.

OCT 22 1910

Original Articles.

THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

BY CHARLES F. PAINTER, M.D., AND ANDREW P. CORNWALL, M.D., BOSTON, MASS.

(From the Orthopedic Clinic of the Carney Hospital.)

For many years the surgical profession have been loath to interfere with pathologic or traumatic conditions located within the larger articulations.

The reasons for this have been the dangers of sepsis and the fear that permanent damage might be done to an articulation by the extent of the incision.

With the development of greater perfection in surgical technic the first of these fears has been, to a certain extent, eliminated. The fear of inflicting permanent injury upon a joint through the weakening of its capsule is still a deterring factor in the minds of many surgeons. The fact that sepsis has occurred in a certain small percentage of cases, perhaps not more frequently, however, than it occurs in other surgical wounds, and the fact that many of the conditions for which an arthrotomy might be and usually is performed are those which do not permanently endanger life or limb, there have been good grounds for the exercise of conservatism in the matter of arthrotomy. It certainly should be considered seriously, when contemplating a major operation upon a joint, whether the object which it is sought to accomplish by the procedure justifies the assumption of a risk which no one would hesitate to assume were the condition which one was seeking to relieve a mortal one, but might hesitate about when not of such gravity. The general surgeon has doubtless been justified in his conservatism about the operative treatment of joint lesions. Many of them, however, though they do not menace life directly, do seriously handicap, either temporarily or permanently, the individual who possesses them from attaining his highest efficiency as well as preventing him from enjoying the free use of his joints.

It, therefore, seems that if surgical technic as it has become perfected can attain the results that it sets out to accomplish in the treatment of joints, and if the skill with which such procedures can be carried out has reached a sufficient degree of perfection to minimize the risks over what they have been during the past ten years, it is justifiable now to undertake surgical procedures which formerly would not have been justified.

It is for the purpose of demonstrating the risks which attend arthrotomies on the large joints, and to describe methods which have yielded measurably satisfactory results, and to outline the conditions in which arthrotomy offers its most favorable prospects of success that the statistics which are contained in this paper have been compiled. The paper will be incomplete, in that it will not touch many things which fall to the lot of one who is dealing with joint surgery. Except for the pathological conditions which will be brought to light in the class of cases which are noted as exceptional in this paper, the methods of attacking the problem, viewed from a surgical standpoint, will be practically the same.

It is also the purpose of this paper to lay stress upon the importance of post-operative treatment in all cases of arthrotomy, because the success of an operation is quite as much dependent upon the skill with which the joint is managed afterwards as it is upon the judgment which determined upon the operation and the skill which carried it to its completion.

The cases have been grouped according to their pathology, and a brief description of the conditions operated upon is all that it seems necessary to give, mainly with a view to investigating the length of time that it was necessary to confine the patient to bed and to the hospital, the rapidity with which normal mobility in the articulations could be secured and the permanancy, where it has been possible to determine it, of the result which was obtained.

These have been the points which we have sought to elucidate in abstracting these histories.

Before each group is outlined the technic of the surgical procedure is described for the particular group of cases which is to succeed. This technic, of course, differs but little for the different pathological conditions which are described.

The first group to be discussed are the joint lipomata, and under this head are included the "solitary lipomata" described by Koenig, the hypertrophied alar ligament fringes which are traumatic fibrolipomata, and the diffuse lipomata which usually represent merely the deposition of fat in the subsynovial tissues as a result of a fatty infiltration, occurring most commonly in persons given to adiposity. The technic of the preparation of these cases and the surgical procedure itself will be next outlined.

JOINT LIPOMATA.[1]

Technic of Operation.

Routine twenty-four-hour preparation of knee. Shave the leg and thigh with a wide margin on both sides of the joint. Scrub with green soap (coarse mitt). Follow this with (*a*) permanganate of potash, (*b*) oxalic acid and (*c*) corrosive (1–3,000). Weak corrosive poultice over the night previous to operation.

Strict aseptic precautions should be exercised in the operating room. Twelve-hour dressing removed from knee, nurse scrubs leg from mid-thigh to mid-calf four minutes with soap and water, Harrington's solution two minutes, corrosive two minutes, after which procedure nothing should come in contact with the knee except that which has been previously sterilized or rendered aseptic. Tourniquet then applied about upper thigh. Depending upon location of tumor, an incision is made about 8 cm. in length, parallel to either outer or inner border of patella. Skin flaps dissected back. Same procedure with

[1] The knee is taken because it is the joint most often concerned.

fascia and adipose tissue, exposing capsule. Latter opened longitudinally and retractors employed to hold cut edges apart. Tumor mass with very thin synovial covering usually protrudes through the capsular opening. Attachment of lipoma then sought out and examined. If very vascular, it should be tied off and then the pedicle may be cut as close as possible to its attachment, thus removing the lipoma from the joint *in toto*. If bleeders are present, they should be tied off with chromic catgut. Joint is inspected and palpated to the satisfaction of the operator. It may be advisable to make a similar incision on the opposite side of the joint for the purpose of a thorough examination. This does not add to the gravity of the case nor interfere with the progress of recovery. The joint cavity should then be irrigated with about two quarts of hot normal salt solution or sterile water. The edges of the capsule are next approximated and sutured with interrupted chromic catgut. Fascia brought together in a different longitudinal plane and sutured with continuous catgut. Skin closed with subcutaneous silkworm gut or continuous plain catgut. Dry sterile dressing and bandage applied. A seton drain may be left in the joint at the lower end of the incision for forty-eight hours. Care should be exercised not to insert anything but the gloved fingers into the joint, all manipulations being carried out with instruments alone if possible.

Routine After-Treatment.

The administration of 15 to 20 gr. of urotropine per day should be commenced forty-eight hours before the operation and continued for four to five days after.

The treatment of post-operative pain and the bowels should be governed largely by the indications in the individual case. Our routine has usually been to give ¼ gr. of morphia subcutaneously before the patient has come out of ether. The bowels ought usually to be opened by a saline the night after the operation.

Patient should remain in bed at least one week.

Stitches removed and passive motion begun on the eighth day.

The arc of motion should be increased daily, and as a rule 90° may be obtained on the fourteenth day, at which time hot fomentations are ordered twice a day, with massage to thigh and calf. When 90° of motion is obtained, the patient may be allowed to bear weight on the leg.

Stimulation (hydrotherapy and massage) is kept up as long as indicated. Flannel bandage worn from ankle to mid-thigh for one month.

The following cases are grouped according to their pathology and clinical diagnosis for the sake of convenience in describing their surgical treatment.

LIPOMATA.

(Female Cases.)

CASE 1. M. C., female, twenty-one, single. Operation, May, 1902.

Five-inch incision over outer side of left knee. Lipoma found attached to top of external condyle of femur and around the margin of the supra-patellar pouch. Blood supply from the periosteum through numerous small capillaries. Bleeding was checked with hot water. Capsule closed with silk sutures. Recovery was uneventful.

CASE 2. S. C., female, twenty-two, married. Operation, June 23, 1902.

Semilunar incision made over inner aspect of right knee. A sessile tumor was found which varied in color from a gray to brownish-white. Also several short finger-like processes were found, all attached by short pedicles. That portion of the tumor mass which habitually came between the apposing bony surfaces was tough and fibrous in nature.

The leg was put up in a plaster of Paris cast in a position of slight flexion for three days.

Motion of knee was normal on the twelfth day. A slight increase in the size of the joint is present, however, and is possibly due to weight-bearing before it was indicated.

Recovery was uneventful. Discharged July 5, 1902.

CASE 3. M. C., female, thirty-two, married. Operation, Feb. 13, 1903.

Left knee. The pedicle of the lipoma extended so far to the inner side of the joint that it was necessary to open on both sides of the patella. The lipoma was situated in the lower, outer portion of the joint and attached to the synovia posteriorly. A small part of the pedicle was not excised, and difficulty was encountered in checking the oozing.

Posterior wire splint used. On the thirteenth day 50° of motion was obtained, with pain. On the sixteenth day fluctuation was obtained on either side of the patella. Patient complained of some pain and tenderness, but there was no local or general temperature. Condition probably represented a recurrence of oozing into the joint from passive motion, too much forced. Four days later, under anesthesia, joint was opened and about 150 ccm. straw-colored fluid obtained containing a small amount of fibrin. Culture negative. Wound was closed tightly. Stitches were removed on the fifth day and routine post-operative treatment again instituted, with subsequent rapid recovery of normal function.

CASE 4. A. A., female, twenty-six, married. Operation, March 4, 1903.

Incision made over outer side of right knee. Membrane of joint was normal in that portion where fringes are usually present. A small mass, size of silver dollar, was found in the upper outer portion of the joint cavity, punched out in appearance and difficult to distinguish from the wall of the joint. It resembled cicatricial tissue, suggesting a former infectious condition. Seven days later the patient had an attack of tonsillitis of three days' duration, which was accompanied by some pain and tenderness in the knee-joint.

Post-operative treatment was delayed somewhat owing to the above-mentioned infection.

CASE 5. E. G., female, thirty, single. Operation, March 13, 1903.

Incision made over outer side of left knee. When capsule was opened the lipoma was immediately exposed to view and very easily removed. Patient had completely recovered in eighteen days and has had no return of symptoms up to present time (1909).

CASE 6. C. F. H., female, sixteen, single. Operation, March 20, 1903.

When left knee was opened about an ounce of fluid was obtained. Numerous hypertrophied fringes were found throughout the joint, and were remarkable for their extreme vascularity. All the large vessels were tied with silk, yet considerable difficulty was experi-

enced in controlling the hemorrhage. Plaster of Paris bandages applied with the leg in extension.

The night following the operation, temperature rose to 102°; pulse, 120; respiration, 30. Complained of some pain in knee. Temperature and pulse remained around this point for three or four days, and the condition indicated the "lighting up" of an infection already present rather than the introduction of infection at time of the operation.

Stitches at lower angle of the wound were removed on the fifth day and considerable pus with bloody fluid escaped. Wick was inserted under anesthesia. Two days later a staphylococcus culture was obtained from the discharge. Wound was irrigated daily and wick reinserted. A few days later it was found necessary to open entire wound and irrigate the joint throughly. The edges were then only roughly approximated with silkworm gut. On the ninth day the appearance of the wound had improved and general septic symptoms had subsided. Improvement continued up to the twenty-sixth day. Sinus closed in rapidly and was immediately followed by sudden rise of temperature similar to preceding attack. Under anesthesia sinus again opened and 2 oz. of bloody fluid was evacuated from a pocket, following which procedure sinus again began to close and purulent discharge changed to a simple serous ooze. Granulations required several applications of silver nitrate. On the forty-fifth day 90° of motion was easily obtained under anesthesia, followed by an increase in discharge of bloody fluid from sinus and considerable pain.

Patient discharged home on the fifty-seventh day after the first operation. Instructed to continue regular post-operative treatment and report for another manipulation in ten days. No pain at that time but only 15° voluntary motion.

Good function had been secured two years after the discharge from the hospital.

Case 7. M. D., female, forty-three, married. Operation, May 27, 1903.

When joint was opened several small purple fringes were found, also bony exostoses situated on the edge of the articular aspect of external femoral condyle, all of which were removed. Suprapatellar pouch closed by adhesions and joint cavity very small. Pre-operative diagnosis, osteo-arthritis of right knee and ankle. Convalescence normal. Discharged July 6, 1903. Stay in hospital prolonged by ankle condition.

Case 8. M. A. L., female, forty-seven, married. Operation, Sept. 16, 1903.

Incision over outer side of knee-joint. One large lobulated lipoma (size pigeon's egg) was found immediately under the capsule. Removed.

Convalescence rapid and uneventful.

March 27, 1905, excellent functional result.

Case 9. H. K., female, twenty-six, single. Operation, Sept. 20, 1903.

When the capsule was opened, numerous lipomatous villi were found scattered over the anterior aspect of the joint, most of which were removed.

Discharged Oct. 6, 1903. Motions of knee normal, but slight tenderness persisted for some weeks.

Case 10. E. M. F., female, twenty-seven, single. Operation, Oct. 14, 1903.

Incision made over both sides of right knee. Capsule thickened and several lipomatous fringes were found situated under the patella, patellar tendon and on the posterior wall of the joint, all of which were removed with scissors. Left knee opened and a similar although less marked condition found. Ten days later patient had slight temperature, but no knee symptoms. At the same time she had irregular catamenia.

Oct. 24. Right knee swollen and edematous, but there is no marked tenderness or surface temperature.

Oct. 26. Temperature 101.2° with increasing tenderness. Under anesthesia right knee was opened and 4 oz. of yellow fluid was evacuated containing some blood clots. Knee was thoroughly irrigated and wick left in lower angle of wound.

Culture negative. Left knee manipulated at same time.

Oct. 28. Right knee again opened, this time on each side, and wick passed through the joint. No pus found.

Patient underwent a vaginal examination. Suspicion of a Neisser infection could not be verified by microscope.

Nov. 3. Ulcer between buttocks.

Nov. 11. Patient vomited several times. Abdomen was distended and very tender. Temperature normal.

Nov. 12. Ulcer very angry looking. Abdomen examined and diagnosis deferred by surgeons. Advised K. I. gtts. x, t. d., in increasing dosage.

Nov. 16. Recurrence of vomiting. Slight tenderness over gall bladder. Edema of abdominal wall. Knee condition markedly improved.

Nov. 22. Patient coughing and expectorating a white sputum. Negative tubercle bacilli, but hypostatic condition present in the lungs.

Nov. 26. Plaster of Paris applied to right leg to allow patient to lie on side, owing to lung condition. Motion of left knee quite free and painless. Ulcer over buttocks very much improved.

Dec. 6. Patient has complained for several days of pain in the right knee, over external condyle. No objective symptoms present, however.

Dec. 31. Both knees can be flexed to a right angle. A second small ulcer has made its appearance upon the buttocks. Old ulcer at a standstill. Patient has been up and about on crutches.

Jan. 5, 1904. Began this morning to have discharge from right knee. Subluxation has been gradually increasing for past six weeks resulting in genu valgum deformity. Ulcers on buttocks have been suspected of being of an atypical specific nature. Antisyphilitic treatment instituted.

Jan. 19. Patient in poor general condition. Urine shows numerous hyalin and granular casts.

March 28. Patient has continued in about the same condition since last note. Has had several exacerbations in the knee which would clear up in a few days.

April 1. Discharge from soft parts under popliteal space and from upper calf. Incision made over abscess and about ½ oz. of green pus evacuated.

April 5. Leg amputated 7 inches above knee, by Dr. J. C. Munro.

April 28. Patient doing well to date, but slight discharge from inner side of stump noted to-day. Staphylococcus aureus culture.

May 1. No discharge noted to-day.

May. 25. Discharged home using crutches. General condition fair.

Dec. 1, 1909. Using artificial limb and gets about fairly well. Left knee has normal motion.

Case 11. M. K., female, twenty, married. Operation, Oct. 4, 1903.

Left knee-joint opened along inner border of patella. About 2 oz. of fluid evacuated, containing flakes of fibrin. Several fringes found hanging from under surface of patellar tendon, but patellar cartilage everywhere normal.

Convalescence uneventful.

Discharged Nov. 1, 1903.

Case 12. M. B., female, twenty, single. Operation, Nov. 4, 1903.

Right knee opened on inner aspect of joint. No

excess of fluid. Capsule thin. Several large fringes found attached under patella and along both borders of patellar tendon, necessitating an incision over outer side of joint for their complete removal.

Nov. 17. Only 40° of motion present, so leg was manipulated under anesthesia and adhesions broken up. Convalescence rapid after this procedure.

CASE 13. M. McK., female, twenty-two, single. Operation, Dec. 5, 1903.

Incision over external aspect of right knee. Immediately under the external lip of incised synovia were found four venous varices about the size of peas. Surface of membrane embracing same was removed and raw surface seared with cautery. Three silk ties found necessary to prevent venous oozing. From underneath the upper angle of the wound a large fatty tumor protruded its free end. This had a fan-like attachment over the synovial membrane covering the patella, spreading out as far as its external reflection and bound to its attachment in several places by firm fibrous bands. The previous symptoms in this case were probably due to the varicosities and not to the lipoma, and might easily have suggested a phlebitis.

Dec. 28, 1903. Good motion. Can actively extend leg to normal. Flex to right angle. Discharged home.

Three years after there was excellent motion and no recurrence of knee symptoms.

CASE 14. A. M., female, forty-eight, married. Operation, Jan. 20, 1904.

Left knee opened on inner side. One lipomatous growth found adherent to internal alar ligament by a broad base, and two other similar fringes found attached to under surface of patella.

Right knee opened and two growths similar in size and origin removed.

Jan. 23. Pain, especially in left knee, since operation. Both knees examined. Scar of left found inflamed at its lower angle.

Jan. 27. Stitches removed from right knee. Wound clean. Left knee discharging slight amount of pus from above-mentioned area.

Jan. 31. Patient has been having a temperature for the past two days of about 102°. Last night it reached 105°, and was followed by a chill and fall of temperature in six hours to 101.5°. Patient was much exhausted in the morning and presented a marked septic appearance.

Under anesthesia old incision was opened and a counter-incision made on opposite side. No pus found. Joint thoroughly irrigated and wicks inserted.

Feb. 1. Local conditions appear satisfactory, but patient has failed rapidly since the operation, various stimulating measures resorted to with no more than temporary relief.

Feb. 2.[2] Mild delirium throughout night. At 6 A.M. temperature by axilla 106.4°; at 7 A.M., 107. Patient died a few minutes later.

CASE 15. L. M. B., female, ten. Operation, Feb. 29, 1904.

Incision over inner aspect of left knee. A portion of the semilunar cartilage was found partly detached from its normal connections, being joined to the head of the tibia by a few fibers from its circumference and partly separated from the remaining cartilage. This portion of cartilage was removed, together with a small lipoma which was found attached to the internal alar ligament by a slender pedicle. The tumor was pyramidal in shape, with a smooth, even surface and adherent over part of its extent to the synovial membrane below the patella. No ties were required.

Plaster of Paris was applied with the knee in complete extension.

March 11, 1904. Cast removed. Motion in flexion about 30°, with pain. Discharged with directions for manipulation later.

CASE 16. A. LeB., female, nineteen, single. Operation, May 13, 1904.

When capsule was opened on inner side of right knee there escaped about ½ oz. of deep red, serous fluid, indicating an old hemorrhage. Several sessile lipomata found over upper and inner aspect of joint, forming in reality a single mass the size of two thumbs placed side by side. These were quite easily removed.

May 28. Patient discharged. One hundred degrees of flexion possible, with some pain.

CASE 17. H. A. C., female, twenty-two, single. Operation, Oct. 17, 1904.

Incision made over outer side of right knee. Several fatty masses were removed, most of which were attached to the anterior surface of the joint above the patella. They were easily dissected away, leaving normal synovial membrane.

Left knee was operated upon in a similar manner. Fatty masses were smaller than those found on the right side.

Oct. 20. Right knee became septic, and when stitches were removed entire wound broke open and a quantity of yellow pus evacuated. Three drains left in joint after thorough irrigation.

Nov. 4. Temperature and pulse continue elevated and knee was again opened, considerable pus obtained and few adhesions broken up.

Nov. 14. Patient in very poor condition. Circular incision connecting lower angles of former incisions. Patellar tendon cut and pocket of pus found directly underneath. Crucial ligaments and external lateral ligament cut, revealing a second pocket of pus. After thorough irrigation, leg was placed on posterior wire splint.

Nov. 24. Patient died from general septicemia.

CASE 18. M. H., female, twenty-nine, single. Operation, Jan. 11, 1905.

Through an incision on the outer side of right knee-joint the capsule was found somewhat thickened. A diffuse lipoma was present in the anterior lower quadrant of the joint surrounded by numerous fringes, all of which were removed.

Jan. 27. Convalescence uneventful. For past six days passive motion beyond a right angle.

CASE 19. M. A. R., female, eighteen, single. Operation, June 16, 1905.

Incision over outer side of left knee. When joint was opened a sessile lipoma was found directly under point of incision filling up the pocket beneath the patellar tendon, attached to the ligamenta alaria and reflected upon the edges of the external lateral ligaments.

June 18. Considerable swelling about the joint and a thin, bloody, purulent fluid drained from the lower angle of the incision.

Joint again opened up under anesthesia and found infected. Counter-incision made, irrigation with Harrington's solution followed by salt solution; two drainage tubes were left in the joint cavity.

July 13. Gradual improvement in knee and general condition.

Discharged against advice.

Some permanent deformity and stiffness.

CASE 20. D. A., female, thirty-six, married. First operation, March 16, 1906.

Patient was operated upon for villous arthritis of ankle. Lipomatous growths removed from tendons and sheaths below external malleolus.

Discharged March 26, 1906.

Second operation, Dec. 14, 1906. Telangiectatic hemangioma. See report of case by Dr. A. T. Legg.[1]

[2] This case was probably infected from a case of osteomyelitis operated in the same room at the same time. Culture same from both cases.

[1] BOSTON MED. AND SURG. JOUR.

Incision over outer aspect of left knee. Lipoma of solitary type protruded when capsule was opened, attached at edge of patella, 1 inch by 1½ inches in size, yellow, lobulated and flattened.

Dec. 19, 1906. Patient complains of considerable pain, especially at night, since operation. Stiff knee on sixth day, and considerable pain when any passive motion was attempted. Patient refuses to co-operate in the treatment in any respect.

Discharged Dec. 24, 1906. Advised to rest at home one week and then begin massage and passive motion. Good result eventually obtained through the efforts of a masseuse.

Case 21. E. W., female, twenty. Operation, March 30, 1906.

Incision over outer side of left knee. A band of fibrous tissue was seen extending well into the joint between its apposing surfaces, which was carefully dissected out. A bony spur which was found on upper surface of inner tuberosity of the tibia was also removed.

April 11. Patient doing very well. Discharged home.

Case 22. M. C., female, thirteen, single. Operation, July 20, 1906.

Incision over outer side of right knee. In exposing joint cavity one large fringe and three small ones were seen extending in under the patella. These were removed.

Convalescence progressive and uneventful.

Discharged Aug. 1, 1906.

Case 23. M. M., female, sixteen, single. Operation, May 24, 1907.

Knee opened on inner side. One large fringe about 1 inch by 1½ inches found attached by pedicle and several smaller fat "tabs," all of which were removed.

June 1, 20° of motion with pain.

June 5, 50° of motion with pain.

June 6, discharged, 10° more motion than at last note and no pain experienced.

Case 24. T. McK., female, thirty-two. Operation, Jan. 3, 1908.

Left knee opened over outer anterior aspect. Synovial membrane thin and a large collection of fat forming a sessile tumor size of an English walnut encountered between the synovia and fibrous capsule. This mass, together with its synovial attachment, was removed. Remaining portion of joint apparently normal, except for a small eroded area on the under surface of the patella, apparently covered by the lipoma which acted as a pannus.

Jan. 20. Ten degrees of free motion with pain, but limited beyond this point.

Jan. 22. Under light anesthesia leg was flexed to a right angle and very little resistance was encountered.

Jan. 25. Mechanical obstruction seemingly removed, but passive motion is attended with great pain.

Feb. 7. Flexion beyond a right angle painful. Active motion in extension limited, but slow manipulation overcomes this.

Improvement has been slow but progressive.

Discharged home.

Case 25. E. B. M., female, twenty-nine, married. Operation, Jan. 15, 1908.

Incision over outer side of knee. Joint opened through bulging capsule directly over lipoma. Synovia thin. Tumor removed. Remaining portion of joint normal in appearance.

Post-operative treatment progressive to seventh day, when patient began her menstrual period, accompanied by intense dysmenorrhea, temperature of 102° and pain in knee.

Jan. 25. Two days after last note, all symptoms in knee completely disappeared. A few degrees of motion.

Jan. 29. Under anesthesia knee was forcibly flexed beyond a right angle. Little force required up to this point. After ether recovery patient was able to bend knee without pain as far as bandages would permit.

Feb. 2. Motion free to 50° in flexion, beyond which there is a feeling of tension. Walks without any discomfort.

Discharged home.

Case 26. L. E. C., female, twenty-two, married. Operation, Feb. 10, 1908.

Incision over inner aspect of left knee. Capsule very vascular; very little subserous fat. When joint was opened numerous villi were found throughout almost the entire cavity, expecially about ligamenta alaria. Quadriceps pouch small and contained some viscid exudate walled off by adhesions. Many of the villi which were removed had undergone fatty degeneration. Cartilage presented normal appearance. No excess of fluid in joint.

Feb. 17. No temperature. Motions of knee free.

Feb. 20. Discharged home.

April 15. Patient entered Out-Patient Department complaining of pain in both feet. No knee symptoms. Physical examination; Marked prominence of internal malleoli, characterised by swelling and some capsular thickening. Peroneal spasm.

July 7. Feet improved, but right knee swollen and contains fluid. Villi plainly palpable. Condition of left knee good.

July 8. Patient again operated upon. Incision over inner side of right knee. Many red villi found and a red pannus extending over inner half of joint. A small spur on inner trochlear surface of femur was noted projecting through pannus. A small eroded area found over external trochlear surface. Considerable loose fibrin in the joint. A small part of the thickened capsule was excised.

July 28. Discharged home. Uneventful recovery. Motion of left knee normal and right much improved.

Sept. 4. Patient steadily improving. Knees can be extended nearly to normal.

Jan. 1, 1909. Patient under treatment with enemata and buttermilk. Condition improving.

Case 27. A. D., female, eighteen, single. Operation, May 1, 1908.

Right knee-joint opened over inner aspect. When capsule was incised, 1 oz. of yellowish fluid escaped. Many villi present, all of which were excised.

May 21. Discharged. Knee can be actively flexed to a right angle. Walks without difficulty or pain.

Discharged home.

Jan. 1, 1910. Patient has had neither recurrence of symptoms nor any difficulty with the joint since last note.

Case 28. C. K., female, nineteen, single. Operation, July 1, 1908.

Joint opened over inner aspect. Beneath capsule and slightly to inner side of patella was a lipomatous mass one inch in diameter, which was easily removed.

July 28. Recovery rapid. Motions of knee good.

Discharged home.

Case 29. S. F., female, thirty-one, married. Operation, Nov. 25, 1908.

Left knee-joint opened over both inner and outer aspects. Joint cavity contained a small amount of brownish fluid. A small lipoma situated underneath patella was removed, and another small fatty tumor was removed from the upper portion of the quadriceps pouch.

Plaster of Paris bandages applied with leg slightly flexed.

Nov. 30, 1908. Cast split. Small amount of post-operative synovitis is present. Twenty-five degrees of motion in flexion.

Dec. 4. Operative synovitis persists. Patient has had more pain than the average case, and recovery is not as progressive as usual.

Discharged against advice.

Six months later patient has not regained full muscular power of her leg, and continues in poor general health. There is question of incipient pulmonary tuberculosis.

CASE 30. L. U. C., female, twenty-two, single. Operation, Dec. 14, 1908.

Incision over outer side of left knee. No excess of fluid found. Lipoma larger than usual and attached by three fibrous pedicles to the top of the external femoral condyle and to parietal synovia. In size, 2½ by 3½ inches thick, very vascular and not apparently covered by synovial membrane. Nourishment supplied chiefly from the parietal membrane. When pedicle was exposed, larger vessels were tied before being cut, and even then, when tumor was excised, several bleeders had to be tied off. Silk seton left in lower angle of wound three days.

Patient had considerable pain for several days following operation.

Dec. 24. Can flex leg 30° without pain or much discomfort. Discharged.

July 9, 1909. Patient complains of pain in extending leg from a position of 40° flexion. Massage and baking have not brought much relief.

Oct. 14. Possible non-removal of entire tumor, recurrence of same or growth of another from a near-by site may account for present condition. There are, however, less marked symptoms now than in pre-operative condition. Patient is wearing kneecap during the day.

Nov. 1. Condition improved. Less pain on extremes of motion than has hitherto been noted.

CASE 31. M. D., female, thirty-six, married. Operation, Oct. 13, 1909.

Incision over inner aspect of right knee. Pedunculated lipoma size of hen's egg found attached under patellar ligament. Removed.

Oct. 26. Fairly rapid return of motion.

Discharged home.

CASE 32. R. B., female, twenty-one, single. Operation, Dec. 1, 1909.

Left knee opened over outer anterior aspect. Lipoma attached by pedicle underneath lower border of patella and tendon.

Dec. 10, 1909. Passive motion to 45° in flexion.

Dec. 15. Flexion to 90° with some pain.

Dec. 20. Discharged home.

Dec. 29. Full extension. Active flexion to right angle. Passive, 20° beyond a right angle, accompanied by some pain.

CASE 33. E. D., female, twenty-eight, married. Operation, Dec. 22, 1909.

Both knees opened over external aspect. Large solitary lipomata found in each joint similar in size and position, subsynovial, and situated in outer, lower quadrant.

Dec. 31. Motion as far as bandages will permit, without pain.

Jan. 17, 1910. Motion in right to beyond right angle. In left, to a right angle. Walking without support.

CASE 34. A. M., female, twenty-three, single. Operation, Dec. 29, 1909.

Right knee-joint opened over outer aspect. Large amount of fluid in the joint. Large lipoma-like growth was found attached by pedicle to external aspect of patellar tendon. The villous tip had quite a little fibrin adherent to it.

Dec. 31. No temperature or pain.

Jan. 10, 1910. Normal motion in the knee. No swelling.

Discharged.

(To be continued.)

THE SMALL FIBROUS PROSTATE.*

BY ARTHUR L. CHUTE, M.D., BOSTON.

THE occurrence of several cases of small fibrous prostate relatively recently has directed my attention especially to this subject and has impressed upon me the fact that this type differs in certain respects from the large prostate that we commonly see. The actual dangers to life are the same as those seen in the hypertrophic gland, but the findings on examination, and the treatment these prostates require, quite warrant us, I believe, in considering them as forming a class by themselves. I believe that to variations of this condition are to be ascribed a good many of the more obscure obstructive conditions, such as contractures of the bladder neck, bars at the bladder outlet and some at least of the cases of "prostatism without prostate" or "obstruction without mechanical obstacle."

I shall give short abstracts from several of my cases that illustrate the points that I wish particularly to bring out.

CASE I. A man, forty-seven years old, seen about three years ago. He had passed several small stones, the first eleven years before, the last three years before. For three years he had had frequent and painful urination. His disability had been such that he had been unable to work a considerable part of the time. He had to get up from two to eight times at night — stream small and without force. He had to strain hard to urinate. His prostate was not increased in size. A large stone was seen in his bladder. The stone was removed by suprapubic cystotomy. I could see no jutting of the prostate into the bladder at the time of operation. There was a recurrent suprapubic sinus and a turbid urine following this operation. Four months after operation he returned and I found a turbid residual of 8 oz., as well as a small phosphatic stone. I removed by a perineal operation a small amount of dense prostatic tissue, also the stone. He appeared four months later without urinary symptoms and with a transparent urine. I have heard from this man several times since and he remained well at the time of the last report.

CASE II. A man of fifty-two whose urinary symptoms began seven years before. He was troubled chiefly with pain, frequency and a turbid urine. Occasionally he had chills and pain in his left kidney region. He passed urine with moderate frequency during the day and from three to five times at night. He sat down to urinate when he could, as the straining necessary to urination occasionally caused his bowels to move. He had a retention of some hours' duration on one occasion. He had had considerable local treatment of his bladder without relief. He had a turbid residual of ½ oz. No definite prostate could be felt by rectum. His prostatic urethra was very sensitive, and the reaction after the passage of sounds caused even greater difficulty in urination. I removed by perineal operation a small amount of very dense prostatic tissue, estimated at a little over a dram in weight. In attempting to bring the prostate into the field the tractor tore through the bladder outlet on one side, a thing that was looked upon as unfortunate at the time. It is, however, probable that this was an important factor in bringing about his good functional result. About three weeks after his prostatectomy this patient had an attack of pain in his right loin accompanied by chills. There was a tender mass. A small shrunken pyelonephrotic kidney was

* Read at the annual meeting of the American Urological Association in St. Louis, June 6, 1910.

removed. This man at last report, some two years after operation, had had no recurrence of his symptoms, though his urine was not entirely clear.

Case III. A man, fifty-four, who had a perineal section and drainage in the summer of 1908. This was done partly because of pain, frequency and turbid urine, and partly as a diagnostic measure. He had, following operation, a troublesome perineal sinus that had to be curetted. In March, 1909, he came under my care because of the illness of the gentleman who had previously operated upon him. He was having a considerable temperature with tenderness over his right kidney, evidently an ascending infection. His prostate was not increased in size, but was fibrous. Soft rubber and woven catheters were caught and held at the bladder outlet, while a curved instrument entered his bladder fairly easily. There was a residual on various occasions of from 6 to 13 oz. The amount apparently depended upon whether he had had a large sound passed recently or not. The cystoscope showed a deep anterior commissure, but nothing more. The diagnosis of a band or bar at the bladder outlet was made and his bladder opened above the pubes. A little fold of mucous membrane that was found blocking the bladder outlet was divided with a cautery. He made a fair convalescence and has been better, but when seen last a few days ago still had a turbid residual of 8 oz. In this case I overlooked the underlying process, the small fibrous prostate.

Case IV. A man, fifty-seven, on whom I did a perineal section for a filiform stricture of the deep urethra in May, 1909. As he had had chills at intervals for some years and had a turbid urine, I drained his bladder for a time. At the time he left the hospital he emptied his bladder completely and had a urine that was nearly transparent. In the summer of 1909 his urine again became turbid and I found a residual of 2 oz: In spite of the use of a catheter and bladder washings, I found in December, 1909, that his residual had increased to 4 oz., though his urethra took a 26 F. sound. He presented a prostate that was not enlarged, but was fibrous, with a definite marking of the commissure or isthmus between the lobes. In January, 1910, he again had chills. In February a perineal operation was performed and all the prostatic tissue that I could trim away was removed. This tissue only weighed a dram and a quarter. The bladder outlet was very tight and fibrous. I dilated it very considerably, but did not incise it as I should have done. This patient made a good recovery, but three months after operation had a residual of 1 oz. of slightly turbid urine. He also has had a slight chill on one occasion after the passage of instruments.

Case V. A man of sixty-nine whose urinary trouble dated back about three years, and had been increasing gradually. He had a residual of from 2 to 3 oz., with rather frequent urination, especially at night. He had passed a catheter occasionally, but for a time had been unable to do this. His greatest complaint was of perineal discomfort, that was worse when he was on his feet; as a result he spent most of his time lying down. His prostate was little, if any, increased in size, but was dense and fibrous, with a well-marked sulcus. Perineal prostatectomy was done and about 2 dr. of very dense tissue removed. The bladder outlet was felt to be a dense fibrous ring — this was well dilated. When the perineal tubes were removed this patient was unable to pass urine, and his bladder distended to above the pubes. A retention catheter was used for a few days, but when it was removed the same state of affairs recurred. At a second operation I removed a few bits of prostatic capsule and a very little prostatic tissue. I also slit the bladder outlet on each side for about a half an inch, fearing to cut it on the floor because of the disturbed relations following my earlier operation. There has been no difficulty in emptying his bladder completely since the second operation. On the contrary, at the present time, one month after operation, he has some incontinence, but his control seems to be gradually returning and I believe in time that it will be satisfactory.[1]

Case VI. A man of sixty whose bladder symptoms began about ten years ago. Two years ago a large stone was removed by a suprapubic incision, and a small median bar was incised at the same time. Following this he had relief for a time, but his symptoms gradually recurred until he spent a large part of the day and night with a catheter tied into his bladder. In the morning, after removing his catheter, he could pass a little urine, but by noon his ability to urinate would be lost and he would be forced to replace his catheter, and spend the rest of the day on a couch. By rectum I could feel absolutely no sign of any prostate. Cystoscopically there was a marked anterior commissure and a slight jutting into the bladder of both lateral lobes. A perineal prostatectomy was done April 25, 1910. I was able to remove by the use of curved scissors and rongeur forceps 2 dr. of fibrous tissue. The sharp unyielding ring of the bladder outlet was cut down to the floor and a lateral incision was made on his left. This man passed all his urine by urethra on the fifteenth day after operation. A catheter showed that he emptied his bladder completely. His urine was clearing up when he left the hospital three weeks after operation.

I have seen a number of other cases of this type, but these are the most typical and illustrate the points that I wish to bring out which refer particularly to the etiology, diagnosis and treatment of these small fibrous prostates.

Macroscopically these prostates present at operation a dense, fibrous, almost cartilaginous condition and do not show the least tendency to form enucleable tumors such as we see in the hypertrophic cases. There may be places where the tissue is a little denser than in others, but this is not marked, and the consistency seems, on the whole, homogeneous. The amount of tissue that one removes in such cases is always small. I think the largest amount that I have removed from a prostate of this sort has been about 5 dr.

Some of the earlier prostates of this sort that I operated upon were not examined microscopically. The later ones have all been. They have shown a hyperplasia of the glandular elements, sometimes very marked. There has been an infiltration of the periglandular tissue with lymphocytes, plasma cells and, in some places, small round cells. In some there has been an increase of connective tissue throughout the gland which has compressed and distorted the ducts and acini. I do not know, but I suspect, that there has been a diminution of the muscle fibers.

The microscopical picture, then, has been that of a low-grade inflammation, to be compared with what we see in hyperplastic endometritis, for instance.

I formerly was of the opinion that some definite inflammatory invasion of the gland, probably in most instances a gonorrheal infection, was the

[1] At the present time this patient has perfect control.

underlying cause of these small fibrous prostates. Undoubtedly many of these cases will have a history of a previous gonorrhea, and I believe that the small fibrous prostate in some instances represents the end result of a gonorrheal prostatitis. We must, however, admit that other causes serve to bring about the condition quite as well as a gonorrheal infection. In only three of the reported cases was there a history of a gonorrhea, while in an equal number there had been no urethral infection. This raises the possibility that the previous gonorrhea may not have been the cause of the fibrous prostate, even in those patients who had suffered from gonorrhea. In searching for a probable cause for the small fibrous prostate, in the cases that have had no urethral infection, I have been unable to find anything that would serve as a reasonably probable etiological factor. In none of the cases had there been a history of anything like an acute prostatitis. It seems probable from the histological appearance that the process depends upon some very mild infection — without a doubt not of venereal origin. Very likely these infections may be brought by the circulation. The theory that they are infections from the rectum by way of the lymphatics hardly seems probable to me. If from the rectum, the infection would probably be with the colon bacillus, and I shall expect that the acute invasion would be attended with distinct symptoms.

The diagnosis of this condition can be most puzzling, especially if one has not yet trained himself, in all prostatic cases, to consider the "obstructive" rather than the "hypertrophic" element. If one demands a prostate that is enlarged by rectum as an essential part of every picture of prostatic obstruction, these cases will naturally be most puzzling. If, on the other hand, one sees in every man who has difficulty in urination the possibility of an obstructive prostate, there is much less difficulty.

When a urinary obstruction that depends upon a small fibrous prostate has not progressed beyond the first stage, that is, while the bladder is still able to completely empty itself, and the symptoms are mostly those of bladder irritation, the diagnosis is difficult and may require very close study. Case II, where the residual was only ½ oz., a negligible quantity, was of this type and the cause of his symptoms had been overlooked by several men. Occasionally in these cases one may feel by rectum practically no prostate at all, as in Case VI. More often, however, one feels a small but clearly defined fibrous-feeling gland, with a well-marked sulcus; though the prostate is not enlarged, this condition may be considered definitely abnormal and suggestive of the possibility of obstruction. If such a patient presents, in addition to his symptoms of bladder irritation, a marked resistance to a soft catheter just at the bladder outlet, the condition is highly suggestive. The passage of a sound will often allow one to feel with great ease the gripping of the instrument by the contracted bladder neck. Some of these patients, with obstruction due to a small fibrous prostate, get temporary relief from the use of sounds, for with them the obstruction to urination is not from a raising or deformity of the bladder outlet, but is from a lack of distensibility of the outlet. This lack of distensibility of the bladder outlet is due to the ring of fibrous prostatic tissue that has been almost shrunken-on, about the beginning of the prostatic urethra.

In the doubtful cases a cystoscopic examination of the bladder outlet will often be of help in arriving at a correct diagnosis. The prostate may be seen to bulge back into the bladder a little on the sides, or the anterior commissure may be very marked. Occasionally it will be seen that the bladder outlet is a little raised above the level of the trigone. The bladder wall will often show bundles of hypertrophied muscle fibers, a sign that the bladder has met with unusual resistance in its attempt to empty itself. Exclusion will, however, often have to play a considerable part in arriving at a correct diagnosis in the cases that do not as yet show a residual.

When there is a residual urine, the diagnosis is much easier. I feel that, broadly speaking, if one can rule out stricture, a lesion of the spinal cord or a diverticulum of the bladder, he may assume that the cause of any residual urine lies in some abnormality of the prostate. I include under the term abnormality of the prostate not only the hypertrophic and fibrous prostate, but also the bars at the bladder outlet, and contraction of the bladder neck, since I believe that they are almost without exception dependent upon fibrous changes in the prostate and are to be considered as part of the prostatic process.

Here I wish to make a slight digression in support of this opinion. With possibly a few exceptions due to a hyperplasia of misplaced prostatic tissue, we must either assume that the bars at the bladder outlet are congenital, in which instance it is hard to explain why they are symptomless over a long period of time, or we must assume that they are produced by some change in the immediate neighborhood. With a marked microscopical change in an organ lying in immediate proximity, it seems to me fair to assume that the abnormality probably depends on this change. The probability of this seems heightened when we consider the joint action that the bar and prostate seem to play in bringing about the obstruction in some of these cases. Cases III and VI illustrate this very well. As regards the contracted bladder outlet, it is hard to believe that an hypertrophy of a weak muscle, such as we know the internal sphincter to be, can produce such a dense and unyielding ring as we sometimes see in these cases. It likewise seems improbable that any thickening of the mucous membrane alone would be likely to bring about such a result. On the other hand, a circle of fibrous prostatic tissue sunk into the angle of junction of the bladder and urethra would produce just such a thick, firm ring. Those who have dealt with this type of prostate know how dense this tissue is, and how intimately it attaches itself to the mucous membrane.

The cases, then, in the second and third stages

of obstruction present little difficulty in diagnosis if one will bear in mind that one can have a prostatic obstruction without an appreciable increase in the size of the gland as felt by rectum. Any obstruction that does not depend upon an hypertrophic prostate or new growth must depend upon a fibrous prostate, or one of the conditions that it produces.

We have two other forms of prostatic diseases that may be confused with the fibrous prostate — tuberculosis and carcinoma of the prostate.

In tuberculosis the gland rarely has the clear-cut, hard outline seen in the fibrous prostate. It is usually more tender; often there is a mass in an epididymis or a vesicle, and in all my personal cases tubercle bacilli have been found in the urine. In one or two cases, however, the condition was perplexing at the outset.

It is often difficult, and sometimes impossible, to differentiate between the small fibrous obstructive prostate and the early stage of a carcinomatous prostate. The question of malignancy arises in the consideration of many of the cases of this type since the malignant prostate is, as a rule, relatively small and hard, though this is not without its exceptions. When the carcinoma is advanced, the stony hardness, rather than fibrous consistency of the gland, and especially the fixity of the prostate, makes the differentiation easy. In a small proportion of cases I find it absolutely impossible to tell before operation whether a given prostate is of the small fibrous variety or a beginning carcinoma.

Great interest attaches to the treatment of these small fibrous prostates, for I believe it is in this type of obstruction that we meet many of our operative failures or unsatisfactory results. I know this has been my personal experience. The suprapubic enucleation is, in my opinion, quite unsuited for dealing with this type of obstruction. In the only instance in which I have attempted it in this sort of a prostate I found that it was only with the greatest difficulty that I could tear away a small amount of tissue. This gave some relief, to be sure, but an inferior result. The median perineal operation would seem to be as inapplicable as the suprapubic operation, though I must confess that I have not tried it. The transverse perineal operation seems to me the one best suited for dealing with this condition.

As I have studied my cases, and particularly my unsatisfactory results, I have arrived at the conclusion that in these cases one must do more than it is necessary to do with the hypertrophic cases. It is not enough in many instances to simply remove all the prostatic tissue that one can get. This fact is well-illustrated in my fourth and fifth cases. In Case IV, after the removal of all the prostatic tissue that I could get, the patient remains unable to empty his bladder perfectly. In Case V, I was compelled under similar circumstances to do a secondary operation. I believe in theory that if we removed all the prostatic tissue beneath and at the sides of the prostatic urethra, and left the urethra absolutely free of prostate, that would be sufficient. In practice I doubt if this can be done, as there seem to be little bands of prostatic tissue that are fairly sunk into the wall of the urethra. At any rate, after the removal of all the tissue that we can get, there often remains a small tight fibrous bladder outlet, wholly different from the gaping, open bladder outlet seen after the removal of the usual hypertrophic gland. I believe that it is essential that this fibrous ring be split, either by an incision on the floor or by an incision on the floor and on one side. This cutting of the bladder outlet also does away with any slight bar.

In order to meet these requirements I have gradually made certain modifications in the usual transverse perineal prostatectomy that I think are especially adapted for dealing with this condition. I dissect the perineum and lay the prostate bare after the method that Young has so clearly described. Then, instead of opening the urethra just in front of the prostate, I open into the prostatic urethra through the tissue of the prostate itself, at a point just back of its tip. This is done in order that I may avoid any chance of injuring the compressor urethræ, as it is most important that this muscle be left intact if one is to intentionally divide the bladder outlet, including, as this will, the internal sphincter. With the tractor in place, and with the surface of the prostate well exposed, I either make a transverse incision through the capsule, or, making an incision into the substance of the gland, I remove with curved scissors first the exposed surface of the prostate and then all of the prostatic tissue that I can get, below and at the sides of the urethra. I remove the tissue back to where I can feel the tractor in the bladder separated from the prostatic cavity by only the thickness of the bladder wall. In digging away this prostatic tissue I have lately found biting forceps of great service. Their use for this purpose was first called to my attention by Dr. A. T. Cabot. I have had a pair of rongeur forceps, such as are commonly used for the removal of adenoids, made a little less curved and find them useful. I find them quite as useful, however, as a forceps to pick up the dense prostatic tissue as for their biting ability. They can be made to bite into the densest tissue and give one a hold that I have been wholly unable to get with ordinary toothed dissecting forceps or with tenacula of various sorts.

When one has removed all the prostatic tissue that he can get, it is necessary to see if the bladder outlet presents a sharp, tight ring. If it does, this must be cut; a single cut on the floor, well through the band, will, I believe, be sufficient in most cases, It can be supplemented with a lateral cut if desired, or a cut on either side may take the place of the incision on the floor; the point is to leave the bladder outlet open and patulous. I do not believe that incontinence follows this cutting of the bladder outlet, if one leaves the compressor urethræ intact. The incontinence in Case V of my series might seem to contradict this, but I am convinced that this was due to an injury of the membranous urethra that I discovered at the close of the first operation. This

was brought about by the unguarded use of a retractor. The cutting of the bladder outlet has not usually been attended with much hemorrhage. In a case more recent than those described in this paper, I encountered a sharp hemorrhage, but it was perfectly controlled by gauze packing. In this type of prostate the bleeding incident to the removal of the prostatic tissue itself is less than that seen in the large hypertrophic prostates in which there is the increased blood supply commonly seen in tumors in general.

After incising the bladder neck double tubes should be placed in the bladder and brought out through the perineal wound. I usually use tubes having a diameter of $\frac{5}{16}$ inch, sometimes $\frac{3}{8}$ inch. I believe it is well in these fibrous prostates to leave these tubes in place for three or four days, instead of one or two. It has been my custom of late to pass a small rubber catheter into the bladder through the urethra at the time that I insert the perineal tubes, and to fix it by a stitch through the meatus. It seems to hasten the closing of the perineal wound and to facilitate the subsequent passage of instruments if this becomes necessary. This I do not confine to operations on fibrous prostates, but use it in the hypertrophied ones as well.

I lead rubber-covered wicks down into the cavity from which the prostatic tissue has been removed, and, after bringing the fibers of the levator ani together with two catgut sutures, I close the skin wound on either side of the tubes and wicks. While the urine is bloody and contains small clots I have the bladder irrigated; at first at intervals of an hour or two, later at less frequent intervals. The wicks are removed in twenty-four hours.

These modifications of the usual operative technic have gradually been evolved to meet difficulties that I have encountered in dealing with these cases. The method in its entirety has as yet been used in only a few cases, but has given satisfactory results.

The points to which I would call special attention are these:

There is a class of obstructive prostates in which the rectal examination shows little, if any, increase in size of the gland. These prostates are dense and fibrous, showing little similarity to the large hypertrophic prostates. They are the result of an inflammatory process. Their recognition before there is an appreciable residual may be difficult. They are often associated with a contraction of the bladder neck or a bar at the bladder outlet. In order to give these patients relief it is important not to overlook either element of the obstruction.

ANALYSIS OF WOUND INFECTION IN ONE THOUSAND CONSECUTIVE CLEAN OPERATIVE CASES.

BY W. P. GRAVES, M.D., BOSTON.

The development of modern surgical technic has reached a point where, under proper conditions, fatal or even dangerous sepsis following clean operations is, for the most part, eliminated. The troublesome occurrence of wound infection, however, is still sufficiently frequent in public hospital practice to deserve serious attention. In an effort to study the possible means to avoid wound sepsis I have analyzed the present series of cases from my practice at the Free Hospital for Women in in order to establish a basis of comparison for future work, and also to stimulate, if possible, comparative reports from other hospitals. As the avoidance of wound sepsis is unquestionably a matter largely of techincal detail, it is hoped that in this way some useful information may be gained in the solution of a difficult problem.

Each operation was performed from beginning to end by myself, thus establishing the personal equation. The conditions relating to the preparation of the patient, general operating-room technic and post-operative treatment were practically constant throughout the series. The technical treatment of the wound was, in some instances, changed and will be noted later. The chief inconstant factor in the technic was the somewhat frequent changing of operating-room assistants and nurses. The custom of frequently changing assistants which unfortunately generally prevails in the public hospitals of this community is a considerable deterrent to well-organized and systematic surgical work, and probably has some influence in the matter of wound sepsis. How far this is true can only be determined by a comparison with cases from public hospitals where the system of permanent assistants obtains.

The present series of 1,000 cases comprises 574 laparotomies, of which 235 were combined with plastic vaginal operations; 376 uncombined plastic operations, 55 breast operations and 11 miscellaneous. In the list of laparotomies are included inguinal hernias and operations on kidneys. Cases of chronic pelvic inflammatory disease are included as clean cases if they were not running a temperature at the time of the operation. Some of these having sterile pus in the pelvis were temporarily drained through the vagina. Radical operations for cancer of the cervix uteri are also included as clean cases, although operated on in the presence of an ulcerated surface. With an adequate preparation of the ulcerated surface, such operations may properly be included in the category of clean cases. Complete lacerations of the perineum are also regarded as clean cases, although the field of operation is exposed to the mucous membrane of the rectum. Most of the breast amputations and abdominal hernias were drained through stab wounds, a form of drainage which adds no risk of infection, but, on the other hand, as will be seen, is of great assistance in preventing general sepsis of the wound.

Out of the 1,000 operative cases, 51 had some form of wound infection which in all but one case was of a mild form, the organism being a staphylococcus in all instances. Twenty-eight of these infected cases were laparotomy wounds where the infection consisted mostly (19 cases) of slight sepsis of a buried catgut knot, the wound closing immediately after extraction of the knot. Some

of these catgut knot infections did not appear until some time after the patient was discharged from the hospital. The other 9 laparotomy wounds were septic to a greater or less extent throughout the wound. Of these 9 cases of general sepsis in the laparotomy wound, 7 occurred in extensive abdominal hernia wounds and 2 occurred in inguinal hernia wounds. In other words, all the cases of general sepsis in the list of laparotomies occurred in hernia wounds. Nine of the breast wounds were more or less septic, the sepsis of 2 of them, however, being confined to a small area where the angle of a too tightly drawn plastic flap necrosed. Ten of the perineum wounds had stitch abscesses, though none were completely septic. Three of these cases were operations for complete lacerations; 4 were cases of very large thin-walled rectoceles. Of the trachelorrhaphies, one wound failed to unite; of the anterior colporrhaphies, one went septic; of the miscellaneous cases, a plastic on the urethra and an operation on the cervix for anteflexion failed to unite by first intention. The total mortality from all causes in the 1,000 cases was 3. One patient died from shock following a radical operation for cancer of the cervix. The second case with a pre-existing heart lesion died of cerebral embolism following an operation for chronic appendicitis. The third case was operated on for an enormous post-operative ventral hernia. The lower end of the wound became septic. Five weeks after the operation and after the wound had healed, the patient died of a sudden acute endocarditis. The endocarditis was probably in some way the result of the wound sepsis. This case is, therefore, recorded as one of death from sepsis.

Although the cases operated on number 1,000, the actual number of wounds subject to infection was much greater; e. g., a combined plastic and laparotomy case might have, beside the wound of the abdomen, a wound of the cervix, of the anterior vaginal wall and of the perineum. In order, therefore, to determine the exact proportion of sepsis to all the wounds, I have constructed the following table:

Nature of wound.	Number of wounds.	Total number of septic wounds.	Number of wounds with general sepsis.	Total deaths from all causes.	Deaths from sepsis.
Laparotomy,	574	28	9	3	1*
Perineorrhaphy,	499	10	0	0	0
Trachelorrhaphy,	465	1	0	0	0
Anterior colporraphy,	313	1	1	0	0
Miscellaneous,	11	2	0	0	0
Breast,	55	9	7	0	0
Total,	1,917	51	17	3	1

	Per cent.
Proportion of sepsis to cases operated on,	5.1
Proportion of sepsis to all wounds,	2.6
Mortality from all causes,	.3
Mortality from sepsis.	.1

* Acute endocarditis following wound infection.

SEPSIS IN PLASTIC WOUNDS.

A study of this table will show that the figures for the vaginal plastic operations are fairly encouraging. Of the 465 trachelorrhaphies, only 1 became septic, although there are included in this list about 50 high amputations. One of the anterior colporrhaphy operations became septic, the failure in this case being entirely due to a lack of coaptation of the wound edges. It may be said, therefore, that sepsis in operations for laceration of the cervix and for cystocele should be practically eliminated, and that when sepsis does occur, it is due to unskillful approximation of the wound edges. The operations on the cervix for lacerations were all performed according to Emmet's method, and the amputations were performed by Hegar's method. The operations of anterior colporrhaphy were, for the most part, done by the method described by me elsewhere.[1]

Sepsis occurring after perineal operations is, under certain conditions, very difficult to avoid. Three of the 10 cases of stitch abscesses in perineal wounds, recorded in the table, followed operations for complete laceration through the sphincter. Considerable experience in operating on cases of complete tear has convinced me that a certain percentage of sepsis, even with the most extraordinary precautions, is, in these cases, unavoidable. It should be remembered also that sepsis occurring after an operation for complete laceration may be a grave condition and is sometimes fatal. Fatal sepsis from an operation for complete tear usually eventuates in peritonitis. The operation should, therefore, be regarded as a major one, and not to be undertaken excepting under the most favorable conditions. Four of the septic perineal cases recorded here followed operations for large thinned-out rectoceles in fat, elderly women. The only practical method for curing this condition is to employ an extensive Emmet's operation by which it is necessary to quilt sutures into the denuded rectocele in order to draw it back into the vagina. I am convinced that the stitch abscesses which occurred in each one of these 4 cases were due to carrying the stitch too near the rectal mucous membrane, and thus exposing it to infection. It is probable that by greater care and skill the sepsis in these 4 cases might have been avoided.

SEPSIS IN ABDOMINAL WOUNDS.

The figures in the table relating to sepsis in abdominal wounds are less satisfactory than those relating to plastic wounds. The sepsis in these wounds is divided into two types, as has been mentioned above; first, the slight infection of a catgut knot, which results in a small sinus, until the knot is discharged or extracted, and secondly, where the wound to a greater or less extent becomes generally septic. The only abdominal wounds in the entire series which became generally septic were hernias, either abdominal or inguinal, the sepsis in all the other wounds being of the first type, namely, infection of a catgut knot. In operations for abdominal hernia, I am accustomed to do a very extensive operation which entails a long wound that is exposed for a considerable length of time on account of the difficulty of

[1] Surg., Gynec. and Obstet., August, 1910

the operation. Most of the operations for ventral hernia are done on patients who have a large amount of abdominal fat. These factors, together with the necessity of dissecting away the fat extensively from the aponeurosis, make operations for ventral hernia peculiarly liable to sepsis. In these cases I have been able to reduce the percentage of infection by draining the dead space caused by the dissection of the fat from the fascia through stab wounds, one on each side of the lower end of the main wound. Penrose drainage tubes are used and can be placed in such a way as to be drawn out thirty-six to forty-eight hours after the operation without disturbing the dressing. It is most important to leave the skin wound absolutely dry before closing. What has been said about extensive abdominal hernia wounds applies also to the wounds of radical breast operations where a large wound area is exposed for a considerable length of time with much dissection of fat, and leaving of dead spaces. Nearly all of the septic cases recorded in the table occurred before I had adopted an effective method of draining the whole wound by means of the Penrose tubes. The necrosis of the angle of a skin flap due to plastic devices for covering in a widely dissected area is not a serious complication, leaving as it does only a small granulating space, which readily heals over.

The infection of buried catgut knots has continued throughout the series despite all efforts to prevent it. The trouble cannot be laid to the catgut, as all the catgut used was tested bacteriologically in the Free Hospital laboratory before being used and was invariably found to be sterile. From a study of the wounds of all the hospital cases for several years it has been noticeable that catgut knot infection is much more likely to occur in wounds where the edges are carelessly approximated, so that one overlaps the other. This doubtless accounts for the fact that in performing the same class of cases one surgeon may have more wound sepsis than another. In order to test this observation a change was made in the present series in the method of closing the skin. In about one third of the cases the skin was closed with interrupted silkworm gut sutures. The rest were closed by a few deeply placed silkworm gut sutures and a running No. 00 chromicized catgut stitch. The latter method secures a much better approximation of the wound edges, and shows a considerably lower percentage of catgut infection, though it has not entirely prevented its occurrence.

In common with other surgeons I note that wound infection is much more common in public hospital work than in private practice, where it is almost *nil*. This cannot be due to infection from other septic cases. At the Free Hospital the number of acute septic cases operated on is no greater than at a private hospital. Moreover, in our public hospitals, all the conditions for systematic avoidance of sepsis are superior to those found at the average private hospital. One is, therefore, driven to the conclusion that the difference is largely due to the personal equation of the patient, and that the person whose skin is habitually clean is far less likely to incur wound sepsis. This is a most important fact and establishes the principle that the preparation of public hospital cases must be much more rigorous than that employed for private cases. The technic which I am about to describe as being employed in the series of cases here reported will doubtless seem to many laborious and unnecessary. In the plastic cases the painstaking preparation, though requiring much attention on the part of the nurses, and some inconvenience on the part of the patient, seems to be thoroughly justified by the results. Out of 611 patients who received plastic operations, only 13 had any form of sepsis. In all these cases the sepsis was slight.

PREPARATION OF PLASTIC CASES FOR OPERATION.

Twenty-four hours before operation the patient is given magnesium sulphate, ℥ii. The external genitals are then shaved well up to the abdomen over the flanks and around the anus. A high soap suds enema with ℥i of turpentine is given. Successive vaginal douches are then given, first of soap suds, then plain water, then of bichloride 1–5,000, after which the area shaved is scrubbed with green soap on gauze. A bichloride pad soaked in 1–5,000 corrosive is applied and reapplied fresh every time the patient urinates. Early in the morning of the operation repeated enemas are given until the bowel is thoroughly empty, and the water runs clear. This is followed by a plain water and then a bichloride 1–5,000 vaginal douche. A fresh pad is applied and left until the patient is taken to the operating room. In the operating room after the patient is etherized she receives another scrubbing with gauze of the vagina and external genitals and all the parts then rinsed with sterile water. After a preparation of this kind an involuntary movement of the bowels during operation practically never happens. The care of the patient after operation is also of great importance for the avoidance of sepsis. Two douches, one of bichloride 1–5,000, and one of sterile water, are given daily until after the patient leaves the hospital. Perineal stitches are rinsed with sterile water under aseptic precautions after each urination and defecation. External perineal stitches are removed beginning on the fifth or sixth day, those being removed first which have a tendency to cut in or cause reddening of the skin. All the stitches are out on the ninth day, when the patients are allowed to sit up.

PREPARATION FOR LAPAROTOMIES.

In regard to skin preparation for laparotomies, there is a considerable divergence of opinion among surgeons, the tendency of the present day being more and more to regard the old-fashioned elaborate preparations as unnecessary. The methods used uniformly in the series here presented have been distinctly of the old-fashioned type, but have been adhered to from a conviction that the results so far as wound sepsis is concerned compare favorably with those in other public

hospitals where the more complicated methods of preparation have been given up. The abdomen is shaved and scrubbed twenty-four hours before operation, a green soap poultice being left on for six hours after each time. The abdomen is rinsed with sterile water and 70% alcohol, and a bichloride dressing is left on until the following morning, when the abdomen is again rinsed off with sterile water and alcohol and a fresh dressing applied. In the operating room the abdomen is treated with permanganate and oxalic, sterile water, and 70% alcohol. The use of permanganate and oxalic has been almost universally abandoned in other hospitals. I am still strongly in favor of its use, especially in public hospital practice, my convictions being formed after repeated bacteriological examinations of surgeons' and assistants' hands prepared by this method. The bacteriological results from the permanganate, oxalic and alcohol preparation are incomparably better than those from any other method tried, while the absence of injury to the skin and nails of the surgeon's hands is of itself, as compared with other methods, sufficient to recommend it. Rubber gloves are put on in a 1–10,000 bichloride solution.

The technic thus described was used in all the laparotomy cases, the number of which amounted to 574. As 28 of these became septic to a greater or less extent, it will thus be seen that the occurrence of sepsis was a little over twice that of the plastic cases. Considering the fact, too, that in the plastic cases, taking all the operations into account, there were nearly three times as many wounds, the percentage of sepsis in the laparotomy cases is still greater by comparison. As equal care was taken in the technic of both classes of cases, the results show that abdominal incisions are much more susceptible to superficial infection than are plastic wounds.

In order to compare the results of the technic of the present series of cases with other well accepted methods, I am now carrying out a series of cases in which the abdomen is prepared with the tincture of iodine. This method has apparently been extremely successful. A report of the results of this method will be made at a later date.

THE COMPARATIVE HISTOLOGY OF FEMORAL BONES.

BY J. S. FOOTE, M.D., CREIGHTON MEDICAL COLLEGE, OMAHA, NEB.

It is interesting to notice the diversity of structure present in the femurs of various animals. We have been led to think that bone is bone, that long bones, and especially similar bones wherever they occur, have the same structure because they are used for the same purposes. This is not true. Microscopical examinations of entire sections of thirty femurs of as many different animals show that the structures and their arrangements are not at all the same. They vary in different animals, and even in the walls of a bone of any one animal. The anterior wall is unlike the posterior; the outer wall unlike the inner. Nor are the linear portions of a bone the same. If a long bone, like the femur, is divided into thirds, each third is found to differ from another third. Therefore a correct knowledge of the histology of bone cannot be obtained from prepared sections of small pieces sawed from the walls of bones. Entire cross-sections must be made in each case. Furthermore, a drawing and description of one long bone will not answer for another.

In a general way femurs answer a common purpose, but in specific ways they differ considerably. The various habits of animals, the complex, muscular stresses to which their femurs are exposed, and the variations in position relative to the bodies which they support, demand corresponding structural arrangements peculiar to the animals possessing them. Thus the femurs of swimmers, flyers, scratchers, climbers, crawlers, runners and jumpers differ from each other very decidedly. Bone exhibits a very ready structural response to functional demands.

We are accustomed to one type of bone, viz., the Haversian system type. It is the familiar type described and plated in books. It is human and will not answer as a formula of the general bone structure of animals. In most cases a small piece of a long human bone is described. In some instances entire cross-sections of small bones, as the fibula, radius, metatarsal or metacarpal, are given. This type, in its pure form, appears to be peculiar to man, as none of the other femurs examined show it. The completely developed Haversian system evidently belongs to the higher animals and exhibits evolutionary forms.

Entire cross-sections of the femurs of the following thirty animals have been examined as they were received. They were not selected.

Frog, normal and fractured; snapping turtle, domestic turkey, wild turkey, wild goose, mallard duck, crow, domestic chicken, man, ox, prairie dog, peahen, large horned owl, woodchuck, dog, rabbit, sheep, pig, cat, skunk, mink; raccoon and os penis of same; muskrat, opossum, wolf (timber), goat, alligator, rat, wild cat, small gray fox.

All sections are taken from the middle of the shafts, ground to proper thinness, mounted in hard balsam and examined with the same objectives, oculars and tube lengths of a Zeiss microscope. Drawings are then made for the purpose of comparison and are intended to show the developments and arrangements of the lamellæ, laminæ, lacunæ and Haversian systems rather than their exact number.

The following general outline is followed in all examinations:

1. Antero-posterior diameter of the bone.
2. Lateral diameter of bone.
3. Antero-posterior diameter of medullary canal. (To show variations in shape and thickness of walls.)
4. Lateral diameter of medullary canal.
5. Medullary canal full or empty.
6. Trabeculæ of bone — present or absent.
7. Cancellous bone — present or absent.
8. Compact bone — extent of.
9. Hardness or density.
10. External circumferential lamellæ.
11. Development and arrangement of central

Haversian systems. (Haversian system type of structure.)

12. Internal circumferential lamellæ.

13. Laminæ — position of — concentric or oblique.

14. Lacunæ — character of — long and narrow or oval or round.

15. Canaliculi — character of.

16. Type of structure — lamellar — laminar or Haversian system.

Although the number of femurs is not yet large, it is large enough to reveal three types of bone formation — the lamellar, laminar and Haversian system.

1. The lamellar type is the simplest and is composed of several lamellæ of bone concentrically arranged around the medullary canal. Example, femur of frog.

2. The laminar type is more complex and is composed of several laminæ of bone concentrically arranged around the medullary canal. Each lamina consists of several lamellæ and is separated from adjacent laminæ by inter-laminar, concentric canals. Best example may be seen in the pig. Earlier forms — turkeys, peahen.

3. The Haversian system type is the most complex form and is composed of Haversian systems generally running parallel with the external and internal surfaces of the walls of the bone. The systems may be large or small, regular or irregular in shape, united by short lamellæ or laminæ of bone and enclosed or not enclosed by external and internal circumferential lamellæ. Best example, man. Other forms (but modified) may be seen in the sheep, dog, woodchuck, ox, wolf, goat, fox and rabbit.

The femurs of other animals are various combinations of these three types in different degrees of development and arranged according to the stress requirements of each. The structural units of the three types may be present in the femurs of many animals, but their developments, positions and proportions vary greatly in all. The types apparently appeared in the order given above. The lamellar, — frog, — laminar, — turkey, — family, and pure Haversian system in man.

The lamellar and laminar types characterize the larger number of femurs and are always well developed. This would be expected if they were the first to appear. Even in those femurs having very incomplete Haversian systems, the lamellæ and laminæ are completely formed.

A study of these bones shows a great diversity of structure and arrangement, wide differences in shape, thickness and hardness of walls and character of contents of the medullary canals. Some femurs are practically round, as those of the frog, turtle, crow, domestic chicken, skunk, owl, prairie dog. In some femurs the antero-posterior diameters are longest, as in the dog, pig, timber wolf, ox, wild cat, wild goose. In some the lateral diameters are longest, as in the domestic and wild turkeys, mallard duck, peahen, woodchuck, rabbit, sheep, cat, raccoon, mink, musk rat, opossum, man, goat, alligator, rat, fox. The largest number of femurs have the long, lateral diameters.

The walls vary in thickness. The peahen has the thinnest (and hardest) walls in proportion to the diameter of the bone, and the turtle the thickest.

The femurs of the turtle, alligator, peahen, owl, sheep, wild cat, goat, ox, pig, man are hard; of the wild goose, mallard duck, domestic chicken, dog, skunk, raccoon, mink and wolf are medium; of the frog, turkey, crow, prairie dog, woodchuck, rabbit, musk rat, opossum, fox, are soft. The degree of hardness is estimated by the grinding process in the preparation of sections. The contents of the medullary canals vary. The canals are empty in the frog, mallard duck, peahen, *musk rat*, *prairie dog*, and full in the turtle, domestic and *wild turkey*, *wild goose*, *crow*, *owl*, woodchuck, dog, rabbit, sheep, pig, cat, skunk, raccoon, mink, opossum, wolf, ox, man, goat, alligator, rat, fox, wild cat. That is, most canals are full. Some mammals are empty — musk rat and prairie dog — and some birds have full canals — wild goose, crow, owl, wild turkey. Two femurs have medullary trabeculæ of bone — peahen and musk rat; three have circummedullary cancellous bone — turtle, man and alligator. The external circumferential lamellæ are best developed and most prominent in the frog, cat, skunk, mink, raccoon, prairie dog, opossum, rat, wild cat.

The internal circumferential lamellæ are best developed and most prominent in the owl, opossum, musk rat.

The central complete Haversian systems are best developed in man, sheep, dog, woodchuck, ox, wolf, goat, fox, rabbit. They are undeveloped in the turtle, alligator, owl, wild goose, domestic chicken, turkeys, crow. Laminæ are best developed in the turkey, pig, peahen. They are absent in the chicken, skunk, mink, opossum. They are obliquely arranged in the rabbit and sheep.

The posterior ridges have the best developed Haversian systems. Nearly all femurs have two forms of lacunæ — long, narrow and oval, or round; and two forms of canaliculi — long, branching and bushy. Seven femurs are incompletely developed, that is, have incomplete Haversian systems, — turtle, alligator, owl, wild goose, mallard duck, chicken, crow. One is fully developed and of the Haversian system type — man. Eight are completely developed, but of a mixed type, that is, they have completely formed, lamellæ, laminæ and Haversian systems arranged in peculiar ways — sheep, dog, woodchuck, ox, wolf, rabbit, goat, fox. Four are laminar; ten lamellar.

Arranging the thirty femurs according to their types and structures, they fall into the groups as shown in table on next page.

It is rather unexpected that the femurs of these animals should fall into these classes. It may be noticed that man stands alone. Summary: Femurs differ in shape. Some birds of flight have full medullary canals, some poor flyers

Lamellar type.	Laminar type.	Incomplete mixed type.	Pure Haversian system type.	Complete mixed type.
Frog, cat, skunk, mink, raccoon, musk rat, prairie dog, opossum, rat, wild cat.	Domestic and wild turkeys, pig, peahen.	Turtle, alligator, owl, wild goose, domestic, chicken, crow.	Man. (The type usually drawn and described.)	Sheep, dog, woodchuck, ox, wolf, goat fox, rabbit.

have empty canals, some mammals have empty canals. Some femurs are nearly solid, some have extremely thin walls, some have medullary trabeculæ of bone, most have none. Some bones are hard, some medium, some soft. Some have circummedullary cancellous bone; most have none. Some have wide external circumferential lamellæ; some, narrow. Some have wide internal circumferential lamellæ; some, narrow. Some have concentric laminæ; some, oblique, and some have none. Some have complete Haversian systems; some, incomplete. Some have thick, central rings of Haversian systems; some, crescents, and some, alternating rings of systems and laminæ. Some show the lamellar type; some, the laminar, and some, the Haversian system. No two are alike excepting those of the same species. There is no femur like the human. The particular femur examined differs from the usual description in that it shows the external circumferential lamellæ very poorly developed and present only at scattered intervals around the periosteal border of the bone. The central ring of Haversian systems reaches the surface for the most part, and occasionally a half system forms the outer boundary of the section.

There is, perhaps, no other tissue of the animal kingdom which indicates the species of animal to which it belongs as clearly as bone. Epithelium, muscle, nerve and other varieties of connective tissue cannot be easily distinguished as peculiar to or characteristic of any animal. Femurs may be grouped by their microscopic structures, and these are sufficiently constant to form some sort of a classification. Bone of repair is cancellous. One of the femurs of the frog had been fractured in the middle of the shaft; the two fragments — proximal and distal — had slipped by each other, and new bone of repair had formed around them. There were cell outbursts from the medullary canal through the walls of the proximal fragment which appeared to initiate the reparative process. The new bone of repair was cancellous bone, although there was none in the femur at the line of fracture. In places the meshes of the cancellous bone had been reduced in diameter by the formation of lamellæ around their walls, forming Haversian systems which were also absent in the femurs.

In the femur of the pig the inter-laminar canals widen at intervals by circular dilatations, around which two or three lamellæ are bent, forming small Haversian systems. These are two methods of system formation.

At the present time it is not possible to account for the varying bone structures on the basis of diversified function alone. A general biological law operating in harmony with a changing environment and establishing the type of the genus is essential.

For example, the femurs of the pig and turkey resemble each other closely. The os penis of the raccoon resembles the femur of that animal. The turtle has four laminæ alternating with three rings of incomplete Haversian systems.

The turkeys have fifteen to twenty concentric laminæ interrupted in the posterior and anterior walls by Haversian systems.

The wild goose has from four to ten external and internal lamellæ, anterior and posterior incomplete Haversian systems; internal laminæ and external Haversian systems in the inner wall.

The crow has six to eight external and two or three internal lamellæ with a wide central ring of Haversian systems.

The peahen has a concentric network of laminæ around the medullary canal and a network of trabeculæ extending from one wall of the canal to the opposite.

The owl has three to nine external and thirteen to twenty internal lamellæ — six laminæ in the outer wall and a central ring of incomplete Haversian systems.

The woodchuck has two external laminæ, two internal laminæ and a central heavy ring of irregularly shaped Haversian systems.

The dog has an outer wall of Haversian systems and an inner wall of Haversian systems alternating with laminæ.

The rabbit has five to eight oblique laminæ merging into concentric oblique Haversian systems and lamellæ.

The sheep has six external lamellæ widening into twenty laminæ, two internal laminæ and a central crescent of Haversian systems.

The pig has seventeen to thirty-five concentric laminæ interrupted in the posterior wall by Haversian systems.

The cat has twenty-three to forty-five external lamellæ, two to six internal laminæ and a central ring of complete Haversian systems.

The skunk has fourteen to seventeen external lamellæ, six to eight internal lamellæ and an irregular ring of Haversian systems.

The raccoon has fourteen to fifty external lamellæ, two internal to one half of the thickness of the wall of oblique laminæ and an irregular ring of Haversian systems.

The mink has fifty to sixty external lamellæ, twelve to twenty-five internal lamellæ and an irregular crescent of Haversian systems.

The muskrat has a few external lamellæ at intervals, nearly the whole of the wall of undulating internal lamellæ enclosing solid cylinders of bone, a few incomplete Haversian systems and a transverse network of laminæ in the inner wall.

The opossum has two wide rings of external lamellæ, a wide ring of internal lamellæ (two

thirds of the wall) and a crescent of very incomplete Haversian systems.

The wolf has sixteen to twenty-one external lamellæ separating into four laminæ, six internal laminæ in the anterior wall, thick crescent of Haversian systems, and well-developed laminæ in the inner wall.

The ox has three wide concentric rings composed of irregularly shaped Haversian systems arranged in different directions, and enclosed by a few external and internal lamellæ.

Man has a few short external lamellæ at intervals, a wide central ring of Haversian systems and internal lamellæ arranged in cancellous bone.

The prairie dog has eight to fifteen external, six to twenty-five internal lamellæ and a narrow central ring of Haversian systems.

The goat has six to sixteen external, four to fifteen internal lamellæ, two or three laminæ and two rings of Haversian systems.

The alligator has no external lamellæ, three or four internal, four rings of incomplete Haversian systems alternating with four concentric laminæ.

The rat has six to ten external lamellæ, a few incomplete internal laminæ and a central ring of incomplete Haversian systems.

The fox has twenty to thirty external lamellæ, a heavy ring of internal laminæ and a central crescent of Haversian systems.

The wild cat has a wide ring of external lamellæ (two thirds of the width of the wall), three to thirty internal lamellæ and a crescent of Haversian systems.

It does not appear just what habits or conditions of environment call for lamellar type, laminar or Haversian system type of structure. Hardly any two animals are farther apart — apparently — than the pig and the turkey, and yet they have a common structure.

Looking over the femurs examined, the pure Haversian system type is shown in the smallest number of animals, the laminar in the next, while the lamellar comprises the largest number. Perhaps — in some cases — the principle of reversion has been introduced. Generally we are inclined to think of the Haversian system type as the one best adapted to support weight, but this does not work out in the pig.

The bones, furthermore, vary greatly in hardness, in contents, in relative thickness of walls and in shape. The study suggests a possible relation of pathological bone to their changeable factors. Deformities, changes in nutrition and growth may be governed by a failure of a bone to conform to the pure type.

It is the intention to continue the study, as it promises to widen the field of bone histology and possibly account for some of the individual variations in human femurs which are responsible for bone diseases.

The writer would be very glad to receive fresh femur of animals not mentioned in the list given above, and would also be glad to send, after Sept. 1, sawed rings of the femurs examined to any one who may wish to prepare them for study.

Medical Progress.

PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE. GASTRIC AND DUODENAL ULCER.

BY FRANCIS W. PALFREY, M.D., BOSTON.

In recent years the study of gastric and duodenal ulcer has attracted much attention both from medical and from surgical investigators. To abdominal surgeons is largely due the credit for the inception of recent advances in these subjects, by observations possible only at operation which have called for a revision of our previous beliefs. These observations of surgeons have in turn stimulated the interest of physicians, and have led to renewed efforts on their part to explain the occurrence, and to perfect medical methods of treatment, of these conditions. The growing movement for experimental research has further shown its influence in investigations attempting to throw light upon the many unexplained points and disputed questions by studies upon animals. Much still remains in doubt. In fact, the pathological physiology of ulcers of the stomach and duodenum is still without conclusive explanations. Yet so much has been written of late in reports of careful research, both experimental and clinical, bearing upon the pathogenesis, recognition and management of cases of gastric and of duodenal ulcer, that a brief review of these reports seems desirable.

ETIOLOGY.

Round ulcer of the stomach was first described as a clinical entity by Cruveilhier in 1836. Similar ulcers have since then been known to occur in the duodenum, but until recently duodenal ulcer was supposed to be relatively rare and was not given independent consideration. But from the findings of Moynihan,[1] of the Mayos[2] and their associates, of Codman[3] and of other surgeons, it has been established that duodenal ulcer is not rare, but, on the contrary, comprises the majority of all chronic ulcers of the upper digestive tract. Ewald,[4] Musser[5] and Hoover[6] dispute this, but the surgical evidence seems incontestable. Furthermore, it is shown that duodenal ulcers give sufficiently definite symptomatology and clinical course to warrant their separation from gastric ulcers into a class of their own. Thus, in discussing the etiology and also the diagnosis, prognosis and treatment of so-called peptic ulcers, while certain considerations apply equally to all such ulcers, the distinction between the two types, the gastric and the duodenal, must be borne in mind and the differences between the two are to be noted.

The pathogenesis of these ulcers has been the subject of much study in which the work of recent years has shown no abatement. Self-digestion has long been believed to play a part, but it has been amply shown that self-digestion cannot be regarded as more than a contributing cause since the mucosa of the normal living stomach and of

the duodenum is immune to the digestive action of the gastric juice.[7] Some cause must be found to explain the failure of this normal immunity before ulceration by self-digestion can occur. This has been the object of recent experimental work, throwing a certain amount of light upon the plausibility of the various theories both old and new that have been suggested. The chief possibilities considered as prime factors in the etiology of gastric ulcer are as follows: (1) Some interference with the circulation of a portion of the stomach or duodenum; (2) some disturbance of innervation; (3) a local inflammation or manifestation of infection; (4) a secretory or motor abnormality of function; (5) a toxic or other influence from the blood.

Able discussions of the present state of our knowledge on this subject have recently been published by Mathieu and Moutier,[8] by Litthauer [9] and by Longcope.[10]

The theory of a circulatory abnormality, either arterial or venous, as cause of a local failure of the immunity of the stomach against self-digestion, first suggested by Virchow in 1853, and from then until now always in question, supported most notably by the work of Von Recklinghausen and of Cohnheim, has of late been investigated further by Fibich,[11] by Clairmont,[12] by Litthauer,[9] by Payr [13] and indirectly by Braun.[14] The first three of these investigators have dealt with the arterial supply. Fibich [11] reports that he was regularly able to produce in dogs an ulcer of the stomach which did not tend to spontaneous healing by ligation of smaller arteries of the stomach followed by excision of mucosa and cauterization with acid in the area which these arteries supplied. These ulcers he produced in order to test the effect upon their healing of gastro-enterostomy. Gastro-enterostomy in these experiments appears to have had a markedly beneficial effect. But this work of Fibich has been called in question by Clairmont,[12] who repeated the procedure of Fibich and found that the ulcers produced in his experiments differed essentially from clinical gastric ulcer in possessing a strong tendency to rapid spontaneous healing, and that gastro-enterostomy had no effect in accelerating the healing process. Litthauer [9] also repeated Fibich's experiments and also failed to confirm the results. Braun,[14] in investigating the safety of ligating arteries of the stomach to check hemorrhage, found that in dogs extensive ligations failed to produce necrosis. Litthauer [9] also found that a third of the stomach could be deprived by ligation of its afferent vessels without death of tissue. In other experiments, however, with extensive ligation of arteries until the stomach wall became livid, followed by excision and cauterization of mucous membrane, followed by the daily administration by the stomach tube of .37% HC solution, Litthauer found that chronic ulcers were produced in about a third of the animals so treated. These experiments taken together seem to show, as Litthauer concludes, that no certain method is yet known to produce chronic ulcers in dogs; these results, therefore, fail to support by analogy the arterial theory as a sole cause of gastric ulcer in man. Yet the rôle of interference with arterial circulation in connection with some instances of gastric and duodenal ulcer in man cannot be thus excluded. Sclerosis of arteries in the neighborhood of ulcers has been so frequently observed (Longcope,[10] Mayo,[3] Bunday [15]) as to establish strong suspicion that it may be still of etiological importance.

With regard to venous circulation, the work of Payr [13] is worthy of note. This work was undertaken in part to investigate the possibility of damage to the stomach by embolism or thrombosis consequent upon operation upon abdominal organs other than the stomach. Damaging of the veins of the omentum or mesentery by freezing or by hot solution, also injections of dermatol, of gelatine, of oil and of other substances into these veins, resulted in 50% of the experiments in lesions of the stomach, — hyperemia, hemorrhagic necrosis of mucous membrane, hemorrhagic erosions and ulcers. These lesions in certain instances contained the substances injected into distant veins, showing their embolic nature. Payr further demonstrated a possible mechanism for this retrograde embolism by tying the united trunk, draining two veins of the portal system, to simulate direct embolism or thrombosis, and showing that in consequence of obstruction of the main trunk the direction of the current in one of the branches became reversed.

Payr believes that in some instances digestive symptoms following abdominal operations are due to this process. His article suggests the question whether ulcers of the stomach which have been reported in connection with trauma,[16] with epigastric hernia,[17] with wounds of the urinary bladder [18] and with appendicitis [19] may not be produced by this mechanism.

The possible rôle of disorders of nerve supply was suggested by Stockton in 1892, and reiterated in a recent article,[20] suggesting an analogy between gastric ulcer and the perforating ulcer of the foot in tabes dorsalis and herpes zoster. This possibility has recently received support from the experimental evidence of Ophuls,[21] of Zironi [22] and of Van Ijzeren,[23] confirming the previous observation of Della Vedova [24] that section of nerves leading to the stomach was followed in a half of the animals (chiefly rabbits) so treated by necroses, hemorrhages and ulcers. Donati [25] and Lilla,[26] however, failed to obtain these results.

The theory that gastric ulcer may be due to an infective or irritative gastritis has long been discussed. The possible rôle of simple gastritis cannot be established or excluded, since, although some inflammatory changes occur in chronic ulcer, this has usually been regarded as secondary to the ulcer rather than primary. That acute ulcerations of the stomach may occur in a variety of infectious diseases is well recognized. But whether chronic ulcer may be caused remains uncertain. Of recent publications bearing upon this question may be mentioned that of Mahnert,[19] who advanced the theory that preceding appendicular infections may be an etiological factor,

finding unquestionable chronic appendicitis in 23 out of 36 cases of proved gastric ulcer. But as Mahnert himself points out, this reasoning may also support Payr's suggestion rather than that of infection alone, since the appendicular inflammation might well give rise to retrograde venous embolism of the stomach. Many investigators have produced ulcerations of the stomach by injection of a variety of bacteria, but these ulcerations have been acute rather than chronic. Considerable attention has been attracted by the results published by Turck,[27] who claimed to have produced gastric or duodenal ulcers in all of a number of dogs previously kept confined in poor environment and later fed daily with cultures of Bacillus coli communis. His experiments, however, have been repeated by Bauer[28] with entirely negative results.

Kodon[29] has recently advocated the view that round ulcer is to be regarded as a tuberculide, reporting in 53 cases of gastric ulcer the presence of marked tuberculosis in 49 and of tuberculides in 5. He compares gastric ulcer with lupus. His evidence, however, does not seem of sufficient weight to justify serious consideration of so radical a suggestion.

In this connection may be mentioned a form of infection which, while not producing true peptic ulcer, still, as is emphasized by Hoover,[6] may cause a clinical picture indistinguishable from it, namely, syphilis. Curtis[30] and Kohn[31] have each reported a case of syphilis of the stomach with pathological examination. Hoover reports 5 cases simulating gastric ulcer which promptly recovered under antisyphilitic treatment.

Hypersecretion, first demonstrated by Riegel in 1886, in cases of gastric ulcer, has been generally held to be incapable in itself of producing gastric ulcer, yet in the experiments of Bolton[32] it is shown that artificially induced extreme hyperacidity in animals can produce gastric ulcer, and Weinland[33] has shown that excessive acidity can overcome the action of the protective antiferment to be mentioned later. Grandauer[34] has emphasized the close clinical relation between hypersecretion and ulcer. It is further possible that hypersecretion, to which is added the presence of a disorder of motor function, may be of greater effect. Frouin[35] reports that repeatedly and regularly, when he has fed to experimental animals with an isolated stomach pouch, food containing an excess of sodium chloride, and has left the pouch for a time without evacuation, the contents have become hemorrhagic, which he takes to be evidence of erosion or ulcer, whereas the contents of the pouch in similar animals fed with normal amounts of NaCl could be left in much longer and with greater distention of the pouch without showing any such abnormality. Moutier[36] also describes the frequent spontaneous occurrence of ulcers closely resembling the *ulcus rotundum* of Cruveilhéir in the isolated stomach pouch of dogs. In these animals at operation great care had been exercised to avoid interference with vessels or nerves. Codman,[37] dealing only with questions concerning the duodenum, has published an extremely suggestive clinical article attempting to establish a connection between duodenal ulcer and chronic constriction of the duodenum by the root of the mesentery, supposing this to cause an abnormally long period of contact between duodenum and the digestive fluids. At operation he observed such a condition, with recovery following the relief of the constriction, which was due apparently to an enteroptosis. In this connection may be mentioned Czernecki's[38] report of the occurrence of gastric ulcer in a mother and in her four adult offspring, all presenting marked visceral ptosis.

But aside from disturbances of long-recognized functions of secretion and of motility, other considerations have been brought to attention. Kauffmann,[39] supported by Aldor,[40] has attempted to show that a deficiency of gastric mucus is found in gastric ulcer and that the disease is due to lack of mucus as a protection against the action of the gastric juice. More attention has been attracted by application of the work of Weinland,[33] who demonstrated in extracts of gastric mucosa and of intestinal parasites which live in immunity to digestion an *anti-ferment* which has the power of inhibiting peptic digestion. Although this is disputed by Von Klug,[41] Katzenstein,[7] Stockton[20] and others regard the deficiency of this antiferment as the essential factor in the production of ulcer by self-digestion, Stockton[20] suggesting that this deficiency is in turn due to abnormality in innervation.

The last theory, that gastric ulcer is due primarily to the presence of toxic or the absence of needful constituents in the blood or body fluids, originated long ago in the recognition of the frequent coexistence of ulcer with chlorosis and of the occurrence of acute ulcer in intoxications. The action of the toxic substances in producing experimental ulcers of the stomach has been studied recently by Rosenau and Anderson,[42] who demonstrated the production of lesions of the stomach in guinea pigs injected with diphtheria toxin; by Gay and Southard,[43] who found gastric ulcers following the toxic injection in anaphylaxis experiments; and by Rehfuss,[44] who succeeded in producing ulcers of the stomach in 35 out of 41 animals by injection of various toxic agents. Beginning with the venom of the gila monster, Rehfuss was equally successful with pilocarpine, atropine, paraldehyde, phenol, chloroform and $MgCl_2$. He concludes that in severe intoxication by a great variety of agents ulcer may be produced. He further showed that when the stomach was injected with sodium bicarbonate in these experiments an ulcer was less likely to develop, appearing in but 6 out of 30 animals. This is taken as evidence that autodigestion is an essential part of the process. Litthauer[9] experimented with pyronin injections, aiming to test the effect of hemoglobinemia, but without striking results.

Of great interest is the work of Bolton,[32] who was able to produce ulcers of the stomach by means of a gastrolytic serum. He prepared this serum from animals injected with emulsions of

stomach mucous membrane; the serum of these animals injected into other animals resulted in the formation of ulcers of the stomach. Like the ulcers in Rehfuss' experiments, these failed to occur if the acid of the gastric juice was neutralized. Hort,[45] basing his argument chiefly on Bolton's work, has propounded the theory that gastric ulcer and chlorosis are due primarily to a blood disease, the essence of which is the presence of a toxic substance exerting its action both upon the gastric mucosa and upon the blood corpuscles. His evidence, however, is far from sufficient.

In spite of all these data, however, we are still far from a clear solution of the problem. Even at first sight such an array of conflicting evidence tends rather to confuse than to enlighten. Yet on closer consideration the conclusions reached by Mathieu and Moutier[8] seem highly plausible. It has been seen in the accounts of experimental work mentioned in the previous paragraphs that ulcerations of the stomach may result from interference with circulation, either arterial or venous, from interference with innervation, from infections, from extreme hyperacidity of contents, especially where the contents are long retained, from deficiency of normal protective influences (mucus or antiferment), and from a variety of toxic influences. In several at least of these sets of experiments the co-operation of acid gastric juice was essential to the production of ulceration. A co-existence of ulcer with chlorosis and debility on the one hand and with an overwrought nervous system is mentioned by various authors. Mathieu and Moutier believe that the best solution of the problem lies in the belief that the ulcerations in the first place may be due to a variety of causes, — some to one, some to others, — but that when once an ulceration is produced by any cause in a portion of the alimentary tract bathed for prolonged periods by active digestive fluids, the combined influences of autodigestion, of secondary gastritis with interstitial lymphangitis, and a lowered state of bodily resistance, may convert an ulceration of any type into the typical round ulcer of Cruveilhier.

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(*To be continued.*)

Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

Meeting at Washington, D. C., May 3, 4, 5, 1910.

[Continued from No. 15, p. 588.]

REPORT OF A CASE OF HEPATICO-DUODENAL ANASTOMOSIS.

George Emerson Brewer, M.D., of New York, N. Y.: The patient was admitted to the Roosevelt Hospital suffering from acute cholecystitis. Following a cholecystectomy there occurred extensive sloughing of the wound, which was followed by a complete biliary fistula. At the end of seventy-five days, as no bile was passing into the bowel, the abdomen was reopened and the fistula followed down to the common hepatic duct. As no trace of a common duct could be found even after reflecting the duodenum and exposing the head of the pancreas, it was assumed that it had been destroyed by the suppurating process which followed the primary operation. A rubber drainage tube three inches in length was introduced into the hepatic duct and also through the duodenum by a stab wound at its upper border, and was secured in these two situations by two purse-string sutures. A mass of omentum was then wrapped around the tube, extending well beyond its introduction in the hepatic duct and duodenum with a view to create a new common duct after the manner suggested by Sullivan. The abdominal wound was closed, a small cigarette drain being allowed to remain at its upper angle. From that time no bile appeared in the wound. The bowels moved on the third day as the result of an enema, and the stools contained an abundance of bile. The reconstructed duct continued to functionate until after the man's discharge from the hospital some four or five weeks after the last operation. Since then he has had two or three attacks of fever associated with jaundice, which would disappear in two or three days. At the present time he is still jaundiced, although some bile is present in the stools.

Dr. Brewer asked the advice of the members of the Association as to further treatment in case the newly constructed duct became totally occluded.

DISCUSSION.

Dr. Alexander H. Ferguson, of Chicago: Since the observation that if all the bile is directed into the hepatic flexure of the large bowel the patient does not suffer from the lack of bile (which observation I believe was first confirmed by Mayo Robson), I have followed this technic in at least half a dozen cases with extremely gratifying results.

DR. JOSEPH C. BLOODGOOD, of Baltimore: I would like to report an anastomosis of small intestine by opening the transverse colon as in posterior gastro-enterostomy, sewing a long loop of the small intestine through the transverse colon, and suturing it to the gall bladder.

RESECTION OF THE PANCREAS, WITH REPORT OF A CASE.

J. M. T. FINNEY, M.D., of Baltimore, Md.: The principal object of this communication is to record the successful removal of a primary solid tumor of the pancreas. The operation involved the resection of the entire middle portion of the gland, leaving only a small piece of the head and the tail respectively, and necessitating a reunion of these segments by suture. A search of the literature reveals records of but sixteen other undoubted cases in which the pancreas has been resected, either in whole or in part, for primary tumor of the gland.

A review was given of the recent advances of surgery of the pancreas due to experimental and clinical work. The difficulties of operating upon the pancreas were referred to and the best methods of avoiding and controlling the same. The best methods of dealing with pancreatic fistulæ were next taken up. The diagnosis of primary solid tumors of the pancreas is made usually by exclusion, and it is not always possible beforehand. Different routes for attacking pancreatic tumors were discussed and the various operations which had been suggested were described. These were so difficult and dangerous as to prevent their general use.

The statistics of the operation for primary tumor of the pancreas were given. Of the 17 cases, 12 occurred in females and 3 in males. Carcinoma occurred 10 times, sarcoma 4, fibro-adenoma 2, cystic adenoma once. Of the 17 cases, 9 recovered and 8 died. In 2 instances the pancreas has been reported as having been removed *in toto*. Three times the gland was completely divided into two parts, and the remaining portion sutured. All 3 cases recovered.

DISCUSSION.

DR. M. L. HARRIS, of Chicago: I would like to mention a case of a policeman shot by a 38 caliber bullet which entered just below the twelfth rib on the left side and was found just beneath the skin a little to the right of the median line between the eighth and ninth ribs. The track of the bullet from before backward was through the right lobe of the liver, the lesser curvature of the stomach, the middle of the pancreas, practically bisecting the organ, and the left kidney. The stomach was sewed up, then the pancreas, and as close an approximation of parts made as possible. Drainage front and back. Fistula resulted but closed in about three months and patient fully recovered.

DR. G. E. ARMSTRONG, of Montreal: With regard to the mobility of pancreatic tumors, I would like to mention a case in which there was a large pancreatic cyst which for a long time, because of its mobility, was considered to be a growth in the stomach.

DR. WILLY MEYER, of New York: I have had two cases in which the tail of the pancreas was tightly adherent to the existing tumor, and here I put a piece of chromicized gut around it and divided the distal end with the Paquelin cautery. Bost patients recovered.

DR. RUDOLPH MATAS, of New Orleans: I wish to report an additional case of unusual character, thrombosis of the splenic artery incidentally involving the pancreatic arterial supply, causing degeneration of the organ from the head to the tail, associated with multiple tumor formation in the spleen. The spleen and three quarters of the pancreas were removed and the patient recovered from the operation, dying about three years later from a slow fever.

CONGESTION OF THE LOWER LOBE OF THE RIGHT LUNG AN EARLY SYMPTOM IN APPENDICITIS.

JOHN B. ROBERTS, M.D., of Philadelphia, Pa.: The author suggested the possibility of a secondary congestion of the lower part of the right lung being found in a considerable number of cases of acute appendicitis. He spoke of this condition being a possible aid in the diagnosis of acute appendicitis when the symptoms of the latter were not yet very definite. A point was made that this observation did not refer to secondary pleuritis, and pulmonary involvement occurring in the late stages of appendicitis. Such inflammation from septic invasion secondary to advanced appendicitis was an entirely different process. The idea of the author evidently was that appendicitis, and perhaps other intra-abdominal inflammations, might cause atelectasis of the right lung, or a true congestion, because of the insufficient action of the diaphragm upon the right side. This spasm or immobility of the right side of the diaphragm he compared with the tonic spasm of the muscles overlying the appendix in the front of the abdominal wall. It was, however, also suggested that the engorgement of the base of the right lung in cases of appendicitis might be due to a simultaneous infection of both the appendix and the lung by the pneumococcus or other invading organism. The well-known fact that pneumonia is sometimes accompanied by pain and muscular rigidity in the right iliac fossa was mentioned, as was also the clinical observation that acute appendicitis may in its early stages give rise to pain in the right lower thoracic region. The early congestion of the right lung, which Dr. Roberts thinks he has found in the early or initiatory stages of appendicitis, might also occur from inflammation of the gall bladder or cellulitis around the upper pole of the kidney. The paper referred to somewhat similar observations by other writers, which seemed to at least partially confirm the correctness of the value of this new point in the diagnosis of appendicitis.

VACCINE THERAPY AS AN ADJUNCT TO SURGERY.

JOHN B. DEAVER, M.D.; JOHN C. DACOSTA, JR., M.D., and D. B. PFEIFFER, M.D., of Philadelphia, Pa.: There has been established at the German Hospital a special department of vaccine therapy. In addition to its well-known and satisfactory use in suppurative affections of the skin and other forms of minor chronic infection, this form of treatment has been used as an adjunct in the treatment of more severe surgical infective conditions.

Vaccines did not prove of service in 3 cases of streptococcic septicemia in which the treatment was begun late. Four cases of severe staphylococcic septicemia recovered, improvement in each case beginning with the initiation of the vaccine treatment. Eight cases of severe septic intoxication without demonstrated bacteremia were treated by drainage and vaccines. Two were *in extremis* when treatment was begun and died shortly afterwards. The remainder recovered. Five of the cases were streptococcic infections.

Improvement was also noted in a miscellaneous group of cases comprising persistent sinuses, cystitis, thrombosis, etc. Not all cases, however, gave a definite response. The dosage varied from 25,000,000 to 750,000,000. The sicker the patient and the less satisfactory the response, the smaller and less frequent should be the dose. Streptococcus also was used in smaller dosage than staphylococcus.

On the basis of these results the paper concludes:

Specific vaccine treatment in our hands has not

proved of benefit in the later stages of streptococcic septicemia.

Staphylococcic septicemia has been treated with most favorable results at all stages.

Septic intoxications without demonstrated blood invasion in a majority of the cases display general and local improvement under the use of vaccines if given early; the later the treatment, the less certain and satisfactory the result.

Localized and persistent suppurating lesions are sometimes markedly benefited by vaccines.

Surgical procedures for the relief of infectious conditions should be reinforced by vaccine treatment, which should be begun as early as is consistent with the case, and preferably by autogenous organisms.

No hospital can be considered fully equipped which is not prepared to supply this form of treatment in conjunction with established measures.

THERAPY BY BACTERINS AND TUBERCULINS IN MIXED SUPPURATIVE BONE AND JOINT DISEASE.

De Forest Willard, M.D., and B. A. Thomas, M.D., of Philadelphia, Pa.: The authors recount their experience of two years' duration in the treatment by bacterins and tuberculins of tuberculous bone and joint disease, complicated by mixed pyogenic infections. The feature of the treatment consists in the alternation of bacterin and tuberculin inoculations in the mixed suppurative type of the disease, as spinal caries, tuberculous hip-joint disease, etc. They do not contend that bacterin therapy is a "cure all," nor that when indications for surgical intervention exist, they can be disregarded and active immunization substituted. They wish, however, to emphasize the fact that the *accessory* employment of bacterin and tuberculin in certain cases stimulates the tissue cells of the organism to the production of specific antibodies to assist the bodily defenses in antagonizing and combating the given infections. On the other hand, the incompetent, inexperienced and careless use of these measures will not only fail to effect cure, but will inevitably lead to disaster and thrust a therapeutic measure of worth into disrepute. Bacterins, particularly tuberculin, are more potent agents for evil than for good, unless wisely administered. They are invaluable aids in competent hands, and when so employed these cases do better than those treated without bacterins; their detention in the hospital is shortened, and complications, if they occur, are fewer and less severe.

The authors present two definite clinical types of disease illustrated by charts, in which therapy by bacterins and tuberculins is recommended. The first type is represented by the case in which already at the time of operation a mixed infection of hematogenous or exogenous origin has been superimposed upon suppurative tuberculous caries. The second type is manifested in the evacuation and drainage of a "cold abscess," in which case almost invariably, after a lapse of fifteen to twenty days, the temperature suddenly rises and symptoms of a mixed infection ensue.

These types of disease are of a serious character, not those mild cases which would recover following simple incision and evacuation, nor those neglected ones of prolonged suppuration, characterized by bacteremia, grave sapremia and amyloid disease, but those with chronic localized processes, the treatment and prognosis of which have been greatly handicapped by the intervention of various pyogenic bacteria.

The authors have found that in the course of weeks the various pathogenic bacteria isolated from the suppuration vary, and for that reason they insist upon the employment of autogenous bacterins, the pus being cultured and recultured at least monthly. As soon as the patient's temperature falls to 100° or preferably lower, under the administration of bacterins, inoculations with tuberculins, either alone or alternating with bacterins for a time, are begun. They conclude, judging from the cases under their observation, that better results have attended the process of active immunization when, just as in tuberculin therapy pure and simple, the treatment has been commenced with relatively small bacterial inoculations, progressively increased to the therapeutic limit, rather than by recourse to large dosage, thereby in the former case establishing immunity, and in the latter avoiding anaphylaxis.

Studious observations of the clinical symptomology have always sufficed to control the treatment, the opsonic index proving not only impractical, but unreliable.

DISCUSSION.

Dr. J. M. T. Finney, of Baltimore: In regard to the use of vaccines in chronic infections of the bladder from the colon bacillus, I would mention a case in which, after every other method had failed, injections were followed by the most astonishing results, the bladder symptoms all practically disappearing.

Dr. Willis G. Macdonald, of Albany: I would like to call attention to the extreme importance of not giving too large a dose of vaccines, as I have found this regulation of the dosage very troublesome in those cases in my experience.

Surgeon-General Sternberg, of Washington: It is impossible to doubt that vaccine treatment is beneficial in a certain class of cases, but it is difficult to understand why it should be. You have a certain specific micro-organism in the blood in large numbers, producing toxic products, and why the introduction of a comparatively small number of the same micro-organisms under the skin should have such a potent effect in arresting the progress of the disease is to me inexplicable.

Dr. L. L. McArthur, of Chicago: I want to call attention to the tuberculin treatment in essential hemorrhage of the kidney. Treatment with the autogenous vaccine of the colon bacillus in several such cases has been productive of a cure, and I consider this a most beneficial treatment in this condition.

Dr. John B. Murphy, of Chicago: The essential hemorrhage of the kidney, the essential hemorrhage of the uterus occurring in girls under twenty with tuberculous histories, respond marvelously to proper dosage with tuberculin. Great assistance is rendered by this treatment in cases of bone tuberculosis. There is, however, no more treacherous and dangerous a drug than tuberculin if improperly given. As a stimulant, and as an aid to surgical tuberculosis, I know of nothing so good when the treatment is carefully administered.

Dr. Joseph C. Bloodgood, of Baltimore: I have had no experience in the vaccine treatment, but would like to suggest in regard to the essential hemorrhage of the kidney that a more simple serum be tried first. The professor of pathology at Tufts College has demonstrated the rapidity with which blood serum of all animals will check hemorrhage, so perhaps it is some antibody in the serum and not the organism that checks the hemorrhage when tuberculin is used in these cases.

Dr. Joseph A. Blake, of New York: I have been employing the vaccine treatment pretty persistently, and in chronic infections have found the autogenous vaccines of great benefit.

Dr. Arthur Dean Bevan, of Chicago: From my limited knowledge I would consider it too early at this time to arrive at any definite conclusions with regard to the value of this treatment. I have been particularly interested in the application of the vaccine treat-

ment to tuberculosis of the kidney and mixed infection of tuberculosis of the colon, and although I know of cases which under good management with this treatment have gone on to recovery, I also know of cases which without the vaccine treatment also recovered.

DR. FRANCIS B. HARRINGTON, of Boston: I have seen some cases in which autogenous vaccines have been of great benefit, and also some cases in which they were productive of great harm.

DR. HARRY M. SHERMAN, of San Francisco: We are using tuberculin more and more in the Children's Hospital. With regard to the vaccine treatment, we have had no success with the streptococcus infection.

DR. EMMET RIXFORD, of San Francisco: I would like to mention a case of tuberculous anal fistula, tuberculosis of the spinal cord and tuberculosis of the wrist which under treatment with tuberculin was completely restored to health. It has been two years since the treatment, there is now no sign of tuberculosis, and the patient has gained 40 lb. in weight.

DR. JAMES E. MOORE, of Minneapolis: I have been disappointed in the serums for the treatment of acute infections. In tubercular cases I have had better results. It is very essential that these treatments should be carried out only by those who know how to use them.

DR. CHARLES A. POWERS, of Denver: In chronic infections, especially the chronic staphylococcic infections, the autogenous vaccines have not given me the encouraging results which many others have obtained, and I, therefore, attribute this to faulty methods.

DR. CHARLES H. MAYO, of Rochester, Minn: In regard to the vaccine treatment, I would say that I have had very little experience with it, but I have had one case of colon infection of the bladder and kidney in which the autogenous vaccine has proved of benefit.

DR. JOHN B. DEAVER, of Philadelphia (in closing): The toxin treatment is most satisfactory if used judiciously. Like all good surgical measures, it must be instituted early to obtain the best result. The dosage is most important and should be carefully studied and regulated to the individual case.

DR. DE FOREST WILLARD, of Philadelphia (in closing): There are four things to remember in the use of tuberculin. First, tuberculin is a potent agent for evil as well as for good. It must be used carefully and in careful hands. Second, if a stock vaccine is used by incompetent men, the treatment will have disastrous results. Third, the dose must be exceedingly small, for the smaller the dose and the longer time consumed in the treatment, the more certain the beneficial results. Fourth, it is by no means a substitute for surgical procedures.

THE STUDY OF THE ETIOLOGY OF CANCER BASED ON CLINICAL STATISTICS.

ISAAC LEVIN, M.D., of New York, N. Y.: The investigations are based upon a clinical study of 4,000 cases of carcinoma and sarcoma collected from several large hospitals in the country, the analysis of which showed many results of interest. The greater frequency of the disease in women is due to the prevalence of cancer of the uterus and the female breast. The other organs become affected more frequently in men, which fact may be due only to the greater subjection of the latter sex to the different injurious influences of civilized life. Cancer, while considered to be a disease of an advanced age, appears, according to this investigation, to occur in many instances in people who have not yet reached middle age. Childbearing does not seem to have any direct connection to the causation of cancer. Another point of interest is the fact that American Indians rarely contract the disease. The data on the influence of occupation in the etiology of the disease were very defective and no conclusion could be derived from them. It is expected that with the co-operation of the profession better results will be obtained in this connection in the future work. The presence of a preceding local disease in the organ affected with cancer, while of certain importance, cannot be considered as the main etiological factor. Hereditary disposition does not seem to have an influence upon the causation of the disease sufficient to warrant the great dread of the lay public before this hereditary trait.

In conclusion, the statement may be made that while this investigation cannot claim to have reached any final result in the elucidation of the etiology of cancer, it appears evident that a local trauma or previous disease of the affected organ is of less importance in the causation of cancer than the increased vulnerability and lessened resistance of the organism caused by the ever-increasing strain of the modern life. This is certainly the only explanation that may be offered for the increasing frequency of the occurrence of cancer in civilized communities. That this increase is not only apparent is very evident from the mortality statistics of the United States in 1907, which shows a ratio of 73.1 deaths from cancer per 100,000 population, as compared with the ratio of 70.8 in 1906.

It is expected that this statistical cancer research, which is still being continued, may arouse the interest in the matter in the members of the profession, who are requested to fill out the schedules, which may be obtained on demand, and offered free examination of tumor tissue.

DISCUSSION.

DR. CHARLES A. POWERS, of Denver: I want to call attention to the formerly prevalent idea that youth was a bar to carcinoma. During the past year I have had no less than three patients under twenty-four years of age suffering from epithelioma.

ON THE SIMULATION OF NEOPLASMS BY INFLAMMATORY PROCESSES.

C. A. HAMANN, M.D., of Cleveland, Ohio: The resemblance, clinically, between certain inflammatory processes and tumors, leading to errors in diagnosis.

Chronic osteomyelitis and other forms of bone disease resulting in enlargement of bones; formative osteitis, as the result of various irritants, leading to the production of swellings which simulate neoplasms. Methods of differentiation. Myositis ossificans, circumscribed enlargements of muscles, myositis fibrosa.

Inflammatory thickening around foreign bodies in abdominal wall (" ligature and foreign body tumors "), inflammation of the omentum after ligation of portions of it.

Pseudo-neoplasms of stomach. Inflammatory pseudo-neoplasms of intestines; peri-appendicular swellings; diverticulitis, associated with the formation of connective tissue masses; tumors of the rectum and perirectal tissues, inflammatory in origin. So-called disappearing tumors are in many instances inflammatory pseudo-neoplasms.

Chronic mastitis in some of its various forms.

DISCUSSION.

DR. HARRY M. SHERMAN, of San Francisco: I would like to report an instance in which I through a mistaken diagnosis removed an inflammatory mass believing it to be sarcoma including the parotid gland. A radical operation was done, beginning with the clavicle, with removal of all the tissues up to and including the parotid gland, following the report on a section of the growth sent to the pathologist that it was

probably of sarcomatous origin. When the whole mass was sent to the laboratory for examination, however, it was proven to be an inflammatory mass in the center of which was a normal parotid gland. In the light, however, of no clinical symptoms of syphilis and a negative Wassermann, and a definite tumor mass, the evidence against syphilis in the diagnosis was enough to justify the operation for sarcoma.

A REVIEW OF ONE HUNDRED AND TWENTY RESECTIONS OF THE RECTUM FOR CANCER.

WILLIAM J. MAYO, M.D., of Rochester, Minn.:

Total number of resections of the rectum for cancer in St. Mary's Hospital from April 21, 1907, to Dec. 31, 1909,		120
Males,	63	
Females,	57	
Age of eldest,		81
Age of youngest,		27
Average age,		52.12
Perineal route:		
Perineal resection,	11	
Quénu-Tuttle,	22	
		38
Harrison-Cripps,	5	
Kraske, modified,	51	
		56
Posterior route: Resection continuity,		5
Abdominal combined:		
Combined,	20	
Combined with permanent colostomy,	6	
		26

Operative mortality. — This includes all cases dying in the hospital following operation without regard to cause or length of time. Three deaths occurred from exhaustion more than four weeks after operation, one from pulmonary embolus and one from apoplexy.

Total number,		120
Mortality,		20.16%
Total number during 1908–9,		44
Mortality,		4.9%
Amount of bowel removed:		
Lower rectum,	5	
Middle rectum,	5	
Entire rectum,	75	
Entire rectum and part of sigmoid,	32	
Entire rectum, part of sigmoid, uterus, ovaries, tubes, part of vagina,	1	
Rectum and prostate,	2	
Total,		120
Pathologist's report:		
Carcinoma,	119	
Sarcoma,	1	
Total,		120
Operated upon more than five years ago,		32
Present condition known,		17
Alive and well (2 abdominal [1 over nine and three-fourths years; 1 over five years]; 2 perineal [1 over nine years; 1 over seven and three-fourths years]),		4
Operated more than four years ago,		41
Present condition known,		26
Alive and well (4 abdominal, 3 perineal, 6 posterior),		13
Operated upon more than two years ago,		82
Present condition known,		63
Alive and well,		26
Operated upon more than one year ago,		102
Present condition known,		82
Alive and well,		36
Operation less than one year ago,		18

(To be continued.)

Book Reviews.

Prophylaxis and Treatment of Syphilis. By GEORGE M. KATSAINOS, M.D. New York: The Phoenix Press. 1910.

This volume written in Greek is addressed primarily to Greeks resident in the United States, and is intended presumably for the laity rather than for the profession, since its purposes, as stated in the preface, are to teach the prophylaxis of syphilis, to convince syphilitics of the importance of perseverance in treatment, and to persuade them to abstain from marriage until their disease is no longer communicable. In accordance with this plan there are interesting popular chapters on the history, distribution and spread of syphilis, its natural phenomena, its etiology, and its modes of communication. The section on prophylaxis is the longest in the book. Apart from the matter of ethics, it may be questioned whether the suggestion of mechanical preventive measures against genital infection may not do positive harm by inspiring a false sense of security in their use. The instruction on the avoidance of extragenital infection, however, seems altogether desirable, and the chapters on the hygiene of the syphilitic and on syphilis and marriage contain much valuable dogma. In conclusion the "syphilitic's decalogue" sums up the rules and duties of the patient in admirably concrete, succinct and emphatic form.

The Diseases of Women: A Handbook for Students and Practitioners. By J. BLAND-SUTTON, F.R.C.S. Eng., Surgeon to the Middlesex Hospital, and Senior Surgeon to the Chelsea Hospital for Women; and ARTHUR E. GILES, M.D., B.Sc. Lond., F.R.C.S. Edin., Surgeon to the Chelsea Hospital for Women and Gynecologist to the Tottenham Hospital. Sixth edition, with 123 illustrations. New York: Rebman Company.

The sixth edition of this excellent small textbook comes to us with only eighteen pages more than the fifth edition published four years ago. In the latest volume there is a short chapter on "Fibrosis Uteri," summarizing the work of Bland-Sutton, Palmer Findley and Gardner and Goodall in this affection, and also a chapter on "Adenomyoma of the Uterus." Other new features are a short chapter on "The Vermiform Appendix as a Pelvic Organ" and one on "Injuries of the Ureters in the Course of Pelvic Operations and their Treatment," and an addition to the chapter on "Injuries of the Uterus," describing, in addition to lacerations of the cervix, gynecological injuries such as perforation during curetting, and obstetrical injuries, with their treatment.

There are several emendations to the text and new illustrations here and there, one of them in color. The book is well written, suitably illustrated, is small and easy to handle, and is not burdened with references. It is plain to see why it has proved acceptable to a large number of readers.

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DR. CRILE'S ETHER ADDRESS.

THE sixty-fourth anniversary of Ether Day was appropriately observed last Saturday, Oct. 15, at the Massachusetts General Hospital. The principal speaker at the exercises was Dr. George W. Crile, of Cleveland, whose address will be printed in full in a later issue of the JOURNAL.

Dr. Crile showed not only excellent judgment but great courtesy to the hospital and to the medical profession of Boston in selecting this occasion to present the results of his valuable and scholarly research into certain problems connected with anesthesia. His investigations demonstrate by experimental evidence that so-called surgical shock represents the exhaustion of nerve-cells by discharges of energy which take place under the stimuli of operative trauma, even though general anesthesia prevent their conscious perception and motor manifestation. This exhaustion is shown by morphologic changes in the cells precisely similar to those produced by protracted muscular exertion. That such exhaustion may also be caused by emotion is demonstrated by the occurrence of the same morphologic changes in fear, which occasions discharge of nerve energy without motor phenomena. These observations Dr. Crile then correlates and explains on the basis of phylogenetic association, whereby the cumulative experience of individuals through countless ages of evolution has developed in the species not only the power of such automatic discharge of nerve energy in response to the deleterious stimuli of environment as shall tend best to preserve the individual from injury, but also the appropriate mechanism, the "nociceptors," by which such stimuli are received and transmitted. To prevent the exhaustion, the surgical shock, due to this unconscious discharge of nerve energy under the stimuli of operative trauma, as under the traumatic stimuli of the struggle for existence, it is necessary to block the afferent path of these nociceptors; and this, Dr. Crile has demonstrated experimentally, may be done by cocaine, the use of which prevents the stimuli from reaching the brain and causing there the responsive discharge of energy with its consequent morphologic cell changes representing exhaustion. Inhalation anesthesia, then, to use one of the many happy phrases with which Dr. Crile throughout illumined his exposition, "is only a veneer"; it obscures superficial consciousness of pain but does not penetrate deep enough to check the exhausting discharges of nerve energy which phylogenetic habit produces in the individual in response to "noci-associations" developed from experience of the traumatic stimuli of evolution. To the ideal surgical condition in which such exhaustion is prevented both by cocaine blocking and by the tactful immunization of fear in the patient, Dr. Crile applies the term "anoci-association." This condition, he believes, though not necessary in the majority of surgical procedures, is desirable and obtainable to a measurable degree in cases which for any reason are "poor surgical risks," and especially in the operative treatment of Graves' disease.

Dr. Crile's address, therefore, does not merely present a piece of laboratory research, but by luminous philosophic deduction rationalizes the data of that research and applies them to the solution of important practical problems in surgery. The last word on anesthesia was not spoken when the safety of ether as an anesthetic agent was successfully demonstrated in the old dome in 1846; and there is no occasion more appropriate than the anniversary observance of that momentous event to make known new discoveries that may still further contribute to the relief of suffering in man.

PROGRESS OF ANTITYPHOID INOCULATION.

IN the issue of the JOURNAL for July 21, 1910, we published an editorial on the "Advisability of Antityphoid Inoculation," in which we advocated the use of this means of protection by "all whose regular work or whose recreation during the summer season may expose them to unusual risk of typhoid infection." An article by Major George H. R. Gosman, of the United States Army Medical Corps, in the *Journal of the American Medical Association* for Oct. 1, reinforces this suggestion

and recommends even more extensive employment of antityphoid inoculation.

After a summary of the work on this subject previously done in other countries, Dr. Gosman points out the significant fact that of 8,510 cases inoculated by United States Army medical officers up to June 1, 1910, not a single one has since developed typhoid fever, in spite of varied exposure, whereas in the remainder of the army, among unprotected persons exposed to similar conditions, there have been in the same time over 200 cases of typhoid. The same favorable results are reported by other observers who have employed the typhoid vaccine prophylactically. At the Massachusetts General Hospital during the past year, since the beginning of systematic inoculation of all persons coming in contact with typhoid patients, not a single case of typhoid has occurred among nurses or ward tenders. This is the first year in which there have been no such cases.

The importance of these facts seems very great. It has been fairly demonstrated that antityphoid inoculation is absolutely safe, causes but trifling discomfort, and affords a considerable degree of protection against the disease. Its possibilities in the treatment of typhoid carriers, and of the disease in its active state, remain to be determined. It may well be that in it we have an agent whose widespread use may greatly diminish the endemic incidence of the disease and reduce typhoid fever to a place with diphtheria and smallpox in the category of controlled infections. Such a consummation would not only save human life and suffering, but would remove a standing disgrace to preventive medicine and to modern civilization. Under such circumstances we do not hesitate to urge upon members of the profession in the strongest manner the more extensive trial and adoption of this valuable prophylactic agency.

THE HOSPITAL OF THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH.

The hospital of the Rockefeller Institute for Medical Research was thrown open for inspection by invited guests on Oct. 17, and by the public on Oct. 18, and now is ready to commence its regular work.

It is located on the grounds of the institute, at the foot of East 66th Street and the East River, and is one of the most perfectly equipped establishments of the kind in the world. Its architecture harmonizes with that of the older building, and in the space between the latter and the main hospital is the isolation pavilion, for the treatment of patients suffering from contagious diseases. Each room in the pavilion has glass walls and airtight doors, and there is no chance for the air in one room to escape into the room of another patient. The ventilation apparatus connects with the roof, and the air leaving a room is sterilized by steam on its way up through the ventilating tubes. In the main building, one whole floor is given up to the accommodation of patients who are in need of unusual quiet and who can be looked after better in separate rooms. Landscape architects are now beautifying the surrounding grounds, and these will include tennis courts for the medical staff.

This new hospital will greatly enlarge the function of the institute, which has heretofore consisted of laboratory studies of physiological and chemical problems related to disease; pathological investigations of such affections as cancer, cerebrospinal meningitis, anterior poliomyelitis, etc.; and problems related to surgery. The following statement with reference to the hospital and its work has been given out by the management: "The purpose of the hospital is not that of merely adding seventy beds to the general hospital resources of the city of New York, but rather of being a place where an intensive study can be made of a few selected diseases. It has been supposed that a hospital connected with an institute for medical research would be one in which the patients were to be experimented upon, or used in the testing of novel remedies. It should be clearly understood at the outset that this hospital would have no right, and does not expect, to take any liberties with its patients in this respect. The treatment and cure of the patient will be the prime consideration in every individual case. The advantage to science which is expected from the establishment of the hospital will be derived rather from the unique opportunity of observing and treating disease. Of course, patients admitted to the hospital of the Rockefeller Institute will have a right to expect the advantage accruing from important discoveries and improvements bearing on the treatment of disease, but the obligation to safeguard the health of the individual will always be paramount. By the terms of the foundation of the hospital no charge will ever be made for services rendered to patients by the hospital, whether for medical attendance, drugs, nursing, board or lodging. Cases will be admitted solely because they fall within a class of diseases which, at a given time, it has been decided to treat in the hospital. The best service that the hospital can render will be given to every patient without regard to his poverty or wealth. Every physician

in the hospital is required to give his entire time to the work of the institute, to the exclusion of private practice, and even of consultation. This will insure an amount of careful medical oversight during the entire period of sickness which under ordinary circumstances would rarely be available."

It is stated that at the present time the diseases, cases of which will be admitted to the hospital, are pneumonia, anterior poliomyelitis, certain heart affections, and certain affections of disturbed metabolism. The medical staff is as follows: Director, Dr. Rufus T. Cole, formerly of the Johns Hopkins University; physician to the hospital, Dr. Christian A. Herter, at present professor of pharmacology and therapeutics in the Medical Department of Columbia University; resident physician, Dr. C. C. Robinson; internes, Drs. Draper, Swift, Marks and Peabody. All the last named have taken the ordinary course of hospital service and have devoted special attention to research work. Mr. Jerome D. Greene, well known through his recent services to Harvard University, is now the general manager of the Institute.

THE THERAPEUTIC VALUE OF RADIUM.

The presence in this country of Dr. Louis Wickham, Clinical Director of the Radium Institute in Paris, offers an apportunity for American physicians to learn from a leading authority the value of radium in the treatment of disease, especially of those forms usually referred to the surgeon or dematologist.

At the suggestion of Drs. J. C. White, J. C. Warren, F. H. Williams and R. H. Fitz, a special meeting of the Surgical Section of the Suffolk District Medical Society will be held on the evening of Monday, Oct. 31, at which Dr. Wickham will give those present the benefit of his wide experience in the clinical use of radium. Dr. Wickham is so well known to the physicians of this country through his numerous contributions to our knowledge of the subject, and by the courtesy which he has extended to those visiting his clinic in Paris, that, apart from the general interest in the subject, a large audience may be expected.

MEDICAL NOTES.

Conjunctivitis in Paris. — It is reported from Paris that a considerable epidemic of conjunctivitis is at present prevalent in that city, chiefly among the inhabitants of the poorer quarters. The nature and etiologic agent of the affection are, however, not stated.

Yellow Fever in Venezuela. — News from Puerto Cabello, Venezuela, reports a recent outbreak there of yellow fever. The number of cases is not stated.

Prosthetic Surgery in a Chicken. — An interesting example of the possibilities of veterinary prosthetic surgery is reported from Anderson, Ind. A chicken was recently hatched in that town with a congenital defect of the lower mandible, a sort of micrognathus, which prevented it from picking up its food. The local blacksmith took measurements of the incapacitated chicken, made a half-beak of tin, and wired it to the stub of the lower jaw. With this appliance the chicken is able to eat as well as with a normal beak, and is said to be holding its own in the struggle for existence as well as normal chickens without this unfortunate disability.

Tetanus Neonatorum in Hindustan. — At the recent Naini Tal Sanitary Conference in Hindustan, attention was called to the extensive mortality from infantile tetanus among the natives, especially at Campur. The prevalence of this disease is doubtless due to their custom of applying to the umbilical stump in the newborn a dressing made of mud, which, of course, contains tetanus bacilli in active culture. It will take centuries of education to eradicate the septic obstetric practises of some oriental peoples.

Another Gift to the Rockefeller Institute. — Mr. Rockefeller celebrated the opening of the new hospital attached to the Rockefeller Institute for Medical Research in New York with an additional gift of $3,820,000. This makes the total of Mr. Rockefeller's gifts to the Institute $8,240,000.

The occasion was further marked by the placing of the institution's property absolutely in the hands of the board of trustees, establishing it in the future as an independent foundation.

Pure Food Prosecution in England. — Prosecutions under food and drugs laws are not confined to our own country. In London recently a dairy company was fined £10, with 10 guineas' costs, for selling Gorgonzola cheese with a plaster rind composed of 13.8% of tallow and 86.2% of barytes colored with oxide of iron. This rind formed 21.7% by weight of the whole cheese, only 78.3% being genuine Gorgonzola. The court sustained the prosecution in its contention that the rind was not a necessary part of the cheese, and tended to render it not of the nature, substance and quality required by law.

Centennial of the University of Berlin. — The University of Berlin celebrated last week with appropriate academic ceremony the one hundredth anniversary of its foundation. A number of honorary degrees were conferred, several upon Americans. Among the latter recipients selected for this distinction were Associate Justice Oliver Wendell Holmes, who received the doctorate of laws; President Arthur T. Hadley, who received the doctorate of philosophy; and Prof. Theodore William Richards, who received the doctorate in medicine. Dr. Richards is professor of chemistry at Harvard College and in 1907 served as exchange professor at the University of Berlin. The exercises on the occasion of the celebration were attended by notable representatives of the *gelehrte Welt* from every part of Germany and from many foreign countries.

Status of the Cholera Epidemic. — During the past week, according to available reports, there have been 98 new cases of Asiatic cholera in Italy, and 30 deaths from the disease. One fatal case has also been reported as occurring in London, though the mode of its entrance has not as yet been determined. In the United States no further cases have been detected, but rigid precautions are still in force, and the local health officers of every city in which immigrants from Russia or Italy settle have been requested by the Federal Immigration Bureau to keep all such settlers under observation until all possibility of their developing the infection is passed.

Mission Hospitals in the Orient. — At the centenary meeting of the American Board of Commissioners for Foreign Missions, held in Boston last week, commendatory emphasis was laid by several speakers on the work accomplished by Christian hospitals in heathen lands. There are now such hospitals and dispensaries in eight of the principal cities of Turkey, and the charitable and medical relief afforded by these institutions in times of pestilence, famine and war have done much to conciliate and educate the people. At the Marathi Mission in India nearly 50,000 patients were treated last year by five American and two native doctors, and similar work is being done in Rahmi, Ahmednagar, Bombay, Wai and Sholapur. No foreigners are so much respected in India as American physicians and nurses.

Meeting of the Advisory Public Health Board. — The meeting of the advisory board of the hygienic laboratory of the United States Public Health and Marine-Hospital Service, to which we made editorial reference last week, was held at Washington on Oct. 10. The principal topics under discussion were the prevention of cholera, the control of poliomyelitis and the treatment of pellagra. Dr. Lavender, who was sent abroad last spring to study the latter disease in Italy, presented a preliminary report, the details of which have not yet been made public. The board, which is composed of Dr. Simon Flexner, of New York; Prof. William T. Sedgwick, of Boston; Victor C. Vaughan, of Ann Arbor, Mich.; Prof. Frank Westbrook, of Minneapolis, Minn.; and Dr. William Henry Welch, of Baltimore, acts on such occasions as a national council of experts in conjunction with the officials of the Public Health Service.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Oct. 18, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 33, scarlatina 15, typhoid fever 29, measles 8, smallpox 0, tuberculosis 49.

The death-rate of the reported deaths for the week ending Oct. 18, 1910, was 17.34.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 15, 1910, was 205, against 181 the corresponding week of last year, showing an increase of 24 deaths, and making the death-rate for the week, 15.94. Of this number 109 were males and 96 were females; 200 were white and 5 colored; 138 were born in the United States, 64 in foreign countries and 3 unknown; 51 were of American parentage, 126 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 9 cases and 0 deaths; typhoid fever, 30 cases and 2 deaths; measles, 4 cases and 0 deaths; tuberculosis, 42 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 2, heart disease 31, bronchitis 3. There were 16 deaths from violent causes. The number of children who died under one year was 50; the number under five years, 64. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 83. Anterior poliomyelitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 3 cases and 5

deaths. Scarlet fever, 1 case. Typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 174 and the death-rate is then 13.53.

TYPHOID FEVER AT HYDE PARK. — Since Sept. 6, 26 cases of typhoid fever, with 3 deaths, have been reported to the Board of Health at Hyde Park, Mass. No definite source of the infection has yet been determined, and investigation has shown no obvious contamination of water-supply.

SCARLET FEVER IN SOMERVILLE. — During the past week there has been an outbreak of scarlet fever in Somerville, Mass., which is, however, hardly extensive enough to deserve the name "epidemic." Eighteen cases of the disease have been reported, of whom 14 are in hospital and 4 quarantined at their homes.

POLIOMYELITIS IN RHODE ISLAND. — News from Providence states that during the past week four new cases and two deaths from poliomyelitis were reported to the Rhode Island State Board of Health, making a total of 24 deaths from the disease in that state during the current year. Quarantine against poliomyelitis has been recommended by the advisory board of the United States Public Health and Marine-Hospital Service, and has for some time been enforced throughout Massachusetts.

NORTHEASTERN DENTAL ASSOCIATION MEETING. — The sixteenth annual meeting of the Northeastern Dental Association will be held at Hotel Somerset in Boston on Oct. 20, 21 and 22. At the opening session to-day a paper was read by Dr. Charles K. Teter on "Nitrous Oxide and Oxygen." Among Boston dentists who will also present papers are Dr. Alfred P. Rogers and Dr. George H. Wright.

PURCHASE OF LAND FOR SOUTH DEPARTMENT. — An order has been passed by the Boston City Council, and approved by the mayor, authorizing the purchase of a tract of land on Southampton Street for the construction of new wards for the South Department of the Boston City Hospital. This extension is made necessary by the great overcrowding of the present wards of this department, in addition to which considerable sums were expended last year by the city for the treatment outside Boston of contagious cases that could not be accommodated at the City Hospital.

WORK OF THE BOSTON DISPENSARY. — At the annual meeting of the corporation of the Boston Dispensary last week, the report of the superintendent presented a record of notable activity on the part of this institution. During the past year, 31,799 new patients have been received at the central office and 11,087 in the districts. A total of 102,263 visits has been made at the central office and 20,387 in the districts. At the dispensary, 81,247 prescriptions have been filled; and 2,987 patients, of whom 1,000 were new cases, have been cared for by the Social Service Department. During this year, the Dispensary has also assumed charge of the Tyler Street Day Nursery.

DEPORTATION OF HOOKWORM PATIENT. — The patient with hookworm disease whose case we noted in the JOURNAL for Sept. 22 as under treatment at the Carney Hospital, South Boston, has been ordered by the federal health officials to be deported to the Cape Verde Islands, whence he came on Sept. 4 last. He was admitted to hospital with the disease six days after landing in this country, and must, therefore, have had it on his arrival, which renders him liable to deportation under national law.

CLOSURE OF MILK STATIONS. — The recent closing of several stations of the Boston Milk and Baby Hygiene Association, from lack of funds, is particularly unfortunate, since it not only stops the daily benefit done to patients, but to a considerable extent undoes the work already accomplished in building up the clinic and educating the mothers. In the absence of suitable milk and watchful supervision, the latter may be expected readily to slip back into the popular fallacies of infant feeding, with a corresponding increase of malnutrition and infant mortality. Fortunately the results are not likely to be as serious at this season of the year as in hot weather. It is earnestly to be hoped that before another summer sufficient money will be forthcoming to insure the full continuance and extension of this beneficent charity.

MILK TRANSPORTATION RATE COMPROMISE. — The conflict over the regulation of milk transportation rates in Boston, to which we referred editorially in the issue of the JOURNAL for Oct. 6, has been temporarily settled by compromise between the contractors and the railroad companies. The rates under the new agreement have not yet been made known, but it is expected that they will not be higher than those previously in operation.

Pending the announcement and trial of these compromise provisions, the Interstate Commerce Commission has deferred action on the complaints previously made by the dealers against the railroads. Whatever the result of the new arrangement, it is probable that the shipment rates and the market price of milk will before long again become subjects of legislative discussion.

Water Famine in Palmer. — In last week's issue of the Journal we made editorial comment on the dangers of scanty water supply, referring particularly to the unfortunate conditions then prevailing at Palmer, Mass. During the past week these conditions have not improved, and the local water company has issued an order forbidding the use of the reservoir water for other than drinking purposes. To provide some protection for the town in the event of fire, a fire-engine has been installed under temporary shelter near the Quaboag River from which it can pump water through 900 feet of hose to the center of the town. For bathing purposes water is also being pumped through 2,300 feet of hose from Burleigh brook. A scheme to provide a new supply of drinking water from artesian wells at Tennyville has been given up for the present owing to lack of sufficiently powerful pumping-engines. Unless nature soon comes to the relief of Palmer with a copious rainfall, it would seem that the town is still in a serious situation, which might be made critical by the outbreak of fire or of epidemic disease.

NEW YORK.

Typhoid and Diminished Water Supply. — In Westchester County there has of late been a considerable increase in typhoid fever, and this is attributed indirectly to the greatly diminished water supply, in consequence of the prolonged drought. On Oct. 7, Dr. Ernst Schmid, President of the Board of Trade of White Plains, issued a second warning against the use of the water from a stream called Davis Brook, to which, he declares, most of the cases in the village have been traced. This water has been shown to abound in typhoid bacilli.

Report on Ehrlich's "606" — Dr. A. L. Wolbarst, attending genito-urinary surgeon to the out-patient department of the Beth Israel Hospital and the West Side German Dispensary, has just returned from Europe with a supply of Ehrlich's "606," which was personally entrusted to him by Professor Ehrlich for testing the remedy in his public and private practise. While in Berlin he had the opportunity of observing the effects of this new treatment in some three hundred cases of syphilis, and he states that in the successful cases the promptness of the results often seemed quite marvelous, especially in instances of four or five years' standing which had resisted ordinary treatment.

A "Cholera Carrier." — A third case of cholera has developed in quarantine. This was reported on Oct. 9 by Health Officer Doty, the patient being an Italian thirty-six years old who arrived from Naples on the steamship *Moltke* one week previous. Dr. Doty states that the case shows all the features of the *Germania* case, and is undoubtedly one of the kind known as "cholera carrier." The *Moltke* left Naples on Sept. 21, and it was about seventeen days later that the man became ill with the disease.

New Medical Directory. — The new Medical Directory of the Medical Society of the State of New York, just issued, contains the names of 13,474 registered physicians in New York state, as against 13,023 in 1909; 2,558 in New Jersey, as against 2,458; and 1,384 in Connecticut, as against 1,304. In New York City there are 7,169, as against 6,889 in 1909, and 6,305 in the rest of the state, as against 6,134.

Conference of Sanitary Officers. — The 1910 Conference of Sanitary Officers of the State of New York is to be held at Buffalo on Nov. 15, 16 and 17, and the Health Department has been promised the assistance on this occasion of a number of sanitarians of national reputation. It is purposed to devote one day to the discussion of the relationship between health departments and various elements of society and another to communicable diseases, and to hold separate sessions for the consideration of certain problems affecting city and rural health officers respectively. There will also be an evening public meeting.

Lectures on Public Health. — In the course of a lecture at Columbia University on Oct. 10, on "The Development of Public Health Work," Dr. H. M. Biggs, Medical Officer of the City Health Department, stated that while many other American cities, especially the newer ones, had lately claimed a lower death-rate than New York, the statistics quoted in support of this claim were often untrustworthy. For one thing, the population of new places was being constantly increased by the advent in large numbers of new residents who were in middle life, and the death-rate in middle-aged persons was admittedly low.

Another explanation was to be found in the fact that many deaths in smaller cities are never reported, a matter of impossibility in New York. This was the first of an extended course of public lectures on public health problems and the prevention of disease to be given at Columbia on Monday afternoons, a series somewhat similar to that inaugurated last season, under the auspices of the university, at the College of Physicians and Surgeons. Among the other lectures in the course will be the following: "Water Pollution and Water Purification," by Dr. C.-E. A. Winslow; "The Collection and Disposal of Municipal Waste," by Dr. George Y. Soper; "Communicable Diseases — Their Transmission," "Communicable Diseases — Their Prevention," by Dr. William H. Park; "Some Examples of the Control of Infectious Diseases," by Dr. Simon Flexner; "The City Milk Supply and Its Control," by Dr. Ernest Lederle; "Tuberculosis — The General Problems, The Organized Campaign against the Disease," by Dr. Livingston Farrand; "Tuberculosis as a Social Problem, Methods of Treatment," by Dr. James A. Miller.

Mortality Statistics. — The weekly reports of the Health Department show that the mortality in the city during the month of September represented an annual death-rate of 14.48, as against 14.91 in August and 14.33 in September, 1909. The corrected death-rate for the month, excluding non-residents and infants under one week old, was 13.81. In the week ending Sept. 17, the uncorrected rate was only 13.58, the lowest recorded since the first week of November in 1908. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from whooping-cough declined from 9.25 in August to 4.25 in September; the weekly average from diphtheria and croup, from 19.75 to 13.5 (the lowest number recorded in years); from diarrheal diseases, from 268 to 190.75; from diarrheals in children under five years of age, from 255 to 181.25; from appendicitis and typhlitis, from 12.5 to 9; from Bright's disease and acute nephritis, from 90.75 to 87.75; and from puerperal diseases, including septicemia, from 12.25 to 10.75. Among the diseases in which there was an augmented mortality were the following: The weekly average of deaths from scarlet fever increased from 2.75 to 3.75; from pulmonary tuberculosis, from 152.75 to 159; from acute bronchitis, from 11 to 14; from bronchopneumonia, from 49.75 to 67.25; from cancer, from 70.75 to 74; from apoplexy and softening of the brain, from 14.25 to 18.75; and from organic heart diseases, from 89.75 to 108.75.

The total number of births reported in the state during the month of August was 18,049, while the deaths numbered 11,998, showing a net gain in native population of 6,051. Of this net gain, 5,157 were in New York City, where the births reported amounted to 11,207, as against 6,050 deaths. In the whole state there were 734 deaths by accident during the month, and of these, railroad fatalities were responsible for 159 and drownings for 138.

Current Literature.

Medical Record.

Oct. 1, 1910.

1. Anders, J. M. *Street Dust as a Factor in Spreading Disease: Methods of Removal.*
2. Lanehart, L. N. *Surgery in Its Relation to Nervous Patients.*
3. Hagner, F. R. *Gonococcus Infection of the Kidney, with Reports of Cases.*
4. Aaron, C. D. *Report of a Case of Carcinoma of the Splenic Flexure of the Colon Treated with the Neoformans Vaccine.*
5. *Pelton, H. H. *The Diagnosis of Incipient Pulmonary Tuberculosis.*
6. Bandler, S. W. *The Metreurynter Incision of Dührssen in the Treatment of Placenta Previa, with Report of a Case.*
7. Snow, W. B. *Neuritis.*
8. Brouner, W. B. *Stricture of the Male Urethra.*

5. Pelton emphasizes the importance of early diagnosis in pulmonary tuberculosis, a disease which is making an appalling drain on public funds and private charity. Thousands of these patients might be supporting themselves if the disease had been diagnosed in the incipient stage. The chances for recovery are in direct ratio to the earliness of the discovery of the disease. In making an early diagnosis the writer considers the following points most important: (1) The anamnesis; (2) frequent examination of the chest; (3) careful observation for toxemic symptoms (evening rise of temperature, rapid pulse, loss of weight, anemia and debility); (4) the cutaneous tuberculin test; (5) x-ray examination of the chest; (6) as a last resort, tuberculin subcutaneously. In cases where sputum cannot be obtained, tubercle bacilli can sometimes be demonstrated in fasting gastric contents. Bacilli are rarely found in the stools unless the intestine is also infected. The inoculation of guinea pigs with sputum may establish a doubtful case. [L. D. C.]

Oct. 8, 1910.

1. Deeks, W. E. *The Carbohydrate Diathesis.*
2. Hart, T. S. *Results in the Treatment of Diabetes Mellitus.*
3. *Gwathmey, J. T. *Recent Progress in Anesthesia.*
4. Smith, O. C. *The Residual Appendix.*
5. Hollis, A. W. *Report of the Treatment of Typhoid Fever with Vaccine.*
6. Hahn, M. *Hemophilia Treated by Transfusion.*
7. Sallom, A. K. *Statistical Analysis of over Sixty-eight Thousand Cases of Typhoid Fever. Report No. II. Mortality.*

3. Gwathmey writes a valuable paper on recent progress in anesthesia. From animal experimentation he can state

positively that the safety of all anesthetics is increased by the addition of oxygen and by warming. Warm chloroform and oxygen make a safer combination than ether and air. Heat is especially valuable in assisting rapid recovery from anesthesia, and in preventing nausea and vomiting.

Electric anesthesia is not yet sufficiently developed to be practical for clinical use. If it ever becomes so, it will be the safest anesthetic known.

The sequestration method of Dawbarn, which maintains anesthesia by cerebral anemia, deserves a more thorough trial; the only contra-indication is a weak heart.

More attention should be paid to anesthetic shock. All patients need preliminary treatment, both mental and medicinal, in order to eliminate the psychic element. Preliminary medication should consist of morphine, either alone or with hyoscine or chloretone. Small doses of morphine given sufficiently ahead of time will generally prevent stimulation of the vomiting center before, during and after full surgical narcosis, and the anesthetic can be discontinued much earlier. [L. D. C.]

New York Medical Journal.

Oct. 1, 1910.

1. Moorehead, J. J. *The Importance to Physicians of the New Employer's Liability Law.*
2. Butler, G. F. *Twilight Talks by the Doctor.*
3. *McCoy, G. W. *Bubonic Plague in Ground Squirrels.*
4. Sobel, J. *Scarlet Fever.*
5. Knott, J. *Aconite.*
6. Ulmer, D. H. B. *On the Effect of Quinine and Urea Hydrochloride upon a Case of Double Tertian Malarial Infection.*
7. Buzzell, J. J. *The Modern Brown Bread Pill.*
8. Harbridge, D. F. *Post-operative Complications in a Case of Acute Secondary Glaucoma, a Case of Mature Senile Cataract and a Case of Sudden Death while Performing Iridectomy for Acute Glaucoma.*

3. McCoy writes an interesting paper on the occurrence of bubonic plague among ground squirrels in California. In 1908, when a few cases of plague occurred in San Francisco, the possibility that squirrels as well as rats might carry the infection was suggested. During the past two years the writer and his associates have examined 90,000 squirrels pathologically; 300 of them were found to be infected. In some districts the ratio was as high as 1: 10. Since 1908 there have been 12 human cases in which evidence pointed conclusively to squirrels as a causative factor. At present, therefore, the indication is to exterminate the ground squirrel as well as the rat in infected districts. [L. D. C.]

Oct. 8, 1910.

1. Beers, N. T. *Medical Photography.*
2. Cole, L. G., and Einhorn, M. *Radiograms of the Digestive Tract by Inflation with Air.*
3. Scarlett, R. B. *A Case of Intranasal Sarcoma.*
4. Amberg, E. *An Irregularly Pearl-shaped Bone Formation in the Mastoid Process.*
5. Girdwood, J. *The Doctor's Duty in Tuberculosis.*
6. Davison, R. E. *Inversion of the Puerperal Uterus.*
7. Schumann, E. A. *Observations upon the Baldy Operation for Retroversion of the Uterus.*
8. *Savitz, S. A. *A Brief History of Epidemics among the Alaska Indians, with Special Reference to Tuberculosis.*
9. Keschner, M. *Alcohol and Its Relations to Legal Medicine.*
10. Henson, G. E. *A Plea for a More Vigorous Campaign against the Malarial Fevers.*

8. Savitz has studied the history of the Alaska Indians and finds that they have been visited with several plagues during the past forty years. In 1869, an Indian trading with white men in British Columbia contracted measles and took it back to his countrymen. All the tribes were afflicted in large numbers, both children and adults; the mortality was 33%, most of the deaths being due to a complicating pneumonia. In 1872 smallpox raged among these people with frightful mortality; most of the fatal cases died before the eruptive stage. In 1876 there was a serious epidemic of influenza. In 1888 there was a second epidemic of measles, and in spite of the enlightened work of missionaries, 20% died, many of a complicating diphtheria. Tuberculosis has probably always been with them. [L. D. C.]

The Journal of the American Medical Association.

Oct. 1, 1910.

1. Hurty, J. N. *The Bookkeeping of Humanity.*
2. McClanahan, H. M. *A Brief Report of the Nebraska Epidemic of Poliomyelitis.*
3. Woods, H. *The Rôle of Ophthalmology in Preventive Medicine.*
4. Harrower, H. R. *Metabolism and Mouth Disease.*
5. *Gosman, G. H. R. *The Present Status of Typhoid Inoculation.*
6. *Nichols, H. J., and Fordyce, J. A. *The Treatment of Syphilis with Ehrlich's "606."*
7. Sedgwick, J. P. *Creatinin and Creatin Metabolism in Children.*
8. Latham, V. A. *Systemic Conditions in Relation to Oral Symptoms and Sepsis.*
9. Duke, W. W. *The Relation of Blood Platelets to Hemorrhagic Disease.*
10. Ogilvy, C. *Operative Treatment of Club-Foot.*
11. Winslow, R. *Partial Thyroidectomy in Dementia Precox.*
12. Alexander, J., and Bullowa, J. G. M. *Influence of Colloidal Protection on Milk.*
13. Gordon, A. *Is Acute Chorea an Infectious Disease?*
14. Newett, L. *Unusually Quick Rash following Injection of Diphtheria Antitoxin.*
15. Nelker, A. *Essential Hemospermia.*

5. Gosman speaks of antityphoid inoculation very hopefully. Not only does it reduce the number of cases, but when a case does appear in a patient who has been inoculated (which is rare, however), the course of the disease is much milder. This is found true from 8,510 inoculations in the United States and German armies. A great stride has been made by the successful treatment of a typhoid carrier by Stone, and the number of cases developing in nurses and ward tenders at the Massachusetts General Hospital has been greatly lowered following Spooner's inoculations, which have resulted in the important fact that this is the first year that no typhoid has originated in the Massachusetts General Hospital. English statistics show that immunity will last three years, which will cover the time of most campaigns, also the training courses of nurses and house pupils. Severe reactions are few and the injection is believed to be harmless. Further systematized inoculation of soldiers and hospital attendants is strongly urged as a routine.

6. Nichols and Fordyce give a detailed description of the composition, dosage and uses of Ehrlich's new syphilis remedy, the so-called "606," or synthetic arsenobenzol, a drug which had for its purpose the destruction in a single dose of all the parasites, leaving the host uninjured. Clinical results seem to show that this remarkable drug can do this. Too short a time has elapsed, however, to warrant the statement that no relapses ever occur. His stated that within twenty-four to forty-eight hours of the injection of the drug, superficial lesions, such as mucous patches, condylomata and primary lesions, are free from living spirochetes. The drug is a yellowish powder which rapidly oxydizes on exposure to air, and is, therefore, put up in vacuum tubes. It dissolves in water with difficulty, making a strongly acid solution. The administration is as a neutral base or an alkaline salt, deep into the muscles, into the veins or under the skin. The dose is 0.3 to 0.6 gm., and is dissolved in 1 to 2 ccm. of sodium hydrate solution. Acetic acid is then added, drop by drop, till the base precipitates out in the form of a fine yellowish suspension. This precipitate is collected in from 1 to 2 ccm. of sterile distilled water and $\frac{1}{10}$ normal sodium hydrate added, or 1% acetic acid as needed, until the reaction becomes precisely neutral to litmus. According as the reaction is or is not accurately neutral, the injection will be followed by much or no pain. Clinically this drug has been tried at the Blackwell's Island Hospital. Results showed that whereas before the treatment the serum reactions were all positive, at the expiration of a certain time, three or four months, all the reactions became negative.

The dose was found to be nearer 0.6 than 0.3 for beneficial results. This drug is not generally available at the present time. [E. H. R.]

OCT. 8, 1910.

1. *HOLT, L. E. *Bacteriology of Acute Respiratory Infections in Children as Determined by Cultures from Bronchial Secretion.*
2. FOLKES, H. M. *The Negro as a Health Problem.*
3. *JONES, W. A., AND HAMILTON, A. S. *Hemiplegia following Acute Infections.*
4. TONNEY, F. O. *Tuberculosis in Market Milk of Chicago.*
5. MCCURDY, S. L. *Pathology and Treatment of Alveolar Abscess.*
6. LUMBARD, J. E. *Improved Method of General Anesthesia in Head Surgery by Means of Glass Nasal Tubes.*
7. SMITH, L. L. *Report of a Case of Middle Meningeal Hemorrhage Accompanied by Actual Hemiplegia. Operation. Recovery.*
8. *LORD, F. T. *The Etiology of Actinomycosis.*
9. CRAIG, C. F. *Complement Fixation with an Antigenic Crystal Obtained from Luetic Liver.*
10. HOLINGER, J. *The Pathology and Prognosis of Internal Ear Complications Resulting from Inflammatory Middle Ear Diseases.*
11. FLETCHER, J. R. *Discussion of the Symptoms and Diagnosis of Infection of the Labyrinth Resulting from Suppurative Otitis Media.*
12. DAVIS, G. E. *The Present Status of Vertigo Considered from a Diagnostic Standpoint.*
13. WARNER, C. F. *Foibles in Specialism.*
14. BAMBERGER, A. *A Case of Colloid Carcinoma of the Skin.*
15. ELY, L. W. *The Pathology of Joint Tuberculosis: Tuberculous Sinuses.*

1. Holt, from his researches, believes that the bacillus influenzæ is the causative agent in many cases of obscure high temperature in cases of recurrent bronchopneumonia or pneumonia running an unusual course, or of high temperature persisting in cases of otitis in which the ears have been opened, or after surgical operations, especially in the winter and spring months.

3. Jones and Hamilton report an interesting series of cases of hemiplegia, mostly following diphtheria, but some in other acute affections. They state that peripheral paralyses occur in diphtheria in as high as 5 to 15% of the cases, while hemiplegias are very rare, 3 in 800 cases in the Berlin Charity Hospital. Osler found none in 120 cases. Taylor states that the causes of infantile hemiplegia in order of frequency are: Acute encephalitis, thrombosis (arterial or venous), hemorrhage and embolism. In diphtheria, antitoxin does not seem to have lessened the cases of paralysis, either of central or peripheral origin.

8. Lord has made valuable investigations into the etiology of actinomycosis. He suggests that the failure of actinomycosis to develop at other than body temperature, the lack of any convincing evidence that it is a contagious disease and the prevailing location of the affection about the jaws and neck, suggest that infection arises from within the individual and probably from the mouth. He has demonstrated the presence of organisms which have all the characteristics of actinomycosis from smears taken from the teeth and tonsils of patients without actinomycosis. This was confirmed further by guinea pig inoculation. [E. H. R.]

THE ARCHIVES OF INTERNAL MEDICINE. VOL. 6. NO. 3. SEPTEMBER, 1910.

1. *ROBERTSON, H. E., AND CHESLEY, A. J. *Pathology and Bacteriology of Acute Anterior Poliomyelitis.*
2. *HOPKINS, J. G. *Phagocytosis of Red Blood Cells after Transfusion.*
3. WIGGERS, C. J. *The Prognostic Significance of Pulse-Pressure Changes during Hemorrhage.*
4. OERTEL, H. *Multiple Non-Inflammatory Necrosis of the Liver with Jaundice in Chronic Cyanosis.*
5. CROSS, G. *A Case of Trichinosis; Trichinella Found in Blood Taken from an Ordinary Ear Puncture.*
6. GAGE, J. G., AND BASS, C. C. *The Prevalence of Hookworm Infection in the Better Class of Southern White People.*
7. EVANS, G. H., AND WHITNEY, J. L. *A Preliminary Report on the Diagnostic Value of the Intracutaneous Tuberculin Test.*
8. *FRANK, R. T. *Has Oötherapy, as Now Practiced, an Experimental Basis?*
9. *GAY, F. P., AND LUCAS, W. P. *Anterior Poliomyelitis. Methods of Diagnosis from Spinal Fluid and Blood in Monkeys and in Human Beings.*

1. Robertson and Chesley, after reviewing the literature relating to the pathology of acute anterior poliomyelitis, give their own findings in 6 cases. The pathological process, they found, extended from the perivascular lymph-channels of the anterior portions of the cord into the surrounding tissue spaces of the gray matter and into the lymph-channels of the white matter and pia. The exudate at first consisted of small numbers of polymorphonuclear leucocytes, but soon these were replaced by endothelial cells and lymphocytes. The tissues became edematous and in places infiltrated with lymphocytes. The blood vessels were congested and showed fatty degeneration of their walls. The hemorrhage following rupture of these degenerated areas seemed to be the agent most responsible for the destruction of tissue. Stains for micro-organisms were negative, and inoculation of animals merely confirmed the opinion that Geirsvold's diplococcus is not a causative factor in the disease.

2. Hopkins, examining the blood of a patient with pernicious anemia after transfusion, found an active phagocytosis of red cells by polynuclear leucocytes. He discusses the reason for this, but does not reach a definite conclusion.

8. Frank attempted, by use of the corpus luteum of ten sheep, to bring about changes in the uterus of castrated rabbits. His results were negative, leading him to believe that the use of ovarian extract of a heterologous species, as it is now prepared, does not replace the secretion of the removed gland.

9. Gay and Lucas found that the acute stage of anterior poliomyelitis, both in human beings and in monkeys, is characterized by the occurrence of a distinct leucopenia, with relative increase of eosinophiles and lymphocytes.

In spinal fluid from monkeys, during the incubation and prodromal stages, the number of cells is increased, the increase being first of the mononuclear type, later of the polymorphonuclear. A fibrin clot appears during prodromal and early stages, but disappears later.

There was never any evidence of the presence of antibodies in the serum or spinal fluid of monkeys with the disease, nor in the spinal fluid of human beings with poliomyelitis. [G. G. S.]

THE LANCET.

SEPT. 17, 1910.

1. *WRIGHT, A. E. *Vaccine Therapy; Its Administration, Value and Limitations.*
2. SHEEN, W., SCHOLBERG, H. A., AND WALLIS, R. L. M. *A Case of Chondro-Carcinoma of the Testis.*
3. WHILLIS, S. S., AND PYBUS, F. C. *The Enucleation of Tonsils with the Guillotine.*
4. LEDIARD, H. A. *Verminous Appendicitis.*
5. WILSON, W. J. *A Note on the Toxicology of Carbon Monoxide.*
6. HORNE, W. E. *The Ventilation of Ships, Particularly Merchant Ships.*
7. HARRIS, D. F. *The Pioneer in the Hygiene of Ventilation.*
8. LISTER, T. D., AND WILKINS, W. D. *The Bevenden Sanatorium and Industrial Insurance for the Treatment of Phthisis.*

1. In an address before the Royal Society of Medicine on "Vaccine Therapy," Wright first discusses the rationale of this procedure; he describes the recent history of medicine as it has affected bacteriology. He deplores the fact that the average clinician does not and cannot do much of his own bacteriologic work, but merely delegates it to the laboratory man. He discusses the limitations of vaccine therapy first as stated by the clinician and again as contended for by the bacteriologic worker. He mentions various conditions, such as x-ray dermatitis, pruritus, hay fever, gastric disturbances, which the clinician

claims are quite beyond the reach of vaccine therapy, but which have shown marked improvement by this method.

He goes on to discuss the limitations as contended for by the bacteriologist, the relation of the opsonic index to inoculation, whether this index can be accurately measured or not, and whether or not it can be dispensed with. The general subject of the value of vaccine therapy and the mode of administration of the vaccine he speaks of briefly. [J. B. H.]

British Medical Journal.

Sept. 17, 1910.

1. *McGavin, L. *Remarks on Eighteen Cases of Spinal Analgesia by the Stovaine-Strychnine Method of Jonnesco, including Six Cases of High Dorsal Puncture.*
2. Stock, S. V. *Remarks on Anesthetizing Patients for Operations on the Throat, Nose and Accessory Sinuses.*
3. Keay, J. H. *State Insurance and the Poor Law Commission.*

The British Medical Association.

Section on Anesthetics.

4. Hewitt, F. W. *Introductory Remarks.*
5. Buxton, D. W., *et al. Discussion on the Dosimetric Method of Administering Chloroform.*
6. *Rowell, G., *et al. Discussion on the Prevention and Treatment of Shock.*
7. *Blumfeld, J., *et al. Discussion on the Present Position and Limitations of Spinal Anesthesia.*
8. Gardner, B., *et al. Discussion on the Open System of Ether Administration.*

Section on Odontology.

9. Goadby, K. *The Buccal Secretions and Dental Caries.*
10. Badcock, J. H. *The Need for Correction of Malpositions of Teeth.*
11. Austen, H. *The Effects of Drugs in the Causation of Dental Caries.*
12. Mummery, J. H. *Susceptibility and Immunity to Dental Caries.*
13. *Turner, J. G. *The Value of Teeth in the Human Economy.*
14. Baldwin, H. *Crown and Bridge Work.*

1. McGavin gives the details of 18 cases operated on under Jonnesco's combination of stovaine and strychnine injections in the spinal canal. His results are, on the whole, disappointing: 4 successful cases show that high puncture is a possibility, but do not suggest that this method will ever take the place of general anesthesia. Other cases of high puncture show its great dangers.

6. In discussing the prevention of shock, Rowell considers ether, given by the open method, as one of the biggest factors; the next best means in his opinion is the injection of salt solution under the skin. Extract of the infundibular portion of the pituitary gland (20% solution) he has found of great value in raising blood pressure, its effect lasting twelve to twenty-four hours or longer.

Crile is of the opinion that, in abdominal operations especially, handling of the intestines is a large factor; careful anesthetization and conservation of blood will help to prevent it. Fear itself he believes is a considerable factor in producing shock. He describes what he believes to be the proper method of preparing a patient mentally for an operation and of giving ether.

7. Blumfeld, McCardie, Ryall and others, discussing spinal anesthesia, seem to agree that this method is retrogressing in favor and that, though it will always be of value in selected cases, as our methods of giving an anesthetic by inhalation improve, spinal anesthesia, on account of its numerous dangers, will be less and less used.

13. In discussing the value of teeth in the human economy, Turner goes so far as to say that teeth are largely for beauty, and that as far as digesting and assimilating food is concerned, they can quite well be dispensed with. Mummery, Cryer and others were unwilling to take this radical view, but believed that carious teeth should be removed and that absence of teeth was better than carious teeth. [J. B. H.]

Edinburgh Medical Journal.

September, 1910.

1. *Hall, A. J., and Beattie, J. M. *An Unusual Case of Chronic Interstitial Pneumonia. (Diffuse Bilateral Pulmonary Fibrosis following [?] Influenza.)*
2. Fordyce, A. D. *The Care of the Infant and Young Child (to Five Years) in Edinburgh.*
3. *Dick, R. J. *Acute Pancreatitis Considered in Relation to Three Cases Occurring in General Practice.*

1. Hall and Beattie describe in detail a case of what they call chronic interstitial pneumonia. The case is a remarkable one in many ways. During the entire course of the disease, nearly four months, in spite of constantly increasing lung involvement, the pulse never reached 100; the temperature ran a practically normal course and there were no signs of right-sided cardiac dilatation; the patient slept better lying flat than sitting up. There are some excellent plates.

3. Dick gives the details of 4 cases of acute pancreatitis, presents a general summary of the subject, with remarks on diagnosis prognosis, and treatment. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 37.

Sept. 15, 1910.

1. Paschkis, H. *Concerning Cosmetics.*
2. *Wechselmann. *The Re-injection of Dioxy-diamido-arsenobenzol.*
3. v. Grósz, E. *Arsenobenzol in Syphilitic Eye Disease.*
4. Bergrath, R. *The Apparent Value of Atoxyl Acid Quicksilver in the Treatment of Human Syphilis.*
5. Bruns, O., and Gruner, J. *Effect of the Depressors on the Heart's Work and Elasticity of the Aorta.*
6. Nonne, M. *Differential Diagnosis between Multiple Sclerosis and Spinal Cord Compression.*
7. Mendel, F. *Diagnosis and Treatment of Duodenal Ulcer.*
8. Joachimsthal. *Congenital Vertebral Anomaly as Cause of Curvature of the Spine.*
9. Bircher, E. *On the Question of the Etiology of Goiter.*
10. Pernice. *Foreign Bodies in the Esophagus.*
11. *Gerber. *Concerning Leprosy.*
12. Mune. *The Wassermann Reaction in the Office.*
13. Wertheimer-Raffalovich, R. *Experimental Investigation on the Effect of Pantopon.*

2. There has been considerable hesitancy on the part of the profession to use Ehrlich's new preparation for syphilis more than once in the same case. This is due to the fear of hypersensitiveness in the organism after the first injection. Wechselmann, however, has used second injections in several cases where the first did not clear up the symptoms and found that the second injection usually cleared up the remaining symptoms. He finds such an injection harmless at the eighth day, but considers that three to four weeks is the better time to give it, as it seems to have more effect.

11. Gerber has been investigating leprosy with a view to finding out the lesions in the respiratory tract and the dangers from its secretions. He does not find leprosy bacilli in the upper air passages of healthy people attendant upon those with this disease, nor in patients who have no lesions in the upper air passages. Lesions in the nose and throat, however, are very common, and when they occur the bacilli are present in the excretions in great numbers and frequently to the exclusion of other bacteria.

[C. F., Jr.]

Berliner Klinische Wochenschrift. No. 38.

Sept. 19, 1910.

1. Ewald, J. R. *The Method of Measuring the Blood Pressure in Man.*
2. Gennerich. *The Treatment of Syphilis with Ehrlich's "606."*
3. *Thomsen, O. *The Importance of a Positive Wassermann Reaction of the Human Milk in the Selection of a Wet Nurse.*
4. Salkowski, E. *The Value of Urinary Findings in the Diagnosis of Carcinoma. Part II.*
5. Ungar, E. *Insufflation Narcosis (Meltzer's) in Man.*
6. Hirsch, K. *Concerning the Subcutaneous Rupture of the Extensor Tendon of the Terminal Phalanx of the Finger.*

7. DREHMANN, G. *The Question of Congenital Coxa Vara.*
8. COHN, M. *Lingua Villosa Nigra in Infancy.*

3. The author states that both the milk and the serum of wet nurses should be tested by the Wassermann method. The milk should be examined either before the birth of the child or the first day or two after to give the most certain and accurate results. While many non-syphilitic cases show this reaction, the number is reduced to a minimum when only 0.1 cm. of milk is used for the test. [J. L. H.]

BULLETINO DELLE SCIENZE MEDICHE.

JANUARY, 1910.

1. GHILLINI, C. *Lesions of the Epiphyseal Cartilage.*
2. *COSTANTINI, G. *Primary Sarcomata of the Liver.*

2. Costantini presents a clinical and pathologic report of two cases of primary sarcoma of the liver, and collects from the literature a series of 111 similar cases previously reported, including one from this JOURNAL [March 9, 1871, vol. vii, p. 157]. Of these, however, he rejects 60 as proving on examination to have been probably instances of hepatic metastasis, and 9 not accessible in the original for verification. Of the remaining cases which he considers authentic, more than 25% occurred in the first decade of life, and the next largest number in the third decade. Nearly 80% of the cases were males. Pathologically, the author believes that such tumors may arise from perivasal, cirrhotic or pericystic connective tissue. [R. M. G.]

FEBRUARY, 1910.

1. CONTI, A., AND ROSSI, F. *A Case of Lymphadenoid Pseudoleukemia with Hematologic Findings of Aplastic Anemia.*
2. MARTINELLI, A. *Craniotomy for Gunshot Wound.*
3. RAVÀ, G. *The Passage of Typhoid Agglutinins from the Mother through the Placenta to the Fetus.*

IL POLICLINICO.

JUNE, 1910.

SURGICAL SECTION.

1. STEFANO, P.-A. *Congenital Cystic Lymphangioma of the Neck.* (Conclusion.)
2. *SABELLA, P. *Early Intervention in Tuberculous Osteitis of the Vertebral Column.*
3. GUSSIO, S. *A New Surgical Procedure for Salivary Fistula.* (To be continued.)
4. ZAPELLONI, L. C. *The Anatomic and Physiologic Relations between Rats in Parabiosis.*

2. Sabella reports a case of early lumbar Pott's disease treated by laminectomy under stovaine spinal anesthesia with removal of the left transverse process of the fifth lumbar vertebra, the only portion of bone appearing to be the seat of definite tuberculous process. The dura was exposed and found to show incipient tuberculous pachymeningitis, but was not opened. The patient was entirely relieved of pain within a few days, made a rapid convalescence, and seven months after operation is reported as being without recurrence of symptoms, able to walk and with perfect functional restoration of the sphincters. The author believes that such surgical intervention is indicated in a limited number of discreetly selected early cases as offering the hope of shortening convalescence by permanently eradicating the disease process instead of waiting for it to become arrested by spontaneous healing. [It should be added that the case in question was particularly favorable from the limitation and accessibility of the tuberculous process.] [R. M. G.]

Obituary.

HENRY HAMMOND GALLISON, M.D.

HENRY HAMMOND GALLISON, M.D., M.M.S.S., who died of cerebral hemorrhage last week at his home in Cambridge, Mass., was born in Boston on May 20, 1850. Though early interested in painting, he entered the Harvard Medical School, from which he graduated in 1872. He then went abroad to pursue his study of art, and remained there for some years, chiefly in Paris. During this time he became an artist of considerable distinction, and his paintings gained admission to the *salons* of Paris, Turin and London. After his return to this country, he spent his summers at Annisquam, where he owned a pleasant country house and studio, and his paintings were familiar at exhibitions in Boston and in other cities of the United States. His greatest work was perhaps in the decoration of the Ray Memorial at Franklin, Mass. Since 1908 he had been partly paralyzed from a slight premonitory hemorrhage, but had borne his disability with characteristic serenity and fortitude.

Many who knew Dr. Gallison did not know that he was a physician; but those who knew him well felt that his medical affiliation added a value to his temperament that it could not otherwise have possessed. His life is evidence that artistic tastes and talent are not necessarily killed by medical study, and his memory is one which our profession may be glad to share with that to which he was chiefly dedicated.

Miscellany.

MASSACHUSETTS MEDICAL SOCIETY.

PROCEEDINGS OF THE COUNCIL, OCT. 5, 1910.

WALTER L. BURRAGE, *Secretary.*

A STATED meeting of the Council of The Massachusetts Medical Society was held in John Ware Hall, in the Boston Medical Library, Oct. 5, 1910, at 12 o'clock, noon, the President, Dr. George B. Shattuck, in the chair, and seventy-seven Councillors present.

The record of the last meeting was read and accepted.

The secretary stated that, in accordance with custom, he had taken the oath of office for the current year.

The following were appointed delegates to the meetings of state societies:

Vermont State Medical Society: O. J. Brown, North Adams; N. P. Wood, Northfield.

Medical Society of the State of New York: D. E. Keefe, Springfield; E. P. Joslin, Boston.

Dr. Goss, for the Committee on Membership and Finance, recommended that the resignations of thirteen members be accepted; that two be placed on the retired list; that fifty-five be deprived of the privileges of fellowship for nonpayment of dues.

Voted, That the report be accepted and its recommendations adopted.

Dr. C. H. Cook presented a report, as a delegate to the meeting of the National Legislative Council of the American Medical Association, held in Chicago, Feb. 28 and March 1 and 2, 1910, in which he summarized the four important papers read to the Council and their discussion. He stated that Dr. Frederick R. Green, secretary of the Bureau of Medical Legislation, has secured

copies of all public health laws of the various states, with a view to the publication of a handbook on medical legislation. Also that a report on optometry and one on medical expert testimony, both written by Dr. George W. Gay, had received the unanimous approval of the Council, and the publication of the former in pamphlet form had been recommended. Dr. Cook urged the need of an awakening of the medical profession to a much fuller and clearer realization of the responsibilities of the medical man as a citizen, not only of a state, but of the nation, and asked the co-operation of the members of The Massachusetts Medical Society with the delegates to the National Legislative Council.

Voted, To accept the report and place it on file.

The committee appointed to consider the petitions of Drs. Maurice Gerstein, of Roxbury, and William I. Wiggin, of Lowell, to be restored to the privileges of membership, reported favorably, and the reports were accepted.

Dr. Walter P. Bowers, of Clinton, was appointed a member of the Committee on State and National Legislation, to succeed Dr. G. W. Gay, resigned.

Dr. E. W. Taylor made a motion that the President of the Society appoint a chairman and a secretary for the surgical section and for the medical section for the current year. The motion was discussed by Drs. Goss, Withington and Hugh Cabot, and it was so voted.

Also, it was

Voted, That the question of the method of appointing the officers of the sections of the Society at the annual meetings in the future be referred to a committee of three, appointed by the President, to report to the next stated meeting of the Council.

The President appointed Drs. E. W. Taylor, Lund and Cotton as this committee.

A petition from Dr. Charles Henry Crawford, of Lawrence, to be restored to the privileges of membership, was read by the secretary, and the following committee was appointed to consider the petition: Drs. G. S. Allen, R. M. Birmingham and H. W. Manahan.

A similar petition from Dr. Flora Frost Moody, of Springfield, was referred to the following committee: Dr. H. W. Van Allen, Dr. Sarah M. Wilbur and Dr. D. E. Keefe.

On motion of Dr. O. F. Rogers it was

Voted, That the Committee on Medical Diplomas be instructed to revise the list of medical colleges recognized for the purpose set forth in By-Law I and report to the next stated meeting of the Council.

Dr. G. W. Gay spoke on the partisan character of the testimony of some of the medical experts in the courts, and made a motion that the secretary call the attention of the members to this matter, requesting the Fellows of the Society to notify the Committee on Ethics and Discipline of any departure from ethical standards of which they may become cognizant, and it was so voted.

Dr. H. D. Arnold presented a report as a delegate to the House of Delegates of the American Medical Association, and pointed out the great importance of the work of the House of Delegates, and urged the full attendance of all the delegates at the annual meeting of the American Medical Association.

Voted, To accept the report and place it on file.

Dr. Hugh Cabot made a motion that the next annual meeting of the Society be held in Worcester. After an animated discussion by Drs. Cotton, G. E. Francis, H. Gage, L. F. Woodward and others, and amendment by Dr. Crowell, it was

Voted, That the matter be referred to the Committee of Arrangements, to report at the next meeting of the Council.

Correspondence.

TEWKESBURY; GLOUCESTER; CHEPSTOW; MONMOUTH; RAGLAN; ROSS; HEREFORD; WORCESTER; SHREWSBURY; CHESTER; LIVERPOOL UNIVERSITY.

[*From Our Foreign Correspondent.*]

LIVERPOOL, Sept. 19, 1910.

Mr. Editor: The country on the borderland between England and Wales seems to have been particularly associated with episodes in the civil wars of British history. The reason for this is hardly obvious unless it be that the fastnesses of the Welsh mountains have always afforded good refuge for defeated insurrectionists, for non-conforming dissenters or for deposed sovereigns, and a point of vantage for pretenders, revolutionists and intriguers of every description. In any event, many of the important battles of the Revolution (an Englishman knows only that of 1688), and of the Wars of the Roses, were fought in these parts, and the castles of the region suffered recurrent sieges by Royalists and Parliamentarians until all of them were ruined and many of them swept out of existence in the process. If Henry VIII must be blamed for the pillaging of all the abbeys, priories and shrines in England, Cromwell and his Roundheads have as much to answer for in their destruction of ancient fortresses and in the vandalism with which they visited cathedrals and churches throughout the land.

The first of these names connected with the English civil wars is Tewkesbury, a town of very different character and connotation from its American namesake, situated not far above Gloucester on the river Severn. One can go to it by boat, and the sail is very pleasant, even though one fail, as we did, to see the nymph Sabrina, who must have been driven under cover by the rain of the preceding night. One lands at a picturesque ford called the Lower Lode, and walks thence to the town across the "bloody meadow of Tewksbury." Here in 1471 was fought the decisive battle in which Edward IV defeated the Lancastrian forces and established the house of York on the English throne. In the brooding quiet of the spacious old abbey across the fields is buried Edward, Prince of Wales, killed in this battle, and also the Duke of Clarence, brother to Edward IV, who later met the ignominious though even more celebrated death of being "drowned in a butt of malmsey," a fate and mode of demise which one would have thought best suited to Sir John Falstaff. Sir John apparently knew Tewkesbury, too, for he averred of Poins's wit that it was "as thick as Tewkesbury mustard." Unhappily he died before the days of the battle, when Prince Hal as king "ran bad humours on the knight"; had he lived to engage in that memorable fight, the issue of the conflict might have been different. We could not discover, in the pleasant little tea-garden where we lunched, that Tewkesbury mustard was thicker than that of any other locality. Nor would one dream, in walking over them, that the smooth, green meadows

which slope gently from the town and abbey to "Severn's reedy marge" were ever wet with the blood of those whom "false, fleeting, perjur'd Clarence slew on the field at Tewkesbury."

Another name intimately associated with English history is that of Gloucester, now a busy but agreeable port at the mouth of the Severn. There was no battle here, but in 1643 the town held out successfully against the Royalists. This exhibition of "malignity" was not forgotten by the Stuart adherents, and after the Restoration, the fortifications of Gloucester were utterly destroyed. There is, therefore, little of interest now in the city but its splendid cathedral. Here is buried Edward II, the first Prince of Wales, son of Edward Longshanks, the great castle-builder. Here, too, is a monument to Edward Jenner, the discoverer of vaccination, who was born in the neighboring town of Berkeley. It is a gratification to professional pride, as well as to better sentiments, to find him thus in the company of bishops and kings.

Not far from Gloucester, on the marches of South Wales, is Chepstow, whose extensive castle once guarded the mouth of the Wye and the old Roman road that still serves as a highway of travel across the river into the country beyond. This castle was held for the king in the days of Cromwell, and later served for twenty years as a prison for the regicide Martin. During those years of solitude he composed his epitaph, which may now be read over his grave in the Chepstow church. With rude but impressive nobility, these lines express his justification for his action and, like his dungeon in the ivy-grown, rambling old ruin, "appeal from tyranny to God."

At Monmouth, a short distance up the winding Wye, one comes again to associations of an earlier date. Here in 1388 was born Prince Hal, Falstaff's merry royal comrade, the hero of our finest historical drama, who later, as Henry V, conquered France and set a French princess beside him on the throne of England. The room where he was born is still shown among the scanty fragments of Monmouth Castle, and his statue, much worn and obliterated by time and weather, occupies a prominent place on the front of the town hall. Another character indelibly associated with Monmouth is that of Geoffrey, the imaginative chronicler of the twelfth century, whose romancing records, though so full of fable, constitute our most valuable information of what the history of his time ought to have been. The river Monnow, which here flows into the Wye and gives the town its name, is spanned by a bridge that resembles those at Bruges and looks as if it had been transported out of medieval Europe. Gray called Monmouth "the delight of the eye and the very seat of pleasure," and indeed it is to-day perhaps the most picturesque of English border-towns and a center for many fascinating excursions. One of the most charming of these is to Raglan, on the whole the most perfect and beautiful of ruined English castles. Like Chepstow, it was a seat of the Earls of Worcester, later Dukes of Beaufort, and, like Chepstow, was held by them for Charles I. In fact, Raglan was the last Royalist stronghold to be captured by the Parliamentary troops, who wreaked their vengeance by undermining and blowing up its beautiful moated Cæsar tower, which as a result now resembles the *gesprengte Turm* at Heidelberg. Partly perhaps in remembrance of its loyalty, partly no doubt on account of its charm and beauty of environment, it was visited after the Restoration by Charles II, whose apartments, fronting on the lovely Fountain Court, constitute the finest part of the ruin. If one could visit but two castles in England, Raglan should surely be one of them.

A little further up the Wye from Monmouth is Ross, chiefly familiar to us from Pope's verses to John Kyrle, the "Man of Ross," who became an eminent philanthropist on five hundred pounds a year. Judging by professional incomes of the present day, this should not have been so difficult a task, especially since money in those times, like George Washington's dollar, "went farther than it does nowadays." Whatever the benefit of Kyrle's philanthropy may have been to his contemporaries, he is chiefly blessed by the present generation for having planted two centuries ago the elm trees whose vigorous maturity now shades the wide churchyard of Ross. Among many quaint memorials in this quiet "God's acre" is one in Latin on the tomb of Richard Panter, who departed this life in 1733, which in spite of its uncanonical and inaccurate meter and rhyme, seems to have a touch of satirical dignity and distinction that makes it almost classic:

> "Animula vagula blandula,
> Hospes comesque corporis,
> Quae nunc abibis in loca
> Pallidula rigida nudula,
> Nec ut soles dabis jocos."

It is to be hoped that these lines were intended not to cast aspersions on the deceased Panter for unseemly habitual merriment, but merely as a mournful comment on his customary cheerful Christian temper. Not far from this monument is another, a simple cross erected in 1637 to mark the burial in a common grave of 315 victims of the plague, and bearing in addition the pathetically fervent inscription, "Libera nos, Domine!" It is hard for us to realize now the poignant terror of these ancient epidemic scourges. One of the interesting preventive measures taken in the seventeenth and eighteenth centuries against the "pestilence that walketh in darkness" was the custom of whitewashing the interiors of churches throughout. As a procedure of antiseptic cleanliness this may have had some slight efficacy, but incidentally it rendered the much more valuable service of preserving to posterity a wealth of carving and frescoes which might hardly have escaped the destructive energies of the Georgian era but for the successive layers of obscuring whitewash, the removal of which has afforded occupation for the zeal of a more artistic modern generation of restorers. The church at Ross affords admirable example of beauties thus long concealed and now once more brought to light. Of the town itself there is little to be said except that it is old and somewhat shabby and evidently having a rather hard time trying to live up to its reputation and environment. Its situation is almost ideal — on the concave bank of one of the numerous bends or horseshoes from which the "devious Vaga" derives its name. On the opposite, convex bank or tongue, which broadens out into a richly green, low-lying, fertile meadow, stand the ruins of Wilton Castle, insignificant in itself, but interesting to us as having once belonged to Thomas Guy, the founder of Guy's Hospital in London, to which institution he bequeathed the property. The castle has now passed into other hands, and its walls, overgrown with reddening woodbine, form the chief attraction of a handsome private estate. Just beyond the castle, the Wye is crossed by Wilton Bridge, on which is a rather unusual four-way vertical sundial, with the admonishing motto:

> "Esteem thy precious time
> Which pass so swift away,
> Prepare then for Eternitie,
> And do not make delay."

Doubtless in a less critical age this laudable injunction lost none of its force from the grammatical license of its second or the anticlimax of its fourth line.

Still further up the Wye is Hereford, a very pleasant and prosperous city, and chief town of the county of the same name, "which for wheat, wool, and water yieldeth to no shire in England." It also manufactures much cider and a seductive drink called perry, which we did not sample. There is a fine cathedral at Hereford, and several interesting old churches, and in the outskirts of the town a hospital or almshouse for old soldiers and other pensioners, founded in 1614 on the site of a former priory of Black Friars. In the garden are still some ruins of this priory, among them a well-preserved preaching-cross, from which the monks used to hold open-air evangelistic services, somewhat in the fashion of the Salvation Army of to-day. In one of the suburbs on the opposite side of the town is the so-called White Cross, erected in 1349 to commemorate the staying of the Black Death of that year, another of the medieval pestilences which seem to have swept this region with particular severity. Of the later civil wars Hereford, though always loyal to the Crown, seems to retain scarcely any trace. It is associated with the Stuarts in another way, however, as the birthplace of Nell Gwynne, the famous beauty and actress, and favorite of Charles II. In an obscure lane, and on the very wall of the bishop's garden, too, is a brass tablet marking the

site of the cottage where she was born, and recording her as the "founder of Chelsea Hospital and mother of first Duke of St. Albans." This somewhat tactless addition cannot help reminding one of the story how one day, when Charles had refused her request to ennoble their child, she promptly suspended the infant by the heels over the balustrade of the balcony on which they were sitting, and remarked, "Over he goes if you don't provide for him." "No," said Charles, "don't hurt the Duke of St. Albans." And so the royal peerage was established. Perhaps this episode was quite in accord with the character of the monarch "who never said a foolish thing and never did a wise one." At any rate, one cannot help thinking more leniently of him for his dying injunction to "take care of poor Nell." She is buried at St. Martin's-in-the-Fields, in London, among many with better reputations and less virtue than herself.

At Hereford we left the valley of the Wye and struck across country to Worcester. This journey took us through Malvern, famous as a health-resort on account of its mineral springs, but more interesting as the site of the monastery where William Langland wrote his "Vision of Piers Plowman." Unfortunately it was a dismal, rainy day when we traversed the scene, very different from the "May mornynge in Malverne hilles" on which the tale begins. Beyond the hills one comes again to the Severn valley and to Worcester, chiefly famous for the manufacture of the somewhat miscellaneous staples: porcelain, gloves and Worcestershire sauce. There is an architecturally interesting cathedral here, in which, by the way, we noted the epitaph of one Richard Solly, "who was seised with an inflammation of the intestines which in five days terminated his life," evidently a case of fulminating perforative appendicitis with general peritonitis. Worcester also has its association with the Stuarts, to whom it was always loyal. There is still standing in excellent preservation a fine old Elizabethan mansion, called the Commandery, from its earlier association as a hospice or infirmary of the Knights Templar, in which Charles I stayed on a visit to the town. This same house Charles II later made his headquarters for a time in 1651; here he spent the night before the battle of Worcester; and from an upper window witnessed the defeat of his troops in that memorable engagement. From that same window one can still overlook the battlefield, and one is shown the very trap-door through which the young monarch made his precipitate escape on the approach of Cromwell. There is enough old oak carving and furniture in this house to drive an antiquarian into a frenzy of admiration.

The journey from Worcester to Shrewsbury takes one back again to Plantagenet times, for here in 1403 Henry Bolingbroke, father of Prince Harry of Monmouth, won his great victory over the Earl of Northumberland. It was this battle in which Harry Hotspur was killed and in which Falstaff fought his "long hour by Shrewsbury clock." The abbey church looks much the same as it must have on that occasion, though its clock is modern, and probably a better timepiece. The town itself, whose name is happily mitigated from that of Scrobbesbyrig, in which it used to rejoice in Saxon times, contains a number of old houses, in one of which Henry Tudor, Earl of Richmond, is said to have passed the night before the battle of Bosworth, which, in 1485, terminated the Wars of the Roses and made him Henry VII of England. There is also in Shrewsbury the ancient and celebrated grammar school which in different ages has harbored two such diverse geniuses as Sir Philip Sidney and Charles Darwin.

Last and in some respects most interesting of these border-towns is Chester, which ever since Roman days has been an outpost at the Welsh frontier on the north, as Chepstow is at the south. As capital of Cheshire one associates it chiefly with cats and cheese; the latter is delectable, but the former, though numerous and amiable, seem to have lost their traditional grin. Perhaps the most distinctive characteristics of Chester, which give so many Americans their first impression of England, are its old frame houses, with their arcades and projecting upper stories, and its town-walls, the only ones in the country that remain complete, though perhaps not so interesting as those of York or of Conway. One can make the entire circuit of the city walking on top of them, and see much of interest in the journey. From the Phœnix Tower, at one angle of the walls, Charles I watched the defeat of his army at Rowton Moor, on Sept. 24, 1645, and the tower now contains a museum of relics associated with him and with the battle. The town itself held out for the king for another year, but finally surrendered to the Parliamentary besiegers. Chester had a former reputation for endurance in a losing cause, for at the time of the Conquest it was the last English city to yield to William the Norman. A little further along the walls, near the river Dee, is the Water Tower, once washed by the tide and used as a mooring-place for ships, now left high and dry by the deposit of silt and the damming of the river higher up. Near this Water Tower have been discovered a number of stumps of columns from some Roman structure on this site, which resemble gigantic mushrooms as one looks down on them from above. Still further on, by the Bridgegate, one obtains splendid views of town and river, and can go down thence to the ruins of St. John's Priory, whose crumbling red sandstone, sunk deep in ivy, makes a picture for the eye and the imagination as well. Chester Cathedral, too, is a study for the artist as well as a first lesson to the beginner in ecclesiastical architecture. Among its many monuments to soldiers, one wonders which bears the name remembered by the

"Widow in sleepy Chester
Who mourns for her only son";

but Subadar Prag Tewarri is not there to tell. Several Cheshire regiments were sent to America in the "good old colony days," and the names of Louisburg and Quebec are conspicuous on their records and standards. Some of these tattered old flags were carried at Bunker Hill, but the name of that battle is not mentioned. Among so many warriors, it is pleasant to find the peaceful grave of Ralph Higden, the monk who is supposed to have written "Everyman." It is to be hoped that the "Dethe" which summoned him proved less terrible than the grinning skeleton of the old miracle.

From Chester to Liverpool is like a step from the Middle Ages back to the familiar atmosphere of our own day and generation. The busy streets, the smoke-grimed buildings, the sharp contrasts of wealth and poverty, all bear evidence of the evils of our civilisation as well as of the good that has grown out of them. As a city, modern Liverpool is dominated by the memory of Gladstone, whose statue before St. George's Hall, like that in the Strand in London, recalls vividly the bristling, indomitable figure that so long stood at the head of the greatest nation in Europe. If popular government has done nothing else, it has at least developed great democratic leaders from the days of Oliver Cromwell to our own.

The return to Liverpool marks the end of our happy and profitable holiday, and recalls professional duties and interests. We sail to-morrow, and shall soon "leave old England on our lee." In our brief time at Liverpool we have been able to make only a hurried inspection of some of the medical institutions in the city, chiefly those connected with Liverpool University, whose buildings form a huge group of structures, not so extensive as the immense Imperial Institute at London, but reminding one of it, nevertheless. There is a large general hospital, a dental hospital, a lying-in hospital, a skin hospital, a school of hygiene and splendid laboratories, among them notably those of the School of Tropical Medicine. It is impressive to visit such an institution, and consider the battle it is fighting for the sordid dwellers in the slums which surround it and for all mankind as well. The spirit of that conflict speaks eloquently in the tablet of dedication on one of the buildings:

"To the Glory of God, in the knowledge of Whom are the steps of human progress, and to the memory of William and Catharine Johnston, now beyond the shadows of time in life eternal, one of their sons erected these laboratories for the search after the mystery of life in health and sickness, and for the alleviation and prevention of suffering."

Such words are a noble reminder of the duties of a profession whose inspiration is the same wherever there is human welfare to be served. One feels the readier to return and labor humbly at home for having met and known some of those who are forwarding the same great cause beyond the seas.

MEDICUS PEREGRINUS.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 8, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	1
Chicago	563	173	Pittsfield	14	3
Philadelphia	—	—	Brookline	4	—
St. Louis	—	—	Gloucester	7	3
Baltimore	—	—	North Adams	14	4
Cleveland	—	—	Northampton	8	1
Buffalo	—	—	Chicopee	6	1
Pittsburg	—	—	Medford	10	2
Cincinnati	—	—	Beverly	7	2
Milwaukee	—	—	Leominster	3	1
Washington	—	—	Hyde Park	4	1
Providence	—	—	Melrose	3	0
Boston	230	72	Newburyport	4	2
Worcester	41	17	Revere	6	1
Fall River	46	28	Westfield	—	—
Cambridge	27	13	Woburn	5	2
Lowell	43	20	Peabody	—	—
New Bedford	44	22	Marlboro	5	2
Lynn	31	7	Attleboro	5	2
Springfield	23	16	Adams	2	2
Lawrence	33	13	Clinton	—	—
Somerville	19	2	Gardner	7	3
Brockton	16	6	Milford	—	—
Holyoke	13	6	Watertown	10	4
Malden	9	5	Plymouth	—	—
Chelsea	14	4	Southbridge	—	—
Newton	4	1	Weymouth	6	3
Salem	10	7	Framingham	—	—
Haverhill	15	8	Wakefield	—	—
Fitchburg	—	—	Webster	0	—
Everett	8	1	Arlington	4	—
Quincy	—	—	Greenfield	3	1
Taunton	22	9			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 5, 1910.

BANKS, CHARLES E., surgeon. Directed to assume temporary charge at Portland (Quarantine), Me., during the absence of Surgeon J. M. Eager. Oct. 1, 1910.

EAGER, J. M., surgeon. Directed to proceed to Naples, Italy, upon special temporary duty. Oct. 1, 1910.

NYDEGGER, J. A., surgeon. Detailed to represent the Service at the meeting of the Medical Society of the State of Pennsylvania, to be held in Pittsburg, Pa., Oct. 4-6, 1910. Sept. 29, 1910.

LAVINDER, C. H., passed assistant surgeon. Granted seven days' leave of absence from Oct. 1, 1910.

GRUBBS, S. B., passed assistant surgeon. Granted fourteen days' leave of absence from Sept. 25, 1910, on account of sickness.

MCCLINTIC, T. B., passed assistant surgeon. Granted seven days' leave of absence from Sept. 28, 1910, under paragraph 191, Service Regulations.

RUCKER, W. C., passed assistant surgeon. Directed to proceed to Elizabeth, N. J., upon special temporary duty. Sept. 28, 1910. Leave of absence for ten days from Sept. 14, 1910, amended to read seven days from Sept. 15, 1910.

PORTER, JOSEPH Y., quarantine inspector. Leave of absence for thirty days from Sept. 20, 1910, revoked.

BEAN, L. C., acting assistant surgeon. Granted five days' leave of absence from Oct. 1, 1910.

GUSTETTER, A. L., acting assistant surgeon. Granted six days' leave of absence from Oct. 1, 1910.

HALLETT, E. B., acting assistant surgeon. Granted seven days' leave of absence from Oct. 1, 1910.

MCDANIEL, S. E., acting assistant surgeon. Granted fourteen days' leave of absence from Oct. 18, 1910.

MCLARTY, A. A., acting assistant surgeon. Granted seven days' leave of absence from Oct. 3, 1910.

SMALL, E. M., acting assistant surgeon. Granted eight days' leave of absence from Oct. 3, 1910.

TAPPAN, J. W., acting assistant surgeon. Granted twenty days' leave of absence from Oct. 1, 1910.

TOWNSEND, F., acting assistant surgeon. Granted four days' leave of absence from Oct. 6, 1910.

WETMORE, W. O., acting assistant surgeon. Granted one day's leave, Sept. 19, 1910, under paragraph 210, Service Regulations.

KEEN, W. H., pharmacist. Granted seven days' leave of absence from Sept. 19, 1910, under paragraph 210, Service Regulations.

OTT, C. R., pharmacist. Granted twenty-nine days' leave of absence from Oct. 11, 1910.

BOARD CONVENED.

Board of medical officers convened to meet at Stapleton, N. Y., Oct. 7, 1910, for the purpose of making a physical examination of a cadet of the United States Revenue Cutter Service. Detail for the board: Surgeon H. W. Austin, chairman; Passed Assistant Surgeon W. A. Korn, recorder. Oct. 4, 1910.

SOCIETY NOTICES.

EIGHTH MASSACHUSETTS STATE CONFERENCE OF CHARITIES. — The eighth conference will be held at Fitchburg, on Oct. 26, 27 and 28.

PARKER B. FIELD,
279 TREMONT ST., Boston. *Secretary.*

SUFFOLK DISTRICT MEDICAL SOCIETY. — Stated meeting, Saturday, Oct. 29, at 8.15 P.M. "What Medical Societies can do for the Health of the People." Paper: By Mr. John Ritchie, Jr. (For two years member of the Boston Board of Health.) Discussion: Formal discussion by invited guests will be omitted; instead, it is hoped that there will be free general discussion by the members of the Society. Business: Election of Nominating Committee. Revision of the By-Laws of Suffolk District Medical Society. Refreshments after the meeting.

GEO. H. MONKS, *President.* DAVID D. SCANNELL, *Secretary.*

RECENT DEATHS.

GALLISON, HENRY HAMMOND, M.D., M.M.S.S., died in Cambridge, Oct. 12, 1910, aged sixty years.

DOWLING, CHARLES JOSEPH, M.D., M.M.S.S., died in Springfield, Sept. 26, 1910, aged thirty years.

DR. DAVID P. BUTLER, who died recently of endocarditis, at Rutland, Mass., was born in Boston in 1873, the son of a physician. He received his medical degree from Boston University in 1898, and for some years had been in charge of the Rutland Cottage Sanatorium for Tuberculosis.

DR. JOHN VEITCH SHOEMAKER, who died of nephritis, at Philadelphia, on Oct. 11, was born in Chambersburg, Pa., on March 18, 1852. He graduated from Dickinson College in 1872 and from the Jefferson Medical College in 1874. He was for a time demonstrator of anatomy at the latter institution, and in 1876 became lecturer on anatomy and diseases of the skin at the Philadelphia School of Anatomy. Later he was for some years senior physician to the Medico-Chirurgical Hospital, Philadelphia, and surgeon-general of the National Guard of Philadelphia. Professionally he was perhaps best known for his numerous contributions on dermatology and therapeutics to various medical journals. He is survived by his widow.

DR. DE FOREST WILLARD, who died on Oct. 15 at Lansdowne, a suburb of Philadelphia, was born in Hartford, Conn., in 1846. He was for many years professor of orthopedic surgery at the University of Pennsylvania, and at one time president of the American Orthopedic Society and of the American Surgical Society.

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department, Hygienic Laboratory, Bulletin No. 65. Facts and Problems of Rabies. By A. M. Stimson.

Treasury Department, Hygienic Laboratory, Bulletin No. 69. The Effects of a Restricted Diet and of Various Diets upon the Resistance of Animals to Certain Poisons. By Reid Hunt.

Treasury Department, Public Health Bulletin No. 34. Maritime Quarantine. By Leland E. Coper.

Treasury Department, Hygienic Laboratory, Bulletin No. 66. 1. The Influence of Age and Temperature on the Potency of Diphtheria Antitoxin. By John F. Anderson. 2. An Organism Isolated from Water, Agglutinated by the Serum of Typhoid Fever Patients. By W. H. Frost. 3. Some Considerations on Colorimetry and a New Colorimeter. By Norman Roberts. 4. A Gas Generator in Four Forms for Laboratory and Technical Use. By Norman Roberts.

Original Articles.

CHOLELITHIASIS.

BY RICHARD P. CHASE, M.D., BOSTON.

I HAVE realized for some time that, of the patients referred to me with digestive disturbances, a considerable per cent of them, comparatively, have gall-bladder affections, most often gallstones. So on looking over my records I was not surprised to find that in every one hundred patients there were from five to nine whose symptoms were attributable to cholelithiasis. I am of the impression that I find this condition as often, perhaps more often than any other, the cause of secondary digestive symptoms. Since about 70% of my patients are referred by physicians, and the balance of them have usually been treated by several physicians before coming to me, I have come to the conclusion that cholelithiasis is more often mistaken for primary digestive diseases by the general physician than is the case with any other organic disease. It is not, of course, the typical cases of gallstones that are mistaken, but those cases lacking one or more of the usual symptoms upon which reliance is placed in diagnosis. As in peptic ulcer, it is usually hemorrhage that is wanting, so in gallstone disease we find it is usually jaundice. I have arrived at this conclusion because, of the cases referred to me, jaundice has been observed in less than 5% of them. Since it is the absence of this symptom that seems to be the chief stumbling in diagnosis, it occurs to me, and, in fact, I have been quite convinced through various experiences with physicians relating to this feature, that the very large per cent of gallstone cases not presenting the symptom of jaundice is far from being fully realized. Furthermore, for the foregoing reason, it follows that the very common occurrence of cholelithiasis is not duly recognised.

Now, of all autopsies, gallstones are found in about 7%, — Moynihan says approximately 10%, — while in autopsies of persons over sixty years of age they are encountered in 25%, or, in other figures, one person in every four over sixty years old has gallstones. It is evident, then, that cholelithisis is of very common occurrence. More common, is it not, than the reader realized? Just what per cent of patients having gallstones present symptoms, it is difficult to determine. We do know, however, that when symptoms occur it is most often between the thirtieth and fiftieth year of life. We also know that gallstones are three or four times more common in women than in men. A full realization of these facts, combined with the knowledge that the symptoms arising from gallstones are, in the main, of a digestive type, will, I believe, lead one to more often think of this condition, and to think of it as a common cause of digestive disturbances. Moreover, a realization of the fact that jaundice occurs in probably less than one third of the cases of gallstones will render one far less dependent on this symptom in diagnosis than appears to be the case at the present time.

Moynihan says: "Patients refer their trouble to the stomach and not to the liver. It requires the unmistakable evidence of jaundice to associate the suffering with gallstones in the minds of all patients and of not a few medical men, yet jaundice is an infrequent and inconstant symptom of gallstones." Richardson says: "Many practitioners to-day believe that jaundice is essential to the diagnosis of gallstones. In the great majority of cases jaundice is anatomically impossible."

As stated, the symptoms of cholelithiasis are, in the main, those of "indigestion," and it is for this reason that these cases are referred to the internist for diagnosis or treatment. Before referring to the gastric symptoms and findings, let me say a few words regarding some of the other symptoms of cholelithiasis.

Colic is, to the patient and physician, the most prominent symptom; its character is generally well known, though modifications in its severity, duration and location may at times puzzle one. Many physicians seem to believe that the pain is located in the gall-bladder region and only there, but very often (Ewald says in most cases) the pain is referred to the stomach; it usually extends through to the back, and, according to Murphy, "in seven cases out of ten it is referred to the right subscapular region," occasionally to the left. Besides biliary colic, it should be understood that there are very few conditions which cause recurrent attacks of violent pain in the region of the gall bladder or in the epigastrium. Mixter says: "It is important to recognize the fact that recurrent attacks of pain in the region of the liver almost always mean gallstones. If one goes on that idea, and with a history of frequent recurrent attacks of pain makes an exploration, it is very seldom that he goes wrong." Pain frequently, and tenderness of the liver almost always, follow the colic, and in many cases the liver is found enlarged, at least for a few days; occasionally it is found constantly enlarged.

Regarding the tender area on the right side behind, on a level with the twelfth dorsal vertebra, and extending at times to the posterior axillary line, described by Boas.[1] Moynihan says: "I consider the search for this tender area a necessary part of the examination. . . . It is undoubtedly a sign of great value." Rarely, it seems, can the gall bladder be palpated. I was surprised at Moynihan's statement that "I have once been able to feel a gall bladder filled with stones and at operation to verify my observation." I had thought that palpation of the gall bladder was of more frequent occurrence than the above statement would seem to indicate. In one such case I recall, the patient could feel the tumor, and she stated that it always swelled at night, — probably due to its increased bile content at this time. The gall bladder contained over one hundred stones and several ounces of mucopurulent fluid.

[1] Münch. med. Wochenschr., April 18, p. 604.

JAUNDICE.

Brewer states that jaundice was absent in from 80 to 90% of all his operative cases of gallstones. Murphy has found this symptom present in only 14% of his cases at any time during the course of the disease. Different writers give various figures. However, it is very evident that this symptom is not observed as often as is generally believed. Since the symptom is absent in so many cases, it loses much of its diagnostic value. With the progress in internal medicine, we should be well past that point where it was once considered necessary to delay the diagnosis of gallstones until the appearance of jaundice, the diagnosis of peptic ulcer until hematemesis occurred, and the diagnosis of gastric cancer until the appearance of the cardinal symptoms.

Jaundice when present usually occurs only after one to several days from the beginning of the colic, and in many cases may then be detected only by careful examination of the sclera, the urine and the feces; in some cases it does not last longer than forty-eight to seventy-two hours. This symptom is certainly often overlooked. In many cases the colic subsides after the administration of morphine, so that by the following day the patient feels practically recovered, and the physician may not see the patient a second time, thereby missing his best opportunity of obtaining a history, of palpating for tenderness and enlarged liver, etc. He has quit the case agreeing perhaps with the patient's own diagnosis, "acute indigestion" due to some article of diet which the patient is usually prepared to name. If the patient has had stomach trouble in the past and is subject to similar attacks, the diagnosis may seem all the more plausible. With a recurrence of the attack, which comes sooner or later, unless jaundice happens to be detected, the same diagnosis is probably again made. Thus the case goes on; if stomach symptoms are present between attacks, the patient is treated for the same until the physician at length discouraged with his lack of success refers the patient to an internist, or, as often happens, the patient takes matters in her own hands and seeks one.

When the patient reaches the internist, he, or more often she, is subjected to a careful history and physicial examination. The history alone is usually sufficient to direct one to the probable diagnosis. Remember that on the internist's history blank there should always be the word "colic," and that questions regarding the same should be asked. The internist knows that the forty or more simple articles of diet mentioned by the patient as the causes of her attacks do not as a rule in any digestive disorders cause sufficient epigastric pain to necessitate the use of morphine, hence he thinks of other causes. Herein he has an advantage over the general practitioner. But to prove the presence or absence of gastric disease, the stomach must be examined. Dr. Richardson says: "The distinction between gallstones and gastric diseases is chiefly important because under a wrong diagnosis of organic disease we may operate uselessly, as in simple dyspepsia, gastralgia, atony, gastritis and the like. On the other hand, we may, under a wrong diagnosis of functional disturbance, withhold an imperative operation for gastric cancer, ulcer, strictured pylorus or gallstones."

Such distinction can be made only by careful observation of the patient, in some cases for a month or six weeks' time, and by the intelligent employment of all the known methods of gastric examination. Besides differentiating from gallstones the various gastric diseases mentioned, it is also necessary to determine the gastric conditions accompanying gallstones, and particularly in those patients declining operation, that proper treatment for both conditions may be administered.

Some patients with gallstones have digestive symptoms only during attacks of colic and for a few days thereafter; others have them both with and between attacks. In the latter cases the symptoms tend to increase in severity as time goes on.

STOMACH FINDINGS.

Immediately following an attack of biliary colic one most often finds a diminution or absence of HCl, and also that the stomach does not empty itself in the normal length of time. These findings show that both the secretory and motor functions of the stomach are impaired. In many cases after a few days or weeks these functions are restored to the normal, yet in some cases several weeks of dietetic, medicinal and mechanical treatment are necessary to restore them. In many cases several weeks after an attack of colic we find the stomach normal, or possibly an occasional hyperchlorhydria; on the other hand, we not infrequently find true cases of secondary chronic gastritis, with the absence of HCl and other usual findings. Frequently repeated attacks of colic, with inflammation in and about the gall bladder, probably most often brings about this condition through interference with the blood supply of the stomach. Adhesions from the gall bladder to the pylorus at times produce severe cases of gastric dilatation. Thus it is seen that various gastric conditions accompany cholelithiasis. In most cases removal of the gallstones, the breaking up of adhesions, etc., overcome all symptoms, so that the medical treatment of these various conditions becomes necessary only in those cases declining operation. The per cent of patients, however, declining operation for their gallstones is a pretty large one. In some cases of gastritis accompanying gallstones, the condition may be entirely overcome by medical treatment, and lesser disturbances are more quickly and more easily relieved. Proper treatment directly following attacks of colic undoubtedly prevents the development of many of these troublesome digestive disturbances.

Lavage of the stomach is one of the best methods by which to overcome recurrent vomiting, so annoying and, in some cases, so threatening to the patient's life. Lavage at times will stop biliary colic as well as morphine, and it is the

best of methods in treating gastritis, atony and dilatation. The rules for the dietetic, hygienic and medicinal treatment are much the same as those that govern the treatment of like conditions due to other causes.

In a differential diagnosis, besides the gastric conditions already mentioned, we have particularly to consider gastric crises, renal colic and Dietl's crises, appendicitis in its various forms, pancreatitis, angina pectoris, affections of the right lung and pleura, and other diseases of the liver.

The average case of cholelithiaisis is not difficult of diagnosis, yet in some cases a differential diagnosis is extremely difficult and at times impossible by medical means. In some patients with apparently clear symptoms of gallstones, no stones are found; in other patients gallstones are found as the cause of trouble where least expected, but these are the exceptional cases.

We should not forget that there are many persons who have gallstones and yet have never presented the usual symptoms. It is without doubt among this class of patients that we should seek the cause of many of the obscure reflex gastric conditions.

TREATMENT.

First and foremost it should be understood that stones in the gall bladder probably cannot be dissolved by the administration of medicine. Certain experiments have yielded just sufficient results to lead the hopeful to believe that time and perseverance in the use of certain agents may accomplish this desired result, but abundance of clinical experience fails to prove that such is the case. We cannot in any case guarantee to ward off or delay an attack of colic, yet in many cases it certainly seems as if such result is attained, as there is no recurrence for years. Confinement to bed after an attack of colic until inflammatory conditions have subsided should be insisted upon. Kolisch believes that by careful attention to diet, medication, etc., and abstinence from sports and other forms of violent exercise for one year after the colic, latency of gallstone disease is frequently obtained. As to medicinal agents for the gall-bladder conditions and the usual digestive disturbances, I know of none better than some such combination as that recommended by Billings, as follows:

℞. Sodii Salicylatis,	1.0
Sodii Phosphatis,	2.0
Sodii Sulphatis Exsic.,	6.0

M. Sig. 3ss to 3j in glass of hot water thirty minutes before meals.

The general attitude of both physicians and surgeons regarding operative procedure in most cases of cholelithiasis is too well fixed to warrant much discussion. Those physicians, however, who feel it their duty to advise operation in every case as soon as the diagnosis is made, and who have not done so, may find some consolation in the statement by Richardson: "I have not a few patients in whom I know gallstones to exist, and in whose cases I have not as yet advised operation. Knowing, however, to a certainty that stones are present in the gall bladder, knowing also the precise anatomical conditions present, I am prepared to advise operation the moment the first symptom of impaction appears, unless this impaction should be of the briefest and most trivial character."

REFERENCES.

Brewer: Trans. Cong. Am. Phys. and Surg., 1903.
Ewald: *Ibid.*
Billings: Modern Clinical Medicine, 1906 edition.
Moynihan: Gallstones and their Surgical Treatment, 1904.
Boas: *Ibid.*
Murphy: *Ibid.*
Mixter: Communications of The Massachusetts Medical Society, 1906.
Richardson: *Ibid.*
Kolisch: Med. Klin., Berlin, April 5, 1910.

FURTHER OBSERVATIONS ON THE WASSERMANN REACTION FOR SYPHILIS.

BY WM. P. BOARDMAN, M.D., BOSTON.

SINCE the first publication concerning the so-called Wassermann complement fixation test for syphilis in 1906, the test has been performed by many investigators on thousands of cases of syphilis, and in other diseases of all sorts, so that a fairly conclusive idea of its limitations in certain directions may now be had.

In spite of much careful scientific work on the subject, the theory upon which the reaction is based is still obscure.

Though many modifications have been suggested to simplify the method, and though a majority of these give a higher percentage of positive results in syphilitic cases, the most of them have also been found to give positive results in many non-syphilitic cases and are, therefore, useless. In regard to the suggestion of H. Schlimpert,[1] which is also used by Noguchi in his book on serum diagnosis, and according to which the reagents are used in small amounts, the method remaining otherwise the same as in the original Wassermann reaction, this scheme has a distinct advantage in that it uses less blood from the patient and less guinea pig's blood. In regard to Noguchi's own modification, using a human-rabbit serum for amboceptor instead of the sheep-rabbit of the Wassermann test, and small amounts of the patient's serum without inactivation, enough has already been done with this to show that it, like the many other modifications, gives a higher percentage of positive results in syphilitics, but, like the others (though not nearly as often), it gives occasional positive results in non-syphilitics.[2] I have had no opportunity to try this test except in about twenty-five cases, and in these it gave the same results as the Wassermann; except in one case of a perforating ulcer of the foot, in which the Noguchi was positive and the Wassermann negative. But this series is obviously too small to be the basis of any personal conclusions.

My own results with the Wassermann reaction, based on a little over 500 cases, are with the original Wassermann technic except that I used an

[1] Deut. Med. Wochenschr., vol. xxxv, no. 32, p. 1386.
[2] Fox: Jour. Cutan. Dis., vol. xxvii, p. 338. Kaplan: Jour. Med. Sci., vol. xxxix, no. 1, p. 82.

alcoholic extract of normal liver as antigen. The blood in practically every case was taken from the patient's ear (about 1.5 to 2 ccm.), which was found to be the simplest method for obtaining blood in the average case.

I have tabulated all my results as positive or negative, classifying all doubtful or slight reactions as negative, so that my figures show a rather low percentage of positive results, but I think I have very seldom erred in reporting a positive reaction in a non-syphilitic case, as one is liable to do if he does not adhere fairly closely to this classification.

I have arranged the following table to show in a general way the percentage of positive reactions obtained by some other investigator in the various broad classes, making possible a comparison of these figures with my own.

	Cases collected by Noguchi.	Noguchi's own cases.	Fox.	Kaplan.	König.	Reinhart.	Jonionek and Mejrowsky.	Bayley.	Basset-Smith.	McIntosh.	Hauck.	Knopfelmacher.	Total.
Primary:													
Total cases,	416	23	7	138	9	144	30	22	..	27	...	..	816
Positive,	291	17	7	122	7	83	20	17	..	20	...	..	579
Negative,	125	6	0	16	2	61	10	5	..	7	...	..	237
%+	70	74	100	88	77.7	57.6	66.6	77	..	74	...	..	70.9
Secondary:													
Total cases,	1,605	79	37	281	42	400	93	23	57	92	...	..	2,801
+	1,434	69	36	242	42	386	90	21	55	78	...	..	2,531
−	171	10	1	39	0	14	3	2	2	14	...	..	270
%+	89.3	87.4	97	86	100	97	97	91	96	85	...	..	88
Tertiary:													
Total cases,	581	65	32	191	12	97	48	61	7	17	...	..	1,111
+	464	52	23	140	9	87	42	52	4	10	...	..	883
−	117	13	9	51	3	10	6	9	3	7	...	..	228
%+	79.9	80	72	73	75	89	87.5	85	57	59	...	..	79.5
Latent:													
Total cases,	2,094	59	54	79	23	170	434	..	7	...	...	..	2,820
+	1,014	37	25	41	13	112	208	..	1	...	...	..	1,451
−	1,080	22	29	38	10	58	226	..	6	...	...	..	1,469
%+	48	63	44	52	56	66	48	..	14	...	...	..	49.7
Tabes:													
Total cases,	216	18	3	205	3	32	19	..	4	...	...	..	500
+	135	8	3	125	2	27	10	..	2	...	...	..	312
−	81	10	0	80	1	5	9	..	2	...	...	..	188
%+	62.5	44	100	61	66.6	84	53	Smith	50	...	...	..	62.4
General paresis:													
Total cases,	498	...	...	61	....	....	7	10	..	7	17	..	600
+	439	...	...	40	....	....	6	9	..	7	17	..	518
−	59	...	...	21	....	....	1	1	..	0	0	..	82
%+	88	...	...	65.5	....	....	86	90	..	100	100	..	86.3
Congenital:													
Total cases,	125	...	1	20	....	....	18	..	..	4	...	33	201
+	118	...	1	18	....	....	16	..	..	2	...	29	184
−	7	...	0	2	....	....	2	..	..	2	...	4	17
%+	94.4	...	100	90	....	....	89	..	..	50	...	88	91.5

Of syphilitic cases I have examined the blood in 267 cases, including parasyphilitic and latent cases.

Of these, 23 were primary lesions showing no secondary manifestations. Eleven of these, or 49%, were positive. As has been very generally found by other investigators, most of the positive results were found in the cases of long duration, — over three weeks, — the reaction sometimes not appearing until the fifth or sixth week, and even later in a few cases. My percentage is much lower than that shown in the table of collected cases from the literature, and I account for this by the fact that many investigators have classified among primary lesions those in which the chancre is still active, but in which secondary manifestations have already appeared; such cases I have classed among the secondary cases. My results show clearly that in the earlier primary lesions the search for the spirocheta pallida is a much more reliable test, but in the older lesions, especially those in which the chancre has been treated locally, or has nearly or entirely healed over, the spirocheta is very seldom found and it is just at this time that the Wassermann reaction begins to become positive and the patient is getting restless over the long wait for secondary manifestations to appear.

In secondary cases showing lesions at the time of examination I have tried the reaction 59 times on 57 patients, with 49 cases giving a positive and 8 a negative reaction, or 86% positive. Omitting treated cases, there were only 2 negative in the series, giving 98% positive. One of these two was a case showing a macular rash on the forehead and severe headache, both of which cleared up under anti-syphilitic treatment. The other was a beginning secondary eruption which gave a positive reaction a short time later, showing that the antibody is very late in appearing in occasional cases.

In tertiary cases showing manifestations at the time the test was made there were 88 cases, 78 positive and 10 negative, or 88.6% positive.

Among the negative cases 2 were very chronic cases of lesions of the nasal septum which had persisted for years with frequent exacerbations and more or less frequent courses of treatment. One case was a perforating ulcer of the foot diagnosed as syphilitic clinically. Three were cases of cerebral syphilis and one an old case of leukoplakia who also showed a serpiginous tubercular syphilide on the leg, both of which were much benefited by subsequent treatment. The others were all cases which had received considerable antisyphilitic treatment.

In cerebral syphilis, 8 of 11 cases, or 77%, were positive. This is higher than has generally been found by other investigators, whose figures were as low as 16% in one series. I think that this may be due to the fact that some of the cases where the diagnosis was rather uncertain clinically have been classified under the list of cases of doubtful diagnoses in my series which possibly should belong to this class. I have only had 4 cases of spinal syphilis, all of which were positive.

Of latent cases, meaning by this term patients who gave a sure history of syphilis or showed unmistakable scars of syphilis, but no active syphilitic lesions at the time of examination, there were 51; 23, or 45%, of which were positive. This corresponds fairly well with the average found in the literature. The earlier cases, that is, those within three years of the primary infection, were only 23% positive. This includes many cases which had been under long and careful treatment, which accounts for the low percentage. The cases of more than three years' duration, including some very old cases who were undoubtedly completely through with the disease, showed 51% positive results. The literature does not bear out these figures of mine, probably showing that my series is far too small to allow definite conclusions. Of 1,423 early latent cases in the literature, 724, or 51%, were positive, and of 1,164 of the late cases, 534, or 46%, were positive. But in the latent cases much depends on the amount of treatment which has recently been undergone and somewhat on the length of time since the last appearance of symptoms of the disease, so that little inference can be drawn from these general figures.

The congenital cases I examined numbered 17, and all but one were positive, or 95%. This was the fetal blood from the placenta of a syphilitic infant who showed definite syphilitic lesions and a positive test two or three weeks after birth. This supports the view generally held that congenital syphilis will almost invariably give a strong positive reaction, but that at birth we may get a negative result due to the fact that the antibodies have not yet developed in the blood.[1]

In contrast with this, it is curious to see how late in life the positive reaction persists, as when an interstitial keratitis develops. I have examined 9 cases of this disease (generally accepted as being due most always to congenital syphilis), and found 7, or 78%, strongly positive. One of the negatives was in a child who was supposed to be tuberculous and gavé a strong Von Pirquet reaction, and the other in an elderly woman forty-five years of age. Some of the positive cases were in young women seventeen or twenty years of age.

Of tabetics, my series contains but 22 cases, and only 6 of these, or 27%, showed a positive reaction. Several of the others showed a slight or doubtful reaction, but, as elsewhere in my list, I have classed all such cases as negative. The percentage falls much below that obtained by other authors, for which I can find no adequate reason, except that the number of cases may be too few to draw definite conclusions.

I have only had an opportunity to try the test on two cases of general paresis, and both were negative. Both were very early cases, possibly still doubtful in diagnosis, and it is in these early cases that the negative results are most commonly obtained.

The non-syphilitic cases numbered 161 and included nearly all the more common diseases of the skin and internal organs. Taking up those diseases in which occasional positive results have been reported; first is scarlet fever, of which I have examined 9 cases, all negative, though a few of them did show a very slight reaction, especially just following the fall in the temperature. There was no doubt in my mind, however, but that these were not strong enough to be classed as positive results. Seven cases of malignant disease were all negative, including some cases with marked cachexia.

In pulmonary tuberculosis I have had 8 cases, all but one very advanced. Three of these gave a positive reaction, but on analysis one was an Italian who could give no history on account of his inability to talk English, one a colored man from whom the blood was taken at autopsy and whose clinical record showed a very shady past, though no signs of syphilis were found at autopsy, and the third was a young man who had been with the army in Cuba and the Philippines and admitted having gone through several attacks of gonorrhea and chancroid, but denied ever having had a hard chancre or other signs of syphilis. Neither of these three cases gives much support to the statement made by some authors that advanced tuberculosis often gives a positive Wasserman reaction, though it undoubtedly does so in occasional or rare cases. In severe acute infections, including sepsis, pneumonia and typhoid, I have had uniformly negative results, but I have only examined a few such cases.

As regards treatment and its effects on the reaction, I have had very little opportunity to follow cases along to see when the reaction disappeared under treatment, and still less to find out when the reaction appears after cessation of treatment. All I can say is that on the basis of 53 cases which had received from a few days' to several years' treatment, only 2 showed a negative reaction who had received less than two months' treatment, and a few remained positive for several years under more or less constant treatment. The latter were either cerebral or congenital or very intractable cases of other forms.

[1] Wechselmann: Deut. Med. Wochenschr., vol. xxiv, no. 15, p. 665.

In general, the more energetic the treatment, whether with mercury or potassium iodide, the more quickly the reaction becomes negative. After cessation of treatment, the reaction often becomes positive again after a very variable time, most commonly with the recurrence of fresh symptoms of the disease. Though no definite figures are at hand, I am of the opinion that it is well to wait a few months after a long course of treatment before trying the reaction in cases where the question of prognosis and completeness of the cure is being worked out. Even after a several months' wait after cessation of treatment, the negative reaction does not have very much definite value. It seems to me, however, that it is one more point on which to base our conclusions as regards a complete cure when considered with the other points found by history and clinical examinations. Another curious effect of treatment which I have seen in one case and which is mentioned by K. Donath[4] is that in some untreated cases of syphilis which give a negative reaction, ten days' to two weeks' treatment is followed by a positive reaction. My case was one of a perfectly evident syphilitic throat lesion which gave a negative reaction at first; then, after about ten days' treatment, a slight reaction which was not strong enough to call positive, and, a week later, the patient still being under mild mixed treatment, a strong positive reaction was obtained. Donath suggests that this may be comparable to the so-called "*provakatorische*" reaction in primary syphilis by which an injection of mercury during the primary stage of the disease sometimes brings out a syphilitic rash within a day or two.

Of special cases which seem to me worthy of record I would mention one of three weeks' duration which healed up rapidly under local treatment with a mild dusting powder, but showed a strong positive reaction shortly after that. The physician who sent me the case agreed that in spite of no other signs of the disease the lesion might have been a hard chancre on account of my positive finding. In another week the chancre had broken down again and a typical syphilitic roseola was present on the body. I think that I speak fairly when I say that without having this positive reaction the average physician would have told this patient that his trouble was not syphilitic and no longer kept him under observation.

In three cases of enlarged liver, all diagnosed as ordinary cirrhosis, the strong positive reaction led to the diagnosis of syphilitic liver, and all three improved at once under antisyphilitic treatment, which latter would probably not have been instituted had it not been for the positive Wassermann reaction.

The diagnosis of syphilitic orchitis was made through the aid of a positive reaction in another case, and the operation for "sarcoma of the testicle" in this patient's case was indefinitely postponed.

Now as regards the value of a positive reaction: About the only diseases which have been found in the literature to give a positive reaction with any great degree of regularity seem to be frambesia, trypanosomiasis and leprosy, and only very rarely does one find a positive reaction in other conditions outside syphilis. The only exceptions that I have seen mentioned in the literature are occasional cases of advanced tuberculosis, and severe septic conditions just before death, rare cases of scarlatina, especially just following the defervescence, malaria, especially a few days after the chills have ceased, and very rarely malignant disease, especially those showing a high degree of cachexia. Certainly from a clinical standpoint in this locality, with the exception of malignant disease, very few of those cases are liable to cause confusion with syphilis in diagnosis. Even in malignant disease a positive result is so rare that it suggests a possible old latent syphilis in addition, in some of the cases.

I, therefore, maintain that a positive reaction has very definite value and almost invariably means syphilis past or present, and in the earlier stages usually means an active lesion.

In regard to the negative reaction, much less definite conclusions can be drawn. In primary syphilis, where so many cases are negative anyhow, even though the lesion be a month old, the negative reaction has no value, though in the latter cases it may be slightly more to be depended upon than in the earlier ones when taken in connection with the clinical features of the case. In active, untreated, secondary lesions, however, the reaction is positive in such a very high percentage of cases that I think a negative reaction means that the lesions are almost surely non-syphilitic, though perhaps not absolutely so. In progressing tertiary lesions the percentage of positives is so high that we can say that a negative reaction has nearly the same definite value, but in cases of very long standing, such as an old leg ulcer of many years' standing, or an old lesion of the nasal septum, one is very apt to get a negative reaction, so that in these cases it has very little value. But in any case of supposed tertiary syphilis it is better to consider the negative finding in conjunction with the clinical evidence and even resort to the therapeutic test, though, as is well known, this also fails in some of these cases of very long standing. In latent cases the negative reaction by itself has little value, as in primary syphilis, for only about 50% are positive in such cases. But with a very indefinite history and no objective signs of a previous syphilis, it seems to me that a negative reaction is still another help in ruling out the presence of syphilis in a doubtful case.

In supposed congenital cases showing lesions at the time of examination, a negative reaction practically rules out syphilis and is of great value, for nearly every case of congenital syphilis showing lesions will give a strong positive reaction, and this even in spite of considerable treatment.

In general paresis it is generally stated that the reaction is nearly always positive, but most of the figures are drawn from cases in insane hospitals where only advanced cases are to be

[4] Berl. Klin. Wochenschr., vol. xlvi, pp. 2015–2017.

found. Unfortunately, however, in the earlier ones where the diagnosis is still doubtful, the reaction is often negative, so that to depend on a negative reaction here would be quite misleading.

In treated cases one very seldom finds a positive result directly after the usual two or three years of careful treatment, but six months or so later it may help to show whether the disease has run out or not, and even more so if the test is repeated again after another six months' interval, watching the patient meanwhile for any clinical evidence of exacerbation. But I have not been able to produce figures to show the value of applying the test in this way, though it is being tried in several places.

Finally, in syphiliphobia I have seen most gratifying results follow (up to date at any rate) the finding of a negative reaction which gives these poor sufferers something much more definite and tangible than the mere opinion of their physician based on his careful observations. And right here I might mention one of these cases previously diagnosed as syphiliphobia which showed a very strong positive reaction and suggested to me the possibility of a sound and sane basis for the complaints of a few of these discouraging cases.

CONCLUSIONS.

A positive reaction is obtained in a large number of syphilitic cases, and if one adheres to the original Wassermann technic a positive reaction in a suspected case means syphilis almost without exception. A negative reaction in a suspected secondary or tertiary or congenital case means that it is probably not syphilis, but the finding should be used with caution and only in conjunction with clinical evidence and not by itself alone. A negative reaction in a suspected primary case, except one of long duration, and in an early case of general paresis, has very little value. In treated cases it has very little value except some months after treatment has ceased. To sum up, I think we may say that in the Wassermann reaction we have a definite aid to diagnosis, but its value in treatment and prognosis has not yet been carefully worked out.

I am glad to have this opportunity to express my thanks to Dr. Mallory for the use of the City Hospital Laboratory, and to the Boston Board of Health Laboratory for their continued courtesy and their kindness in allowing me the use of certain apparatus. I also wish to thank the staff of the City Hospital and the numerous private physicians who have given me the clinical material in such abundance.

Sanatorium for Hollanders. — The Christian Benevolent Society for Consumptives has been incorporated to establish a sanatorium for the care of those suffering from tuberculosis. The institution will be located in South Denver and will receive Hollanders from all parts of the United States. The secretary of the institution is Rev. I. Van Dollen, Denver. — *Jour. Am. Med. Asso.*

THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Continued from No. 16, p. 606.]

LIPOMATA.

(Male Patients.)

Case 35. L. F., male, thirty-five, married. Operation, March 19, 1902.

A large quantity of fibrin and villous thickening was found throughout the joint; considerable cloudy fluid escaped. At the lower end of the joint wound a row of thickened fringes was found which were removed.

The outer side of joint was opened and a similar condition found. One large finger-like fringe was attached to the capsule in the upper outer part of the joint. The cartilage presented a fairly normal appearance as a whole, except for a few areas which appeared thinner than normal.

Convalescence uneventful.

Discharged April 12, 1902.

Case 36. C. F., male, fifteen, single. Operation, April 8, 1903.

Patient presents a similar condition in both knees. The right was operated upon. Numerous fringes were found, the largest of which was attached to the patellar aspect of the joint.

Convalescence progressive. No pain, temperature or discomfort.

The stitches were removed on the twelfth day. Ninety degrees of motion without pain present at this time.

Discharged April 24, 1902.

Patient refused operation on left knee.

Case 37. T. H., male, twenty-six, single. Operation, Aug. 31, 1903.

Numerous large fringes found and removed. Two incisions were employed for the purpose.

Stitches removed on the eighth day. Forty-five degrees of passive motion present; active motion about 30°.

Nov. 16, 1903. Knee motions normal.

Three months later patient was again operated upon for spurs of the os calcis. No subjective symptoms at this time referrable to knee-joint.

Case 38. A. F. S., male, thirty, single. Operation, Nov. 4, 1903.

Patient was suffering from a villous arthritis, probably of Neisser origin. When joint was opened, about 8 oz. of yellow fluid, viscid in character, were removed. A few short fringes were found attached to under surface of capsule.

Stitches removed on eighth day. In addition to the routine treatment, rubber dam was used at night.

Discharged Nov. 18, 1903.

Massage to thigh and calf continued at Out-Patient Department for several weeks.

April 4, 1904. Patient presents symptoms of foot strain. Plates, showers and exercises.

Aug. 31. Small amount of swelling present for some time, situated to left of the patella. A chart of the fluctuation in size of the knee at Out-Patient Department suggests a hydrops articuli of the intermittent type.

Case 39. F. A. L., male, twenty-eight, married. Operation, April 29, 1904.

Numerous villi found, in greatest abundance as a

sort of pannus about the posterior borders of the patella and along the edge of the external femoral condyle.

Very rapid convalescence followed removal.

Discharged May 14, 1904.

CASE 40. E. D., male, forty-one, married. Operation, May 11, 1904.

A large dark purple fringe found immediately upon opening the left knee-joint. The synovial membrane was thickened throughout. About 1 oz. of clear thick serum was evacuated, containing several pieces of soft, fatty tissue, the largest of which was the size of a pigeon's egg. These were evidently detached lipomata in a state of partial degeneration. Incision over inner surface revealed a small sessile lipoma.

The knee became swollen shortly following the operation. Considerable pain accompained this condition. Patient ran an atypical septic temperature with a leucocytosis of 20,000. A few days later a fusiform swelling appeared over the outer surface of the leg, and an incision was made over fluctuating area three days later. Beneath the muscles was found a quantity of slightly blood-stained pus. A second incision made over the posterior surface of the leg and a smaller quantity of pus of a similar nature found. Following this there was an amelioration of all the symptoms, knee symptoms subsided and wounds closed as rapidly as wicks would permit.

Discharged June 14, 1904.

Oct. 17. Patient had right knee operated upon and several lipomatous masses attached only by fibrinous adhesions were removed.

Stitches removed on seventh day. Motion restricted few degrees. Manipulated, under anesthesia, on tenth day, but patient regained his motion rather slowly.

Discharged Oct. 31, 1904.

CASE 41. J. S., male, twenty-nine, married. Operation, July 11, 1904.

Large sessile tumor found in quadriceps pouch above condyles of femur. A few small lipomata also present.

Rapid convalescence and return of function.

CASE 42. F. W. E., male, thirty-three, married. Operation, Aug. 29, 1904.

Very large amount of serous exudate when joint was opened. Upon looking into joint all the serous surfaces were seen to be extremely injected or covered with an exudate which could be easily removed. Directly under the patella was found a lipoma the size of a horse-chestnut projecting into the joint cavity; another was attached to the capsular wall on inner side of the patella. When second incision was made, several small roughened areas were found over outer, lower edge of the patella. These were excised and upon examination found to be areas of rapidly proliferating cartilage.

Eight days later wound entirely healed, except for small area about wick.

July 10, 1905. Knee more swollen than at last visit. Fluid increased.

July 17. Probable fibrous or villous changes in capsule.

Jan. 5, 1906. Can voluntarily hyperextend leg when bearing full weight. Slight lateral mobility. Can voluntarily flex leg to normal.

Jan. 6, 1907. Can flex and extend leg to normal. Lateral mobility when bearing weight. Knee bows outward markedly. Joint much enlarged, and marked crepitation can be felt over entire joint in flexion or extension.

Symptoms of tabes detected for the first time. Evidently a Charcot arthropathy.

CASE 43. F. J. B., male, twenty-five, single. Operation, Nov. 4, 1904.

A much thickened fatty capsule was found which extended well beneath the surface of the patella. This was removed and nothing abnormal found upon examination.

Nov. 21, 1904. Can flex knee only 15°. Motion slowly increased. Discharged.

CASE 44. A. B. R., male, thirty-eight, married. Operation, Jan. 10, 1905.

Four ounces of fluid escaped when joint was opened. Small pannus found near the internal condyle of femur with fatty fringe attached. Both were removed.

Discharged Jan. 24, 1905. Fair immediate result.

March 20. No symptoms referable to joint. Excellent final result.

CASE 45. J. P. S., male, twenty-eight, single. Operation, July 17, 1905.

Numerous fibrous fringes found projecting into joint from the internal lateral ligament, in such a position that they might easily be pinched between the joint surfaces whenever motion was attempted. Over the face of the external tibial condyle was noted a small area, 1.5 cm. in length and 0.7 cm. in width, the site of an inflammatory lesion. The semilunar cartilage presents the appearance of having been fractured. The upper end of a tongue-like process could be caught up with forceps, and although it could be detached, it had produced a roughness on the upper joint surface. Cartilage was not removed.

Pathological report: "Specimen consists of three or four irregular shaped masses of a fatty-fibrous nature which show on the smooth surface a thin covering of synovial membrane. Shining through this surface are numerous fine capillary vessels. Fat is held firmly in lobules. No special vascularity noted in the deeper tissues."

Discharged July 29. Patient has had considerable pain, especially at night. Cast applied to-day and split down both sides; instructions given to wear same at night and flannel bandage during the day. Discharged home.

Aug. 1. Less pain. Instructed to begin walking without cast.

Aug. 9. No subjective symptoms from right knee. Some capsular thickening can be palpated, however. Both knees are capable of hyperextension and some knock-knee deformity is present.

April 3, 1907. Complains of pain in left knee. Functionally right knee is in good condition.

CASE 46. F. J. H., male, thirty. Operation, March 9, 1906.

Several fringes were excised from the anterior joint surface of the left knee, and many smaller tabs were curetted out, care being taken not to injure cartilage any more than possible.

Convalescence rapid and progressive.

Discharged twelve days after operation.

April 4. No symptoms.

CASE 47. H. W., male, twenty-two, single. Operation, Oct. 3, 1906.

Synovia greatly thickened and two large finger-like villous processes removed. A few smaller ones were found which were also excised. No erosions found.

Oct. 12. Patient has 80° of free motion.

Oct. 16. Discharged. Out-Patient record shows no subsequent subjective symptoms.

CASE 48. T. W., male, forty-eight, married. Operation, Feb. 2, 1907.

Slight excess of fluid escaped from joint, external cartilage partially detached and small lipoma adherent to infrapatellar fat pad. Silk wick.

Discharged sixteen days later. Motions nearly normal.

Rapid and progressive return to normal function.

CASE 49. T. C., male, twenty-one, single. Operation, Oct. 21, 1908.

Lipoma found adherent to joint capsule below and to both sides of patellar ligament, 1½ inches by ¾ inch by ¼ inch.

Discharged sixteen days later. Pain and swelling entirely disappeared. Motion to a right angle.

Dec. 23, 1908. Flexion to a right angle. Beyond this point flexion is accompanied by "catching" pain. Massage and baking.

Nov. 5. Ridges felt along inner condyle.

R. K. I., gtts. x, t. i. d., and increase to gtts. xxx, t. i. d.

Nov. 13, 1909. Re-entered hospital. Arthrotomy and small semi-detached piece of cartilage removed from outer femoral condyle.

Dec. 17. Returns to Out-Patient Department. Motion almost to a right angle.

Case 50. A. D., male, twenty-eight, single. Operation, March 10, 1909.

Left knee-joint opened over inner side. Small lipoma found on anterior surface of joint and removed.

March 21. Discharged. Motion to a right angle. Beyond this motion is accompanied by some pain, very little tenderness.

June 28, 1909. Re-entered hospital.

About one month ago began to have pain in left knee. The joint is swollen and tender. Slight atrophy of the thigh and calf. Considerable capsular thickening and slight surface temperature over inner condyle of femur. Question of tuberculosis of soft parts. Plaster cast applied but no relief obtained from symptoms.

July 2. Discovered that patient is addicted to the use of morphine, which is in a large measure held responsible for symptoms.

July 12. Cast removed. No swelling or thickening of capsule. Motions of knee good. Patient still complains of pain. New cast applied with leg in few degrees of flexion.

Discharged.

The detailed description of these cases gives one a fair chance to estimate the success of arthrotomy in this class of patients. As will be seen from a study of the cases subsequently reported, and a comparison with these, there was the greatest number of unfavorable results among this group. There was a higher mortality and more stiff joints, and post-operative manipulations were proportionately more numerous here than elsewhere. The 50 cases belonging to this group show 44 restorations to normal function without infection and without any very protracted convalescence. Six cases were infected. Two of these died. Of the two that died, one was doubtless infected from another case operated upon unadvisedly at the same time and in the same room. The other was a case that had both knees operated upon at the same time, which we now regard as a technical error. The four other septic cases were not explained except in one case, and this now has a normal joint. This should not be classed strictly as sepsis for the joint was scalded by water used to check synovial hemorrhage and the larger part of the synovial membrane sloughed out. One of the cases, a double one, also operated at one sitting, lost her leg above the knee. There is a good deal of evidence that this was a syphilitic subject, but this is not offered in extenuation of the results. If it was, it was just as much an error to have operated it as it was to have infected it. A better showing might be made if the double cases were counted as separate operations, but they have not been so counted. We regard it a serious error to do both knees at one sitting.

The next largest group of cases for which arthrotomies have been performed at this clinic has been that in which the removal of tuberculous disease has been undertaken, and a little space will now be devoted to a consideration of the technic of the two procedures by which this is ordinarily accomplished, viz., excision and erasion.

Technic of the Operations for Excision and Erasion of the Knee-Joint.

The patient is subjected, twenty-four hours previous to the operation, to the routine preparation as before described.

Strict aseptic precautions are used in the final preparation of the patient in the operating room. A tourniquet should then be applied at about the junction of the middle and upper thirds of the thigh. The classic U-shaped incision is employed with the base just above the tibial tubercle and the arms extending up either side of the knee-joint to points opposite the top of the quadriceps bursa. The patellar tendon is next encountered and cut directly across just below its mid point. The capsule is then incised, and while an assistant grasps the upper end of the severed tendon with a tenaculum and retracts the flap, at the same time gently flexing the knee, all intervening tissue and adhesions are cut by the operator, including the crucial ligaments, if they are not already destroyed by disease. The leg is eventually flexed to about 130°. The joint should then be thoroughly inspected; all diseased synovia should be dissected off. Next the tibial and femoral condyles are inspected and the amount which it is desirable to remove determined upon. Careful section is then made (care being taken to have all contiguous soft parts dissected away), slanting the saw about 5° in order to have the joint in the position of slight flexion.

The head of the tibia is then removed. After this procedure all diseased tissue in posterior portion of the joint should be removed, both bony surfaces and all contiguous tissue swabbed with tincture of iodine. The leg is then extended and the bony surfaces approximated. Three or more chromic catgut sutures may be used to hold the bones in place. A bone drill is employed. Beginning about half an inch below upper surface of tibia, in median line the drill is directed upwards so that it comes through the tibia about one inch from the anterior margin of the cut surface. Two similar holes are made on either side and about one inch distant from the original. The femur is treated in the same manner. The bony surfaces may then be approximated by the assistant and the sutures tied. The assistant has no further duty except to hold these two bony surfaces in close juxtaposition. Any sinus which may be present in the tissues should be thoroughly curetted or dissected out entirely. Several interrupted catgut sutures are used to bring together the capsule of the joint. A semilunar

portion of flap may be removed and also the patella at the discretion of the operator. The fascia is then brought together with catgut sutures and the patellar tendon is united with three layers of silk or chromicized gut. Skin is closed with interrupted silkworm gut. A wick may be left in either angle of the incision for twenty-four hours. Dry dressing and bandage. Plaster of Paris bandages applied from foot to groin and carefully modelled while the limb is held with great care.

POST-OPERATIVE TREATMENT.

Unless pain and temperature contra-indicate, it is not necessary to examine the wound until the tenth or twelfth day. A large window cut in the cast enables one to make this examination, exposing the entire upper surface of the knee. If a wick has been used it should be removed on from the second to the fourth day.

At the end of second week the patient may sit up. The cast should be changed at the end of the fourth week. Union is usually fairly firm at this time.

Patient may use crutches during sixth week and bear weight at end of eighth week. Cast may generally be removed about the twelfth week. A leather cast may be used for a time after this if necessary, but is not generally required. In some cases a posterior wire splint is indicated immediately after the operation for two to three weeks, after which a cast may be put on for the remainder of the convalescence. The use of wire sutures is not generally desirable because of the frequency of necrosis about them. Of late some operators are attempting to hold the bones for a few weeks by plates similar to those employed by Lane in the open treatment of fractures. Occasionally wire nails are driven up from below through the tibia into the remains of the femoral condyles. Failure to unite after the usual time has always meant, in our experience, that all the disease was not removed and a fresh focus had started up along the line of union of the two bones. Two such cases are among those reported here. In both cases union took place promptly after the secondary operation, and in both cases there was tuberculous tissue lying in between the two bones.

EXCISIONS.

(Male Cases.)

CASE 51. T. M., male, forty-six, married. Operation, April 11, 1902.

Knee-joint excised for deformity after old tuberculosis.

Firm fibrous adhesion present. No active disease. Silver wire used to hold bones in apposition. Leg put up in posterior wire splint.

May 14. Normal convalescence. Cast removed and new one applied. Discharged.

June 20. Silver wires removed. About a dram of pus evacuated from pocket near the twisted ends of the outer wire.

July 6. Discharged well.

CASE 52. R. M., male, fifteen, single. Operation, Sept. 3, 1902.

Diagnosis: Infantile paralysis with ankylosis of knee.

Attempt made to forcibly correct the knee under anesthesia unsuccessful owing to contracture of hamstrings and posterior capsule. After the usual incision was made and joint exposed, the knee was forcibly flexed and firm adhesions broken. One inch of lower end of femur removed and posterior capsule incised before bone surfaces could be approximated without putting too much tension on popliteal vessels and nerve.

Sept. 11. Wound became septic immediately after operation. Staphylococcus aureus.

Oct. 18. Wound nearly healed. Leg in position of slight genu valgum.

Oct. 20. Discharged.

Dec. 19. Patient wearing split plaster cast. Position slightly improved.

Jan. 16, 1903. High sole advised.

Feb. 13. Patient instructed to leave off wearing cast gradually and begin to bear weight upon the foot.

CASE 53. A. D., male, eighteen, single. Operation, March 12, 1903.

Excision of knee. Infantile paralysis.

On April 27, 1903, hamstrings were cut, but complete extension could not be obtained. Patella and surrounding capsular tissues removed. Wedge-shaped piece of bone removed from lower end of femur to correct deformity. Excised bony surfaces approximated and heavy silk sutures used to hold same in place, being passed through periosteum of each bone.

May 25. Discharged. Recovery uneventful.

Oct. 29, 1903. Wearing brace with comfort. No further history.

CASE 54. T. E. S., male, eighteen, single. Operation, April 8, 1903.

Old focus of disease found in middle of articular surface of internal tibial condyle. The core, a solid necrotic mass, was removed as a whole, exposing a sound cavity 1 cm. in diameter with necrotic walls. Anterior surface of apposing femoral condyle eroded and an infiltration of the surrounding tissue. Patella, bursæ about joint, and surrounding soft parts removed. Silk sutures used to hold bony surfaces in apposition.

April 28. Wound healed. No pain or discomfort.

May 5. General condition improved. Patient can bear weight on leg without pain.

May 7. Discharged wearing new cast.

CASE 55. T. S., male, twenty-nine, single. Operation, Oct. 6, 1903.

Joint surface studded with tubercles. External condyle of femur eroded and cavity found in opposite condyle of tibia without sequestrum.

Oct. 27. Tubercule bacilli found in sputum.

Nov. 10. Discharged. Knee condition good. General condition poor. Patient died a few months later of tuberculosis (general)?

CASE 56. D. L., male, twenty, single. Operation, March 9, 1904.

Few adhesions found in joint. No pus. Pannus over condylar cartilage and slight erosion of bone at margin of cartilage. Crucial ligament pulpy and hemorrhagic. Focus in external tibial condyle.

March 10. Patient had some hemorrhage from knee, which was finally controlled by pressure.

March 30. Wound healed. New cast applied.

April 10. Discharged. Excellent result as to function and position.

CASE 57. J. P., male, fifty-five, married. Operation, June 24, 1904.

Considerable hemorrhage at the time of operation and for fourteen hours following. Finally controlled by compresses and elevation of the leg.

June 29. Considerable ooze when wicks were removed.

July 15. Discharged. Healing delayed owing to poor general condition of patient.

Nov. 20, 1905. Union has not been complete, due probably to a fibrous pannus between excised bones, allowing small amount of flexion. Refused operation. Leather cast.

Case 58. T. M. K., male. Operation, Oct. 21, 1904.

Considerable osteoporotic bone curetted out of both condyles of femur and tibia. Operation not unusual otherwise.

Discharged Nov. 23, 1904. No further history obtainable.

Case 59. T. M., male, seventeen, single. Operation, June 14, 1905.

Patella found ankylosed and had to be pried off with chisel. Very firm ankylosis of joint in poor position. Synovial capsule entirely obliterated. Owing to the subluxation of the tibia a wedge-shaped slice of bone thicker than normal had to be removed from the femur. No evidence of active disease found in joint or bone.

June 30. Wound clean. Stitches removed and new cast applied. Good operative result.

Patient died of general tuberculosis several months later.

Case 60. F. B. E., male, twenty, single. Operation, July 24, 1905.

Some tubercular pus found. Joint cavity very small owing to the encroachment of fibrous tissue. Exuberant granulations over internal condyle of femur and up into quadriceps pouch, including that portion of the patella which rides over this area. The internal condylar notch shows extensive tubercular granulations. In the external femoral condyle is a sulcus dividing that surface into separate areas, and it is possible to separate remaining cartilage only with difficulty. The tibia seems remarkably free from involvement in the process. The patella was removed with its adjoining capsule. Most of the granulations were in a state of fatty degeneration. The quadriceps pouch was not as extensively involved as usual and could be dissected out *en masse*. No deep-seated foci were found. The disease was evidently primarily a synovial affair now just beginning to encroach upon the bone. Excision was done owing to the fact that a satisfactory result in motion would not be likely after a simple erasion.

Aug. 13, 1905. Discharged wearing cast.

June 11, 1906. Patient has had leg in cast since above note. Union is imperfect and seems unlikely to be accomplished.

Operation June 12, 1906.

Same incision used and fibrous pannus found across upper surface of tibia with two small foci underneath, each containing a small amount of tubercular pus. Bony surfaces freshened and approximated with kangaroo tendon.

Discharged June 25, 1906.

Six months later examination of patient showed most excellent post-operative result. Patient has had no return of symptoms to present time.

Case 61. A. D., male, twenty-eight, married. Operation, March 30, 1906.

This case was diagnosed as a possible villous arthritis. Linear incision made over outer anterior surface of knee. Considerable villous thickening present. As much as possible of this was removed and sent for pathological examination, the result of which was a diagnosis of tubercular synovitis.

Discharged April 10, 1906.

On April 26, 1907, patient re-entered hospital suffering from an exacerbation of all previous symptoms. Upon examination of the joint swelling, surface temperature and obliteration of all fossæ normally present about the joint was noted. An excision was deemed advisable, but was delayed for three weeks. The lower end of the femur and upper end of the fibula appeared normal. Slight pannus formation noted over almost entire head of tibia. A thick, red, edematous membrane was found enveloping the patella and occupying the quadriceps pouch. The crucial ligaments were involved to an unusual extent, and there was thick gelatinous material extending down to the head of the tibia. Patella unusually large, but not diseased, though it was resected.

Excision of both bones performed and convalescence uneventful.

Discharged May 16, 1907.

No recurrence of symptoms, except a small discharging sinus, up to Aug. 22, 1908, when patient again entered hospital.

A marked tenderness had been gradually developing at the site of the healed sinus at a level with and corresponding to the old joint. Pain pronounced only when standing, which was gradually increased in intensity and duration. Right leg, 2 cm. shorter than left. Right thigh shows 5 cm. atrophy. A compensatory scoliosis of spine present.

Operation Aug. 26, 1908. A 2½-inch linear incision was made on inner side of patellar tendon down to bone. Periosteum dissected back and focus of necrotic bone found in tibia just under the last discharging sinus and at level of previous joint. Same curetted out and tincture iodine applied.

Sept. 3. Patient has had no discomfort from knee since operation. Discharged home.

Nov. 24. Knee has been tender and some pain has been experienced since last operation. X-ray shows evidence of active disease between excised bony surfaces. Patient again re-entered hospital. General condition improved. Former excision exposed through U-shaped incision. An opening was found between the two bones communicating with a cavity in the femur. Similar focus in head of tibia and tubercular tissue found between bones. The parts were cleaned out thoroughly and bones again approximated.

Discharged wearing plaster of Paris cast, Nov. 30, 1908. No recurrence of symptoms to date of writing, 1910. Union solid.

Case 62. G. D., male, twenty-two. Operation, April 13, 1906.

Flow of tubercular pus when joint was opened. Disease limited to synovial membrane, external condyle of femur and quadriceps pouch. The latter was walled off except for small sinus connecting with the joint proper. Recovery uneventful and patient was discharged April 29, 1906.

Three months later physical examination shows no motion at knee-joint. No pain has been experienced and patient was, therefore, instructed to begin bearing weight.

Feb. 11, 1907. Small fluctuating area found over anterior junction of tibia and femur.

℞ X-ray. No subsequent history; x-ray not found.

Case 63. W. M., male, twenty-three, single. Operation, Nov. 21, 1906.

Synovia pale and redundant; process general but of low-grade virulence. Pulmonary symptoms delayed convalescence.

Discharged Dec. 14, 1906. Advised general hygienic treatment.

Pulmonary tuberculosis. Further history not obtained.

Case 64. P. L., male twenty-nine, single. Possibly Charcot joint (?). Operation, Nov. 21, 1906.

Right knee opened over inner aspect. Just beneath skin a cystic cavity not communicating with joint was found, which was formed of redundant fat and fibrous tissue. Joint opened and a small amount of bloody fluid escaped. Internal condyle thickened, friable and

covered with tubercular-like granulations. Practically entire condyle removed and wound closed.

Dec. 10. Plaster cast applied.

Dec. 12. Discharged.

Dec. 31. Knee in good position. Split plaster and begin weight-bearing.

Feb. 17, 1907. Complains of discomfort over outer surface of knee. X-ray shows exostosis of tibia and femur. Re-entered hospital.

Feb. 18. Operation. Knee-joint opened over outer side. Cartilage and synovial membranes thickened and congested. When knee was flexed, condyles were exposed and presented a marked hypertrophic condition. Both ridges removed. Bone and cartilage soft. Wound closed.

Feb. 28. Discharged.

March 3. Patient wearing plaster cast. Slight swelling over outer surface of knee and some pain in right ankle-joint.

June 12, 1907. Considerable thickening about condyles.

CASE 65. M. M., male, eighteen, single. Operation, Jan. 21, 1907.

Linear incision over outer surface of knee. Synovial membrane found injected and thickened. A portion of this was removed. Also one fringe 5 cm. by 1½ cm. and sent for pathological examination. Bone apparently normal according to x-ray and actual finding.

Jan. 26. Persistent pain in knee-joint.

Feb. 11. Septic stitch delayed healing of wound.

Feb. 13. No improvement in motion of joint. Pain very acute with attempted flexion.

Feb. 18. Under chloroform leg forcibly flexed to a right angle with hardly any resistance.

Feb. 21. Forcible flexion accompanied by extreme pain.

Feb. 25. Can flex almost to a right angle. Extension limited to within 10° of straight. Delayed pathological report. Tubercular synovitis.

Feb. 27. Leg put in plaster of Paris bandages. Tonic treatment to improve general condition. Discharged home.

Readmitted Oct. 2, 1907. Patient has been wearing plaster of Paris cast since Febuary. Knee swollen and very painful without cast.

Oct. 23. Excision performed. Bone somewhat osteoporotic.

Nov. 12. Convalescence uneventful. Discharged home.

Dec. 6, 1909. No symptoms for past two years. Excellent result.

CASE 66. J. H. M., male, eighteen, single. Operation, Dec. 30, 1908.

Quadriceps pouch of right knee adherent but not markedly infiltrated. Numerous eroded areas were found over internal condyle of femur and corresponding upper surface of the tibia, with only a few small islands of cartilage remaining. Many of the erosions were deep. There was a distinct fibrous envelope isolating this region from the rest of the joint. When incised about 2 oz. of sero-sanguinotal fluid escaped. The outer trochanter of the femur and opposite surface of the tibia practically normal and very little extension of synovial disease in this direction. One crucial ligament was considerably disintegrated. On the posterior surface of the internal condyle a soft area of bone was found. This was curetted out to depth of ¾ inch. The semifluid substance expressed resembled pus, but may have been fat.

Jan. 13, 1909. Discharged home wearing cast.

Feb. 15. Wound entirely healed. Knee is in position of slight hyperextension. New cast applied.

March 29. Knee in good condition.

Dec. 1. Patient still wearing cast. Has had some pain when cast was split, but condition now is improved. To leave off cast gradually. Massage to thigh and calf.

CASE 67. J. St. J., male, seventeen, single. Operation January, 1909.

No joint cartilage remaining. Considerable healed tubercular tissue removed. Wick put in either angle of wound and leg put up in plaster of Paris. There was considerable ooze from the wound for twelve hours following operation.

Feb. 8. Wick removed.

Feb. 15. Wound septic about inner angle when wick was removed.

Feb. 24. Septic infection readily yielded to treatment. Cast changed.

Feb. 26. Window cut over small granulating area. Slight discharge.

March 8. Discharged home. Leg in 15° permanent flexion.

Jan. 1, 1910. No exacerbation of disease and fair result as to position.

CASE 68. V. R., male, thirty-seven, married. Operation, April 14, 1909.

Left knee-joint excised. Greater part of joint cavity contained healed tubercular tissue. One small focus in head of tibia; otherwise the bone not deeply involved.

April 16. Considerable ooze from joint for twelve hours following operation. No pain or other symptoms to note.

April 28. Renew cast.

May 3. Discharged.

Nov. 12, 1909. Still wearing cast. No subjective symptoms. Excellent result.

CASE 69. U. B.

Both articular surfaces diseased, and there was considerable involvement of the soft parts. Two small foci found in femoral head. In tibial head was a focus which apparently penetrated bone to soft parts.

Dec. 23. No post-operative symptoms. Patient discharged wearing plaster cast.

(To be continued.)

Clinical Department.

THE EXTREME BLOOD PICTURE IN A CASE OF PERNICIOUS ANEMIA.

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THE following case is deemed worthy of report on account of the remarkable degree of oligocythemia presenting, the red blood cell count, dropping to 100,000 per cubic millimeter two hours before death, being the lowest count yet reported. The hemoglobin at that time as nearly as could be calculated was 9% (Sahli).

In the literature on the subject of pernicious anemia, Cabot mentions two cases in which the count fell below 200,000, citing the celebrated case of Quincke, 1877, of 143,000, and referring to two other cases. Hills, 1898, reports 155,280; Naegeli, 1908, 138,000, reports the lowest up to that time. This indeed is noteworthy when one considers that in the extensive and voluminous amount that has been written on this subject, a count of 1,000,000 is frequent; so low as 500,000, uncommon; below that number, rare, and when it is called to our attention that a count of less

than 200,000 is reported in but four cases, it becomes of exceeding interest to learn if possible what might cause or bring about such extreme poverty of the blood. If unexplainable upon the basis of the facts in the case, it is of speculative interest, to say the least.

Before introducing the case it might be well to make in brief a few remarks in regard to the pathogenesis of the condition. The researches of Bunting, who produced experimentally in animals a gradually long-standing hemolysis by the injection of small doses of ricin, proved that a typical megaloblastic metamorphosis of the bone narrow can thus be produced, a metamorphosis identical with that seen in pernicious anemia. With larger doses of this or other hemolytic agents we get, as after experimental exsanguination, a red marrow, whose color is due not to megaloblasts, but to normoblasts and normal red cells. Bunting suggests the interesting hypothesis that in pernicious anemia we are dealing with a hemolytic process produced by a poison which exerts its action over a considerable time; that in an attempt to repair the damage done by this poison, the peripheral layers of the germinal erythrogenetic centers are first "peeled off" as in ordinary secondary anemia. Then, as the new formed erythrocytes are rapidly discharged into the blood with the continuation of the hemolytic process and the prolonged stimulation and acceleration of the blood-forming activities, the germ centers where the large immature red corpuscles lie become enlarged, over-active and finally crowd out all the other tissues of the marrow, so that immature red cells, often nucleated and of the large type characteristic of the erythrogenetic centers, are discharged into the blood in an unsuccessful attempt to make up for the losses due to hemolysis.

Cabot further says that if, as in cases of anemia due to the fish tapeworm, we can remove the source of blood destruction, the marrow returns to its normal condition, functions in the normal way and the patient recovers. If, on the other hand, as in cryptogenetic anemia, the hemolytic agent cannot be found or removed, the marrow grows more and more bankrupt.

William Hunter holds that the hemolysis which is now generally considered responsible for the disease is of gastro-intestinal origin, citing as evidence an increase in amount of iron pigment normally deposited in the liver and, to a lesser extent, in the spleen. It has been shown, however, that when hemolytic agents are introduced through the blood stream itself, these iron deposits occur in the same way as in pernicious anemia of the ordinary type. It seems more likely, as is generally assumed, that the unknown poison of pernicious anemia stimulates and pathologically exaggerates the normal phagocytic and hemolytic activities of the spleen, lymph glands and marrow. The pigment in the phagocytic cells and stroma of these tissues fails to give the iron reaction. It is in the liver and kidneys that it is changed to hemosiderin, but the primary destructive agencies are in all probability in the hemopoietic organs themselves.

History of case. — Patient, R. G., male, forty years of age, nativity Ireland, has been in this country twenty-two years; is married.

Admitted to Cook County Hospital Feb. 8, 1910, on the service of Drs. Loeb and Mix.

Present complaint. — General weakness, some cough and vomiting. The onset was insidious and indefinite and is dated as beginning about one year ago with soft chancres, following which patient began to lose weight, noticing pallor and progressive weakness and shortness of breath, and "night sweats" were frequent. Several attacks of vomiting during that time; these attacks were unaccompanied by pain, bear no relation to eating. No hematemesis or blood in stool. Coughing has been persistent for the past five months, no hemoptysis, expectorates considerable greenish-yellow sputum.

Previous diseases. — Had muscular rheumatism one year ago, gonorrhoea eighteen years ago, for the past ten years has had urethral stricture, some difficulty in urination and has frequently had urethra dilated. Had a chancre fifteen years ago followed shortly by secondary eruptions. Has since had children who were strong and show no hereditary taint.

Habits. — Has been a "hard drinker" for years. Present occupation a motor-man, formerly a butcher.

Family. — Parents died of old age; two brothers and three sisters living. Wife is living and well. Has living children. There is no history of similar disease in the family.

Physical examination. — General: Shows a poorly nourished, pale, somewhat lemon-tinted, white male about forty years of age, of uncertain gait, good mentality, complaining of general weakness and some numbness of the extremities.

Regional. — Head and neck: Pupils unequal, left smaller than the right, react very sluggishly to both light and accommodation. Tongue is pale and flabby, as is mucous lining of mouth in general. Teeth are poor (pyorrhea alveolaris). Cervical glands are not enlarged.

Chest: Prominence of right clavicle. Lungs: Some râles and impaired resonance over upper right lobe; also roughened breathing in the same region. Heart shows normal area of dullness, no irregularity, a hemic murmur at the base; second sounds are unaccentuated. Abdomen: Spleen and kidneys are not palpable. Liver extends one finger's breadth below the costal margin and is not irregular or tender. No ascites or palpable tumor masses. Inguinal glands palpable but not enlarged. Rectal examination is negative. Genitalia and lower extremities are negative.

Nervous system: Left patellar reflex absent, right reduced. Babinski positive on both sides. No girdle sensation, no acute gastric or shooting pains and no bladder trouble except as could be accounted for by stricture of urethra. Muscle and joint sense gone. Rhomberg positive and gait is noticeably of stamping quality. Numbness and tingling sensation are complained of in the lower extremities.

Functional irritability and some inability to fix attention are present; insomnia has been bothersome at times. Memory is good.

Subsequent history. — The course of the disease from then until the end, thirty-two days after entering hospital, is with but a slight suggestion of remission, progressively downward, and of chief interest are the blood findings. Other points less noteworthy are merely to be mentioned in passing.

Feb. 10, two days after admission, blood examination shows: Hemoglobin, 36% (Sahli); red blood corpuscles, 1,566,000; white blood corpuscles, 4,800; color index, 1, plus.

Feb. 25, hemoglobin, 19% (Sahli); red blood corpuscles, 680,000, showing a drop of over a half million in fifteen days; white blood corpuscles, 4,000; color index, 1, plus.

Differential white cell count (100 cells) show polymorphonuclear neutrophiles, 61%; lymphocytes (large and small), 32%; transitional, 2%; neutrophilic myelocytes, 3%; eosinophiles, 1%; basophiles, 1%.

During the differential count eight nucleated red cells were seen, four of which were normoblasts, and an equal number of megaloblasts were present. Marked chromatophilia and a tendency toward macrocytosis is noted. Poikilocytosis is not marked; no blood platelets found.

March 5, hemoglobin, 14% (Sahli); red blood corpuscles, 750,000; white blood corpuscles, 4,200; color index, $\frac{14}{19}$, slightly less than 1, showing if anything a slight degree of improvement in the blood condition over that noted a week previous. In a stained smear at this time one megaloblast only appeared in the field in one of three slides. Both poikilocytosis and polychromatophilia are marked. No normoblasts are found.

March 10, hemoglobin, 12% (Sahli); red blood corpuscles, 780,000; white blood corpuscles, 2,200; color index, $1\frac{2}{3}$ approximately, is still less than 1. Here is noted only a small increase in the red cells. The white cells are notably diminished in number and the hemoglobin also on the decrease. Eight to twelve megaloblasts were found on a single slide and four to six normoblasts.

March 12, two hours before death, the final count shows the most interesting changes above mentioned, namely, (1) Hemoglobin, 9%. It is found that Tallquist and the Dare instruments do not register; however, using two volumes of blood where one is called for, with Sahli hemoglobinometer then registering 18%, dividing by 2 for correction, the above result obtains. The instrument is six months old and the acid hematin control has probably not deteriorated. It is possible that the hemoglobin content here is less than 9%, for it must be borne in mind that from deterioration, improper standardization and the age of the individual arise sources of error which must be taken into account before absolute calculation can be made. Webster reports an error of 25% arising from faulty standardization of Sahli's solution. However, a discrepancy in favor of a higher color count is tenable on the same grounds, though inapplicable here, I think. Naegeli mentions as the lower limits in extreme cases, 12, 10, 8, and even 7% hemoglobin.

(2) Red blood corpsucle, 100,000 per cmm. A free drop from the lobe of the ear was obtained with some difficulty owing to the remarkable degree of oligocythemia existing, necessitating a liberal stab. A second drop was taken, a new stab being made in order to obviate possibility of error and for a check and control, Hayem's solution, fresh and recently filtered and in the dilution of 1: 100 being used, Thoma-Zeiss counting chamber counting 200 squares, in each case recounting each a second time to avoid possible inaccuracy. An even distribution was noted and microcytes were included in the counting. (Emerson has noted an error of 200,000 arising from overlooking this form of cell.)

(3) White blood Corpuscle, 2,400, an inconsiderable increase over that of the forty-eight hours preceding.

Differential white count of 100 cells at this time shows

	Per cent.
Polymorphonuclear leucocytes,	56
Lymphocytes:	
Small,	28
Large,	11
Transitional,	1
Neutrophilic myelocytes,	4
Eosinophiles,	0
Basophiles,	0

During the count ten normoblasts, twelve megaloblasts and five intermediates, including the latter with the megaloblasts, give a Von Noorden blood crisis, of megaloblastic type, of 170 per 1,000 leucocytes, — the arbitrary lower limit being taken as 50 per mille. It is here seen that myelocytes were thrown out into the blood at this time. In a crisis of this sort eosinophiles should rise; in looking over the slide none are found; a jump in the red count is usually concomitant or follows shortly. Such was not evident in the present case and serves to illustrate the variability within certain limits of the blood picture of pernicious anemia relative to this point. Emerson, reporting 89 cases, in 20 finds an increase in the number of red cells counted within forty-eight hours preagonal, occurring quite uniformily, making note of interest in the fact that the higher the count with the first symptoms, the higher it is at death. How, then, in the face of such evidence, is such extreme paucity of red cells to be explained, unless we assume that the hemolytic agent causing this destruction was especially and intensely toxic at this period of beginning dissolution or, on the other hand, that vasomotor paresis is paramount in producing a relative local anemia or ischemia, considerations which at best must be purely hypothetical?

Skelton-Barlow stain used throughout.

(4) Color index, 4.5. This is exceedingly high, though hyperchromemia, as we know, is one of the characteristics of the disease. The volume index in this case unfortunately was not taken, but through the kindness of Dr. Capps, who measured 100 cells, we found an average diameter of 8.1 microns (7.5 microns normal), which leaves some discrepancy as to the high color proportional to the size of the individual cell. Capps has shown and upholds the theory that the color index is never increased without corresponding or greater rise in volume index; that it is not due to an increased affinity of cell protoplasm for hemoglobin. And furthermore, this fact proven, it is quite unnecessary to assume a supersaturation of the cell with hemoglobin. Another source of error is suggested by Emerson, who says, "The high color index of pernicious anemia has perhaps with reason been attributed to the fact that microcytes are overlooked." As previously stated, such I think is not the case here. Here applies also what was mentioned under hemoglobin estimation above with regard to source of error relative to defective instrument and so forth.

(5) The drop is pale, watery appearance, showing fluidity especially, and the halo about the drop so often described and rarely found in other diseases according to Cabot. Absence of rouleau formation is noted, as is also delayed coagulation time.

Coma supervened before death, six hours.

Diagnosis. — An autopsy was refused. It is, therefore, impossible to determine anything definite as to actually existing pathology underlying; however, the clinical picture is such that the diagnosis of pernicious anemia seems justifiable on those grounds alone, fulfilling many if not all the requirements suggested by Billings, namely, "when we find a marked oligocythemia, with the presence of many poikilocytes, microcytes and macrocytes, with polychromatophilia, and a

relatively high percentage of hemoglobin with normal or higher than normal color index, it affords a type of blood which is found in no other anemic state. If to this we add the presence of nucleated red cells, and especially of megaloblastic type of red cells and a few myelocytes, which together indicate degeneration of bone marrow, the diagnosis is reasonably certain without post-mortem examination.

As to type, it is of cryptogenetic origin, the idiopathic form called Addison's anemia by Hunter, in that it conforms fittingly to the negative findings, which were emphasized by Addison so early as 1855, namely, cases where there had been no previous loss of blood (in this case slight and occasional epistaxis is noted), no exhaust-diarrhea, no chlorosis, no purpura, no renal, no splenic, no miasmatic, glandular, strumous or malignant disease.

Ophthalmoscopic examination showed slight hemorrhage into left retina. Urine showed small amount of albumin and an occasional cast, no edema of the extremities or puffy eyelids. Repeated stomach, sputum, and examination of the stools showed neither malignancy, tubercle bacilli or animal parasites. Diminished acidity of stomach contents was noted. No evidence of hemorrhoids or other cause of secondary anemia except slight nose bleed.

The diagnosis of tabes dorsalis is hardly tenable, and, if entertained, must be so on the assumption of a superimposition. Clinical evidence of dorsal column involvement is insistent, sphincter disturbance is absent, as is also a history of crises of any sort, and, in the presence of additional lateral cord involvement, as evidenced by a double Babinski, speaks for a combined cord degeneration due in all probability to the common hemolytic agent which is responsible for the most damaging and terminally destructive changes in the blood.

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Medical Progress.

PROGRESS IN THE THEORY AND PRACTICE OF MEDICINE. GASTRIC AND DUODENAL ULCER.

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[Concluded from No. 16, p. 619.]

DIAGNOSIS.

In diagnosis also the influence of surgical evidence has been of great importance. The writings of surgeons, notably those of Moynihan, of Mayo and his associates, of Deaver, of Codman, of Hall, and of a number of reporters from German clinics, presenting large series of cases where the diagnoses were tested by operative findings, have given a far firmer basis for clinical diagnosis than ever before existed. In the light of these findings many discussions have appeared of the significance and diagnostic value of symptoms, of signs and of clinical laboratory tests. As compared with similar discussions in recently previous years there is a notable tendency to lay greater stress upon clinical history and symptoms and to place less reliance upon the findings of the laboratory in the diagnosis of gastric and of duodenal ulcer. Particularly is this true in the case of articles upon duodenal ulcer which from its recent recognition as a common disorder has received the attention due to a new disease. Its symptomatology, in the practice of those who have had the most intimate experience with it, is described by Moynihan [1] as so definite that the history is in itself sufficient for practical diagnosis, rendering other diagnostic evidence superfluous. While this statement must be regarded as an exaggeration, it is undoubtedly true that clinicians at large do not sufficiently appreciate the significance of histories such as are given by the class of patients in whom duodenal ulcers are being demonstrated. A digest of a few of the more important discussions of the symptomatology of duodenal ulcer may, therefore, be profitable in attaching a new significance to a clinical picture which has frequently in the past been denied adequate attention.

Mayo [2] enumerates the symptoms of gastric and duodenal ulcer in common as follows: (1) Acidity — the regurgitation of acid food and of acid-burning contents from the stomach not containing food; this acid regurgitation from the fasting stomach he regards as almost pathognomonic of ulcer. (2) Pain — seldom absent; described as burning or deep boring in character, temporarily eased by food, but as the patient clearly recognizes, later aggravated in consequence of food taken. (3) Hemorrhage — not a frequent symptom, even occult blood in the stools being rare in comparison to its constant presence in cancer. The presence of blood in the stomach contents or stools must always be suspected of coming from other sources. Single large hemorrhages are more often due to other causes (e. g., cirrhosis) than to ulcer. (4) Vomiting — not frequent on account of the care exercised in eating. (5) Gas — a nearly constant symptom. The

symptoms of chronic perforation and of obstruction are also described. The presence of tumor is mentioned as occasionally observed. The distinction between gastric and duodenal ulcer is usually possible, based upon the location of the pain to the left in gastric and to the right in duodenal ulcers, and upon the fact that in the latter its onset is delayed for several hours after eating.

Moynihan,[1] writing of duodenal ulcer, maintains that in recurrent attacks the diagnosis can be made with certainty upon history alone. He lays stress upon the long duration of cases at present seen, and of their remittent and recurrent course, upon the frequent complaint of pain occurring two hours or more after eating and continuing until the next meal, the so-called "hunger-pain," occurring in many instances at regular hours in the day or night, as at 4 P.M., or at 2 A.M. It is often preceded by burning or gnawing sensations, with some belching and bitter or sour regurgitation. The pain, if severe, may be relieved by pressure; in this case it may be due to a spasm of the pylorus such as is sometimes seen at operation. Appetite is usually good and vomiting is rare. Hemorrhage is regarded as a complication rather than as a symptom. Occult bleeding is regarded as of possible diagnostic value, but Moynihan has not made use of it, in confidence in the adequacy of diagnosis from symptomatology.

Deaver,[46] also dealing with duodenal ulcer, attaches chief importance to pain in relation to food. In gastric ulcer the pain may not be immediate, and may even occur in the fasting contents under the influence of hypersecretion, but its constant appearance after a regular and considerable interval after eating speaks for duodenal ulcer. There may be tenderness. The pain is increased by acid and relieved by alkali, and if vomiting occurs, it gives relief. The periodicity of attacks is striking; Deaver believes that cessation of symptoms in the interval between attacks is not to be regarded as temporary healing, but merely subsidence of secondary inflammation.

Codman[3] emphasizes the probable frequent occurrence of non-classical unrecognized duodenal ulcer. He reports the finding by the Pathological Department of the Massachusetts General Hospital of 30 active duodenal ulcers in 2,390 successive autopsy cases dying from all causes, or over 1%. The failure of demonstration of scars of healed ulcers he explains by the probability which he establishes that healing occurs in ulcers of the duodenum without demonstrable macroscopic scar.

Thus all these authors, and others, agree in regarding the history as sufficient basis in itself for a provisional diagnosis, and with such confidence that they are willing in cases which do not yield readily to medical treatment to make this diagnosis the ground for exploratory laparotomy.

Hall,[47] and Graham,[48] from the Mayo clinic, have written in similar vein concerning gastric ulcer. In an analysis of 50 cases of gastric ulcer proved by operation, Hall reports the following occurrence of symptoms: Pain in 82%; sour stomach in 80%; tenderness in 70%; vomiting in 60%; rigidity in 60%; and hemorrhage in but 34%.

It is undoubtedly true, as these authors suggest, that many cases passed as hyperacidity and nervous dyspepsia are in reality cases of gastric or duodenal ulcer.

Of special tests and diagnostic methods there have been few publications that require description. Perhaps the most noteworthy of these is the procedure of Bönniger,[49] which, however, has not yet received confirmation by other authors. Bönniger tests the sensitiveness of the stomach by introducing in the morning after first washing with water, 100 to 200 ccm. of decinormal hydrochloric acid. In cases of ulcer there is immediate intense pain, which is at once relieved by the introduction of milk. If there is no such pain, Bönniger feels that ulcer can be excluded.

Grandauer[34] has written to emphasize the importance of hypersecretion. He has also attaches significance to microscopic stagnation,[50] tested by giving bismuth in the evening and examining for it the washings of the stomach after removal of a test breakfast given the following morning. Recovery of considerable amounts of bismuth, according to Grandauer, occurs only in ulcer and in severe catarrh; if catarrh can be excluded, then ulcer is present. Borgbjärg[51] also supports these conclusions, finding that microscopic stasis is strong evidence for organic stomach trouble — either ulcer, cancer or chronic gastritis; that hypersecretion alone is suggestive of ulcer; and that if stasis and hypersecretion are both present, the diagnosis of ulcer is practically certain.

Einhorn[52] has used an ingenious device by attaching a thread to a small receptacle called a "duodenal bucket" enclosed in a gelatine capsule which is swallowed by the patient and allowed to remain in position over night. In the morning it is withdrawn and in cases of duodenal ulcer a blood stain is said to be found on the thread at a distance from the teeth at which the ulcer is situated. For diagnosis of gastric ulcer a still more complicated procedure is described, — a silk-covered, inflatable balloon at the end of the stomach tube, to be inflated within the stomach, showing a stain on withdrawal opposite the ulcer Ewald,[4] however, reports unfavorably on the use of the duodenal bucket.

Radiographic methods have of late years made great advance in the study of a variety of abdominal conditions, but unfortunately they have failed to demonstrate their utility in the diagnosis of gastric ulcer except in its complications, — pyloric stenosis and hour-glass stomach. Gastroscopy also has been practiced to some extent, but has not yet reached a position of general utility.

Thus the clinical diagnosis of gastric and duodenal ulcer still rests largely upon the time-honored methods of anamnesis and physical examination; but with our added knowledge that gastric and duodenal ulcers are of more frequent occurrence than was formerly believed, their presence is to be recognized or at least suspected on grounds that have hitherto been supposed to warrant only

the diagnosis of hyperacidity or of other disorders purely functional.

PROGNOSIS.

In the prognosis of gastric and duodenal ulcer there have been published no recent statistics of importance except in connection with special methods of treatment with which they will be mentioned later.

A notable fact, however, is the increasing importance attached to gastric ulcer in the etiology of gastric cancer. Rodman[53] has shown this tendency in citing the following opinions as to the percentage of gastric carcinomata which could be traced to previous ulcer; Sonnichsen in 1891, 14%; Klausa in 1900, 26%; Mayo in 1906, 54%; more recently Moynihan, 72%, and Sscapescho, 90%. Hayem,[54] in 94 anatomical specimens of cancer of the stomach, found evidence of pre-existing ulcer in 21. Wilson and MacCarty,[55] however, point out that in investigations based upon post-mortem specimens traces of pre-existing ulcer may be obliterated. In an important communication based upon 210 surgical specimens from the Mayo clinic, they report that of 149 cases of cancer, 109 had definitely developed upon a preceding ulcer, 7 had probably been preceded by ulcer, and but 33 showed no evidence of pre-existing ulcer. Of 52 specimens of ulcer, 5 showed appearances suggesting transition to carcinoma. Jeannel[56] has collected 50 cases, 2 of which are original, where gastric ulcer has produced a gastrocutaneous fistula.

TREATMENT.

With advances in the symptomatology and diagnosis of gastric and duodenal ulcer, and with the great progress in their surgical treatment, new efforts have been made to improve the medical treatment. From 1878 until within the past few years the medical treatment has been based almost exclusively upon the principles of the Ziemsen-Leube method. The requirements of this method as reiterated in a recent article by Von Leube[57] are (1) absolute rest in bed from one to two weeks; (2) ½ liter warm Carlsbad water in the morning on a fasting stomach; (3) hot applications to the epigastrium; (4) restricted diet according to Von Leube's tables,[58] preceded by a few days of absolute fasting with rectal feeding in cases of hemorrhage. Von Leube's diet is divided into four stages. The first, given for the first ten days, includes bouillon, Von Leube's meat solution, milk, and raw and soft-boiled eggs. The second stage diet includes boiled calves' brain, thymus and chicken, gruels and mushes. The third gives, in addition, scraped raw or cooked beef and raw ham. The fourth includes roast meats, boiled fish and macaroni, bouillon with rice and chopped young spinach. A small amount of wine is given before meals. Most vegetables, salads, preserves and fruits are long avoided.

This treatment, however, in its application by other physicians, has been only loosely adhered to. The importance of rest in bed has not been fully realized, and, in the face of objections on the part of the patient, has often not been insisted upon. The use of Carlsbad water, emphasized especially by Ziemsen, has been generally omitted. The use of external applications has not been universal. The diet has been widely varied. The rectal feeding is the part of the treatment which has most often been regarded as the essential measure. This has been very generally employed in cases even without hemorrhage and has often been continued for periods much longer than Von Leube's directions have advised, and undoubtedly by the undue prolongation of this period of scarcely modified starvation much harm has been done. The articles of Von Leube's diet-list have been criticised both upon theoretical and upon practical grounds. A certain proportion of patients do not do well on this diet. The food value of some of its constituents, notably the bouillon, is low, and, according to Pawlow's findings, meat extract and wine are active stimulants to gastric secretion, which is, at least in those cases of gastric ulcer that tend to hyperacidity, distinctly undesirable. Thus most physicians have digressed from Von Leube's diet to a greater or less extent, according to their own experience, and articles upon the diet in gastric ulcer have varied widely in their recommendations.

In recent years much discussion has been aroused by a method of treatment devised by Lenhartz[59] and used by him for eight years with results published at the Congress für Innere Medizin in 1909. This treatment differs from that of Von Leube in several ways. While the value of bodily rest is strongly insisted upon, as in the Von Leube treatment, the withholding of food even in cases with hemorrhage is not recommended. Lenhartz believed that more could be accomplished in the way of sparing the stomach by giving frequent feedings of proteid substances to combine with the acid of the gastric juice than by leaving the stomach completely empty. He further believed that improving the state of bodily nutrition and correcting any anemia that might be present was essential to the healing of the gastric ulcer. He, therefore, advised rest in bed for a period of three or four weeks, with ice-bag to epigastrium and bismuth in the morning until cessation of hemorrhage. He gave a diet, even in cases which had had hemorrhage within an hour or two before the institution of treatment, of hourly feedings, rich in albumin, the total of which for each day was planned according to the following schedule. On the first day 2 stirred raw eggs and 200 ccm. of milk, iced, were given, increasing on each of the following days by 1 egg and 100 ccm. of milk until 8 eggs and 1,000 ccm. of milk per day were taken. Sugar 20 gr. was added to the egg on the third day, increasing 10 gr. every second day up to 50 gr. per day. Scraped raw beef 35 gr. was given on the sixth day and the same amount twice on succeeding days. Rice, boiled in milk, 100 gr., was given on the sixth day, increasing 100 gr. every second day up to 300 gr. Zwieback 20 gr. was included on the eighth day, gradually increasing to 80 gr. Raw ham 50 gr. and fresh butter 20 to 40 gr. were given on and

after the tenth day. After the fourteenth day the eggs were reduced to 2, the fluid continued at 1,000 ccm. and the diet continued at 3,000 calories a day, including, in addition to the articles previously allowed, thick soups, roast and boiled meat, mashed potato and certain other vegetables. The bowels were not stimulated to act, but were allowed to remain without movement for ten days or more unless distention occurred, in which case a low enema was given. Contrary to the common teaching that iron is harmful in gastric ulcer, iron was given in the form of a specially prepared pill of soft consistency.

Lenhartz' report includes 295 cases, — 262 with recent hemorrhage and the remaining 33 with more or less blood in the stools. Of these 295 cases, only 7 died, and of the last 120 cases, but one died. There were but 18 which had return hemorrhage after the treatment was begun. The pains ceased within a day or two and never required narcotics; throughout the treatment the patients were more comfortable than under the Von Leube treatment previously used; convalescence was more rapid, with earlier return to normal diet and to work with gain in weight.

Excellent as these results seem, Von Leube in his reply to Lenhartz at the Congress and in a subsequent article [57] has published statistics of his own treatment which are even more striking. Of 627 cases of gastric ulcer, he reports 90% cured, 8.5% improved, only 1% not improved, and mortality 0.3%. Of 80 cases with recent hemorrhage, 90% were cured, 6¼% improved, 1¼% not improved, with a mortality of 2½%; 7 cases among these 80 had recurrence of hemorrhage. Of 547 cases without hemorrhage, there was no mortality.

Thus, both of these methods in the hands of their authors have given results far better than have commonly been attained.

The Lenhartz diet has been given trial by a number of authors not only in Germany, but also in other countries of Europe and in America. The preliminary reports of Lenhartz' method, notably that published by his assistant, Wagner, [60] attracted attention which led to reports by other authors and much discussion. Wirsing [61] applied the treatment in 326 cases with highly favorable results. Minkowski [62] also obtained better results than he had previously done with the Von Leube method. He did not, however, accept Lenhartz' teaching that the treatment was begun with safety and with advantage immediately after a hemorrhage, but followed the older custom of withholding all food for a day or two after hematemesis. Senator [63] recognized the force both of Lenhartz' and of Minkowski's arguments and devised a compromise between the two by means of a diet to be more fully described later, which in his opinion could be given with greater safety than Lenhartz' immediately after hemorrhage, to be adhered to for a few days, after which treatment could be continued according to Lenhartz' directions. Haberman, [64] Lambert, [65] Brown, [66] Spriggs, [67] Crummer [68] and Craig [69] have written favorable preliminary reports in English and American journals. Zweig [70] has adopted a diet closely similar to Senator's modification of Lenhartz', but on account of losing two cases from hemorrhage regards the immediate feeding as dangerous and advises a brief period of rectal feeding chiefly to supply fluid. Mayerle [71] has used the Lenhartz treatment in 71 cases with good results, but without success equal to that of the author of the treatment. Gerhardt [72] early wrote in favor of the treatment, but the results of cases reported recently from his clinic by Lüdin, [73] compared with those of a series of earlier cases from the same clinic treated by the Von Leube method, shows a slight advantage in favor of the older treatment. Ewald [74] and Weintrand, [75] on the other hand, have opposed the Lenhartz method and have adhered to the Von Leube treatment.

In the discussion following Lenhartz' report and Von Leube's reply at the Congress in 1909, [59] Müller and Von Tabora expressed themselves unfavorable to Lenhartz' immediate feeding. Von Krehl, Gerhardt and Stintzing expressed favorable impressions from their experience with Lenhartz' method. Moritz recognized the Lenhartz treatment as of value, showing that the Von Leube treatment was not the only way of accomplisihng results, but expressed a preference for the Von Leube treatment as somewhat safer.

Thus the Lenhartz method has won for itself a place in the treatment of gastric ulcer. It is true that the objections to that part of it which deals with the giving of nourishment immediately after hemorrhage may have to be reconsidered on account of the occasional untoward results that have been reported. But at least it has called attention to the undesirability of the prolonged under-feeding practiced especially by physicians who have carried Von Leube's principles to an extreme not countenanced by Von Leube himself, by undue prolongation of the period of rectal feeding. Lenhartz' diet must not be taken as an invariable one, but undoubtedly, as Lambert [65] and others have recognized, is to be varied to some extent according to local habits of diet and to individual peculiarities of patients, yet such variation can be readily affected without in the least changing the application of underlying principles. It is true that the Lenhartz treatment has not been proved to be actually better than the Von Leube treatment, and it may be that combinations of the two such as Senator's and Zweig's may be better than either, but at least we are now provided with a choice of treatments. When one treatment fails, as either treatment must do in some cases, the other may be instituted in its place instead of resorting to untried expedients.

Senator [63] aims to avoid the possible mechanical irritation of milk curds and at the same time to secure combination of free acid and adequate nutrition immediately after hemorrhage by the use of gelatine and of cream and butter. He begins treatment with a warm 10% solution of gelatine, sweetened and flavored with lemon, a tablespoonful every hour or oftener, and by giving in the first twenty-four hours 30 gm. of fresh butter

and ½ liter of cream, the butter in frozen pellets, and the cream beaten, with or without freezing. The blood still remaining in the alimentary tract is supposed to furnish sufficient protein, but a small amount of albumin is sometimes given in addition. Later the butter may be partly replaced by olive oil or almond milk. While this diet is small in bulk, its acid-binding power and its caloric value are relatively high.

Articles describing treatment of gastric ulcer have also been written by Rosenfeld,[76] who emphasizes the value of fats, especially cream, and increases or diminishes the relative proportion of albumin or carbohydrate according as hyperacidity or hypo-acidity is present; by Sternberg[77] with emphasis upon finely divided, mechanically non-irritating foods, the preparation of which he describes at length; by Linossier[78] and by Rochester,[79] who describe methods based upon the Von Leube method, and by Thomson.[80] Few writers upon medical treatment have attempted to distinguish between gastric and duodenal ulcer, and even those who have attempted the distinction have not modified their treatment when the ulcer is believed to be duodenal and not gastric.

A number of accessory measures in the treatment of gastric ulcer have been discussed, notable among which is the olive oil treatment, first advocated by Cohnheim in 1902. Difficulty has been encountered in prevailing patients to take the olive oil; on this account Senator,[82] Bloch[81] and others have substituted oil of sweet almonds or almond milk (a tablespoonful of powdered sweet almonds to a glass of hot water, emulsified, followed by peppermint, if necessary) or the following prescription of Bloch: ℞ Tinct. belladonnæ, ʒi; Olei amygdalæ dulcis, ʒi; Vitelli ovi uni, Aquæ ad ʒi. M. Ft. emulsio. Sig. One tablespoonful three times a day. Köhler[82] has given olive oil in gelatine capsules of 3 gm. each — six to ten a day. Rutimeyer[83] has reported striking results from the use of olive oil 100 ccm. every morning in 100 cases. Borbjaerg[84] has found the effect of this increased by the suspension in it of 10 gm. of bismuth.

The value of bismuth has long been recognized from its power of coating over the surface of an ulcer. But since nitrite poisoning has occurred in a few cases, attempts have been made to find a substitute. Meyerle[71] has used bismuth subcarbonate with satisfaction, also escalin, a preparation of finely divided aluminum devised by Klemperer, recommended also by Jacobson.[85] Hort[86] in England and Katzenstein[7] and Fuld[87] in Germany have treated cases by means of horse serum prepared to supply the theoretically deficient bodies which are supposed after Weinland[33] normally to combat gastrolysis and autodigestion of the stomach. The results of the former, however, are not conclusive, and those of Katzenstein and Fuld have not yet been formally reported; judgment upon this method must, therefore, be reserved.

To stimulate mucus secretion as a possible protection to the stomach, Kaufmann[39] has reported benefit from the use of silver nitrate, either ½ gr. doses internally or by lavage with 1:2,000 solution. Ewald[74] gives a dram of 1:1500 solution three times a day in certain cases. Surmont and Dubois[88] have shown that in animals bismuth has a marked effect in increasing mucus secretion.

To counteract hypersecretion Von Tabora[89] recommends the continued use of atropine, subcutaneously. Petri[90] has shown that solutions of hydrogen peroxide have a powerful effect in reducing acidity; he gives 1 to 3 ccm. internally in 200 to 300 ccm. of water in the morning or practices lavage with a ¼ to ½% solution.

Ewald[74] and Bourget[91] support the use of a gelatine solution containing ferric chloride, given either by mouth or by tube. Bourget also uses soft tablets prepared as follows: Gelatine, water and glycerine, āā 100 ccm., are dissolved with gentle heat; 50 ccm. liq. ferric chloride are added with stirring; the mixture is then allowed to cool and solidify in tablets of 1 ccm. each. Bourget's treatment consists of a diet of milk and zwieback or rice given at 8 A.M., 12 M. and 6 P.M.; two or three hours after each meal is given a ferric chloride gelatine tablet followed in half an hour by sodium bicarbonate solution.

The treatment of gastric hemorrhage is discussed by a number of authors. The hemorrhage in gastric ulcer, like other hemorrhage, tends to spontaneous cessation by reduction of blood pressure and by clotting of blood in the eroded vessel. In all but a small proportion of cases this process leads to a favorable outcome without treatment, but in certain cases where the bleeding is arterial and from a vessel of unusual size it is fatal in spite of all treatment; repeated or long-continued bleeding from smaller vessels may also lead to dangerous exsanguination. It is in these latter cases that treatment may make the difference between a favorable and an unfavorable result. The usual treatment of gastric or duodenal hemorrhage following Von Leube has been absolute bodily rest, an ice-bag to the epigastrium, morphia to quiet peristalsis and cessation of all mouth feeding. Hoover[6] has disputed the value of the ice-bag, Lenhartz has dispensed with morphia and Lenhartz and Senator have attempted immediate feeding as already described; yet rest, ice-bag, morphia and fasting are still made the basis of treatment by most clinicians. The use of old-fashioned styptics given by mouth has been abandoned except that of ferric chloride used with gelatine by Ewald,[74] or in solution for lavage in severe cases by Bourget.[91] Lavage with ice-water is advocated by Ewald,[74] but is regarded as unsafe by others. Weintrand[75] gives intravenously a 10% salt solution.

The use of adrenalin by mouth, 30 drops of 1:1,000 solution, has in recent years been advocated by Von Leube.[57] Müller[59] mentions cases where this has been of no avail, and Zweig[70] disputes its desirability on the ground that it may increase acidity, as it has been shown to do by Ynkawa.[92] Yet so many authors mention the adrenalin treatment with favor that it may be accepted as having won a place in the treatment of gastric hemorrhage.

SURGICAL TREATMENT FROM THE MEDICAL POINT OF VIEW.

With the recent prominence of gastric surgery it is important for the physician to have a clear understanding of its present status, particularly as to what assistance the surgeon can offer in the treatment of cases of gastric and duodenal ulcer, simple or complicated, and with what risk and with what hope of benefit.

Since gastro-enterostomy is by far the commonest operation, certain considerations as to its method of action which have been illuminated by recent work deserve mention. Gastro-enterostomy was at first devised to relieve pyloric stenosis. Next it was applied to uncomplicated gastric and duodenal ulcer with the idea of relieving the ulcer to some extent of the constant contact with gastric juice, but especially in the earlier cases with uncertain success, leading in some instances to obstinate vomiting of bile, cachexia and death. This led Cannon and Blake [93] to institute experiments in animals to determine the action of gastro-enterostomy in the presence of a patent pylorus, with the startling result that the stoma was found to refuse to serve as an outlet so long as the pylorus remained open. These results of Cannon and Blake have been confirmed by work of Legett and Maury, [94] of Guibe [96] and of Rovsing. [95] But the increasing success of gastro-enterosotomy in man as a method of treatment of ulcers without stenosis in itself establishes a presumption that the phenomonon in animals cannot be entirely parallel to what occurs in human cases of gastro-enterostomy. Furthermore, that the new opening from stomach to jejunum in human beings upon whom gastro-enterostomy has been performed may functionate whether or not the pylorus is obstructed is shown by the work of Pers, [96] who collected forty patients upon whom he had performed gastro-enterostomy from a few months to six years previously and traced the emptying of their stomachs by x-ray after a bismuth meal. In 38 of these 40, the stomachs discharged through the stoma rather than through the pylorus, and in the remaining two the route of discharge was uncertain. In all of these cases the stomach was emptied more rapidly than normal. Only 17 of them had at operation shown organic strictures of the pylorus. Jonas, [95] Schmieden [95] and Gray [97] have observed the stoma functionating in man. Gray [97] calls attention to an important anatomical consideration emphasized by Cunningham, but not sufficiently recognized by surgeons, that the stomach is not a one-compartment organ, but is divided by a band of muscle fibers, the *sphincter aditus vestibuli*, into two parts, the saccular cardiac portion and the tubular pyloric portion of greater peristaltic activity. To perform its function satisfactorily the stoma must be situated in the pyloric portion. While it is generally so placed by the surgeon, sufficient care is not exercised to insure this. Mayo's rule, for instance, that the stoma should lie vertically below the cardiac orifice, does not sufficiently guard against a stoma being placed in the cardiac portion where it can have little effect. In gastro-enterostomy performed with proper placing of the stoma close to the pylorus, Gray has seen by x-ray the bismuth meal pass out through the stoma in preference to the pylorus even though the pylorus was patent.

Aside from motor considerations, changes in the chemistry of digestion following gastro-enterostomy, notably a diminution of acidity found by some authors, have been supposed to play a part in the healing of gastric ulcers. To this question little has been added to what is mentioned by Goodall and Joslin [98] in 1907, except the work of Schönheim [99] confirming the usual presence of bile and pancreatic juice and of diminished acidity in the stomach contents of patients after gastro-enterostomy.

But whatever the cause of benefit after gastro-enterostomy in cases of gastric and duodenal ulcer, the statistics of surgical treatment leave no doubt that such benefit does occur. Statistics of different surgeons vary widely — between those of the Mayos,[2] who report, from 234 traced cases of gastric and duodenal ulcer, 80% cured, 9% improved, 4% not improved and the remainder dead, but only in 2 cases from causes connected with the stomach, and from 106 cases of duodenal ulcer, 82% cured, 9.5% improved, 5.7% not improved and a mortality of 2.8%, and those collected by Bettman and White [100] (150 cases) in which there was an operative mortality of 10%; 12% died in the first year and 14.6% died within five years after operations; 60% were cured or much improved and the remainder not improved. From a general survey of the literature [101] the impression obtained as to what can be expected from the present surgical treatment of gastric and duodenal ulcer may be roughly stated as follows: Approximately 60% of cures, improvement in half of the remaining cases and a mortality of 5%. As shown by the writings of Moynihan and of a number of other English surgeons, the treatment of duodenal ulcer by gastro-enterostomy has been considerably more successful than that of gastric ulcer; also gastric ulcers have been more successfully treated where they were situated at or near the pylorus. When it is remembered that the great majority of cases treated surgically are of a class which cannot be compared with those cases from which the medical statistics are compiled, but rather belong to the class of failures of medical treatment, even the less favorable of these surgical statistics show benefit from resort to surgery.

Operations other than simple gastro-enterostomy have been practiced by some surgeons, by ligation of vessels, or infolding and suturing of the base of the ulcer to guard against perforation and occlusion of the pylorus. These procedures appear not to increase the danger of the operation and may be of benefit.

Many surgeons, notably Rodman [53] and Payr,[102] counsel the resort to resection on the least suspicion that the ulcer may become malignant. The value of resection of suspicious cases is emphasized by the results of Kocher,[103] who reports 140

cases of resection for cancer with 30 permanent cures. But it must also be remembered that resection hitherto has greatly increased the mortality.* Thus the statement of Payr [102] that even a family history of cancer should warrant resection cannot be accepted without question.

The indications for surgical interference have been much discussed, physicians advising operation with reluctance and surgeons advising exploratory laparotomy at an early period. But as Mayo [2] has said, there need by no such dispute; that only cases that have failed to yield to a reasonable amount of medical treatment should be considered surgically. This is an excellent statement, correcting alike those physicians who have held that gastric and duodenal ulcer become surgical diseases only for their complications, and those surgeons who have advised premature operation.

The view expressed chiefly by English surgeons that duodenal ulcer should be treated surgically as soon as the diagnosis is made, since they believe that duodenal ulcers do not heal under medical treatment, must be questioned in the light of Codman's [3] findings. That healed duodenal ulcer is not found at autopsy may be due to the fact that duodenal ulcers heal without visible scar.

The surgical treatment of complications of gastric and duodenal ulcer is sufficiently well recognized and require but passing mention in a medical discussion. The treatment of recurrent hemorrhage has been advanced by increased knowledge of the situation of ulcers, and by the procedures of Rovsing [104] of illumination and instrumental inspection of the interior of the stomach at operation. That pyloric obstruction demands operation is no longer disputed.

The results obtained in gastric and duodenal perforation have been noteworthy. These perforations high in the gastro-intestinal tract cause peritonitis of a type which when promptly treated is frequently cured. The surgical results of perforation stated by Deaver,[105] of 50% recoveries in all cases and of 75% recoveries where operation was performed within twelve hours, emphasize the physician's responsibility for prompt diagnosis and surgical interference.

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Reports of Societies.

AMERICAN SURGICAL ASSOCIATION.

MEETING AT WASHINGTON, D. C., MAY 3, 4, 5, 1910.

[Concluded from No. 16, p. 623.]

DISCUSSION.

DR. ARTHUR DEAN BEVAN, of Chicago: There is a point of technic I wish to emphasize after an experience with some 20 cases in which the Kraske operation was performed. That is, during the Kraske operation we do not employ a single ligature, but simply as we come to the tissues on the sides of the incision freeing the rectum, massive 10-inch or 12-inch clamps are put on the tissues, for instance, high up on the levator ani muscles and on the inferior hemorrhoidal vessels which supply the rectum and the lower part of the sigmoid. With the employment of these clamps there is less risk of hemorrhage and a greater saving of time than if an attempt is made at ligation.

DR. JOSEPH C. BLOODGOOD, of Baltimore: One of my first cases, operated on about six years ago, was such that we were able to save three inches of the anus and rectum, making a suture of the sigmoid which was brought down, and this patient has not only been as well as before, but has perfect function.

DR. ALEXANDER H. FERGUSON, of Chicago: In some of these cases I have resorted to the combined operation in two stages to advantage. Open the abdomen, take the proximal end of the bowel, make an artificial anus, invert the distal end into the rectum — that would be one operation; then, when the patient is in good condition, remove the rectum from below, the bowel being already inverted giving ready access to the mass. By the use of clamps without ligatures the operation can be done in a few minutes.

DR. JOSEPH A. BLAKE, of New York: I have had more experience with the combined operation than with any other; I have done twelve consecutive operations in that way without any mortality. The mortality is less if a permanent colostomy is done; it avoids infection and the operative field is kept comparatively clean, and it also affords the opportunity of removing the whole growth at the lower part of the bowel. This procedure should be confined to those cases at the middle of the rectum or above, and those in which the anal sphincter is involved and has to be removed.

DR. G. E. ARMSTRONG, of Montreal: In the low cases where the sphincter has been involved I have sometimes succeeded in getting a satisfactory sphincter by bringing the upper ends down through the lower fibers of the gluteus maximus. One such case operated upon ten years ago now has perfect control.

DR. WILLIAM J. MAYO, of Rochester, Minn. (in closing): We have some very satisfactory cases of union between the sigmoid and lower portion of the rectum, and the rule has been, when made from above it has been all right, but when made through the posterior incision, or through the vagina, there is ulcer and fistula. In regard to permanent colostomy, I have often regretted not employing this procedure, because some of our deaths have been due to infection.

I wish to emphasize the point that it is practically impossible to make honest percentages of cases such as these, for the reason that if all cases which cannot be traced are counted as dead, the mortality rate would mount up. This is the only way, however, to consider such cases of which we have no absolute record, and proves the inaccuracy of any percentages which we may try to strike.

CHORIOCARCINOMA. REPORT OF A CASE OCCURRING IN A PATIENT WITH AN INFANTILE UTERUS.

A. PRIMROSE, M.D., C.M., M.R.C.S. Eng., Toronto, Canada: Tumors variously described in individual instances as chorio-epithelioma, deciduoma malignum, syncticma maligna, etc., have hitherto been considered as overgrowths of chorionic villi which invade the blood sinuses of the uterine wall, and then, rapidly disseminating, present the clinical picture of great malignancy.

A neoplastic growth of this character may occur after normal pregnancy. In addition, however, it may follow miscarriage or it may make its appearance after the removal of a vesicular mole. In cases of ectopic gestation the tumor elements have been demonstrated in the gestation sac. In 1903, Teacher published the results of an exhaustive study of chorio-epitheliomata, and his views have generally been accepted that they arise in connection with pregnancy and originate from the chorionic epithelium which is of fetal epiblastic origin.

The tumor removed presented the characteristic elements of a choriocarcinoma with a very large proportion of Langhan's cells showing metaplasia and mitosis. A few isolated masses of the syncytium were also present.

These tumors may exhibit an histological structure in which fully formed villi may be present or the cellular elements of that structure in varying proportion. Secondary growths are common in the vagina or in the lungs, but occasionally metastases occur in the liver, kidney and other organs. There is a relationship between pathological processes resulting in a neoplasm and physiological activity because the invasion of the maternal uterine tissues by the villi occurs as a normal process in pregnancy. Increased activity in this direction may lead to malignant infiltration and tumor formation. A further fact of interest is that in normal pregnancy normal chorionic elements are carried to the lungs and lodged in the pulmonary capillaries and there undergo absorption.

The clinical course of chorioma presents great variation. The primary growth may disappear spontaneously and this may occur whilst secondary metastases continue and produce a fatal issue. Hemorrhage, pain, anemia and extreme emaciation are frequent symptoms, and where metastases occur in the lungs, then we have cough and hemoptysis.

Ewing's classification is the most valuable guide for prognosis and treatment.

Chorio-adenoma in which the structure of the villus with its normal histological arrangement is reproduced.

Choriocarcinoma in which Langhan's cells are chiefly in evidence and where marked mitosis is observed.

Syncytial endometritis where the maternal tissues are invaded with wandering cells derived from the syncytium.

Syncytioma where transitional types are in evidence.

Of these, the choriocarcinoma is extremely malignant and is probably invariably fatal. The other forms present great variation in their degree of malignancy and may even disappear spontaneously or after partial removal.

Where spontaneous disappearance does occur, Teacher has shown that the process is brought about by fibrosis and encapsulation.

PROGNOSIS AND OPERATIVE TREATMENT OF FRACTURE OF THE BASE OF THE SKULL.

JOSEPH RANSOHOFF, M.D., of Cincinnati, Ohio: The paper was based on an analysis of 190 cases occurring during the last ten years in the Cincinnati Hospital. One hundred and twenty-four of the cases were fatal. The prognosis is influenced by the depth of the coma chiefly, and even in greater degree by the fixed condition of the pupils. Of 42 patients with non-reacting pupils, 41 died. In five years there were 19 operations, trephining or decompressive, with 7 recoveries. The conclusions of the paper were as follows:

I. There will always be a large mortality connected with basal fractures; death resulting from primary shock, brain laceration or hemorrhage. Thirty-seven per cent of the fatal cases die within six hours or less, and 56% die within twelve hours. It is not probable that the mortality of this class of cases can ever be reduced with or without operation. They are primarily fatal.

II. Twenty-three per cent of the fatal cases die during the second twelve hours of the first day; and 6% die during the second day. They are the cases in which the coma is not profound; in which the pupils are not fixed; in which the breathing is not stertorous and in which there is not complete muscular relaxation. With a slow, full pulse and lumbar puncture indicating hemorrhage and increase of intracranial pressure, a trephining operation is indicated. In the doubtful cases an operation is indicated.

III. In this class of cases, where facilities for the major operation of trephining are not at hand, repeated lumbar puncture should be essayed. This procedure

may be destined to take the place of decompressive operations.

IV. There is a large group of cases in which there is complete consciousness or in which there is a somnolence or milder degree of coma, and in whom the concomitant symptoms do not indicate a grave intracranial trauma either to the brain or its vessels. The pupils though uneven react; involvement of one or more cranial nerves may be evident. The symptoms singly or collectively are not ominous at any time. Eighty per cent of this class of cases have a tendency to get well with or without operation. They should not be operated on unless the symptoms indicate an increase of intracranial pressure from hemorrhage, beginning cerebral edema or distinct localizing (cortical) symptoms.

V. There is a distinct class of cases in which operation is indicated. They are cases which seemingly not severe in the beginning grow progressively or suddenly worse, showing signs of increased intracranial pressure. Decompressive operations may save a considerable proportion of them.

VI. It has yet to be determined where the trephining should be done to obtain the best results. Since most fractures involve the anterior or the middle fossa, subtemporal trephining is doubtless the procedure oftenest indicated. When, however, an hematoma in the mastoid or occipital region indicates an involvement of the posterior fossa, the operation should be subtentorial. To relieve the subtentorial tension by an opening made in the temporal region is illogical and may be dangerous. I attempted it recently in a cerebellar tumor, the site of which could not be determined. The patient succumbed within two weeks with symptoms of bulbar paralysis.

DISCUSSION.

Dr. Frank E. Bunts, of Cleveland: In an ordinary case of fracture of the base of the skull in which the blood pressure can be obtained, a beginning choked disk and edema and hemorrhage in the brain detected, the decompression operation should be performed, and in many such cases we may expect altogether beneficial results.

Dr. Joseph C. Bloodgood, of Baltimore: Up to the present time I have been unable to find any case of epilepsy following an injury to the skull in which some piece of the skull was removed, either by operation or by the injury itself. This would rather substantiate the view that epilepsy is more apt to be started up by changes in pressure than by actual injury.

Dr. G. E. Armstrong, of Montreal: If in these cases the pressure is subtentorial, as indicated by the respiration, aspiration of the cerebrospinal canal may prove very injurious.

Regarding Dr. Bloodgood's remarks, I would like to report two instances where epilepsy has followed in the presence of considerable defect in the skull; one following the kick of a horse in a young man, where there was rupture of membrane, loss of brain tissue with considerable defect in the skull remaining, and epilepsy beginning a couple of years later; the other, in a man injured in the frontal region, in which there is a considerable defect in the skull, and epilepsy has followed.

A METHOD OF OVERCOMING THE SHORTENING IN OLD FRACTURES TREATED BY THE OPEN METHOD.

Edward Martin, M.D., of Philadelphia, Pa.: It was because of the complete futility of any method of traction which could be applied to the leg and feet in the case of an ununited fracture of the femur with 2½ inches of shortening that the present method of overcoming the shortening was devised. It consists in a long strong canvas strip pocketed in the middle and looped at the ends. The bones at the seat of fracture are freed, the pocket is slipped over the proximal end of the distal fragment, the ends of the canvas strip are carried in the long axis of the limb, and in the loops is fixed a cord to which are attached the weights. By thumb pressure the bone is kept from angling out of the wound, and weights up to 100 lb., or even more, are attached to the rope. In from three to five minutes the shortening is overcome. Only those structures which interfere with proper placement are stretched, and this is done so thoroughly that there is but slight tendency to the reproduction of deformity.

DISCUSSION.

Dr. Richard H. Harte, of Philadelphia: In regard to extension, I consider a pulley similar to that used on boats, a double and single pulley, to be the best type to use. These should not be close together, but enough line between them to allow of manipulation of the limb by the operator. After a thorough incision has been made and the ends of the bone exposed, you can disengage the bands of tissue by the employment of steel elevators. It is important to do as little damage as possible to the tissues. I do not consider silver plates strong enough to hold the bones in position and, therefore, would always advise the use of a heavy steel plate such as that suggested by Lane.

Dr. Albert J. Ochsner, of Chicago: I would like to describe a method which we use almost entirely. It consists in the slow stretching of the muscles instead of the rapid stretching, and the only thing that is peculiar about the method is the application of rubber adhesive strips to as high a point above the seat of fracture as is possible. For instance, instead of applying the rubber adhesive up to the fracture, it should be applied over the entire length of the thigh; then, with no more than 24 lb. of weight, we have, in every fracture where there has not been a union, been able to stretch the muscles sufficiently to replace the fractures without making a resection of the ends. In cases where there is a union in malposition, the muscles will stretch to a marked extent. It is important to use two Lane plates, with two screws at each end in order to keep the bones from slipping.

Dr. James E. Thompson, of Galveston: I think the important point is that it is not the contraction of the muscles which prevents reduction, it is hemorrhage, and after this blood clot has been evacuated, the bones can be held in proper position.

Dr. Harry M. Sherman, of San Francisco: The method of extension described by Dr. Harte I do not consider as good as where two hanks of yarn are applied as perineal straps, the weight coming on the tuberosity of the ischium. On the foot is put another hank of yarn. The pulling upon the bones has been measured, and over 200 lb. of weight have been applied in some cases without injury to the ligaments of the ankle or knee, and that is sufficient to pull out any tissue interfering with the approximation of the bones.

Dr. Edward Martin, of Philadelphia (in closing): The length of the screws used in adjusting these plates should be the thickness of the bone, should be threaded up to their heads, and to hold the plate in place it is required that they penetrate entirely through the bone and no more.

In cases of extension, we prefer to use the old-fashioned resin plaster, properly made, because the rubber plaster always excoriates the skin.

FRACTURE DISLOCATIONS OF THE OS INNOMINATUM.

Harry M. Sherman, M.D., of San Francisco, Cal.: The paper made the point that simple uncomplicated fractures of the pelvic bones was not of necessity a

serious lesion, but that healing could be expected in an ordinary way, as after a fracture of a bone of an extremity; that the really serious lesion was the complication of injuries to the bladder, the intestines or the vascular system; that injuries to the bladder were more likely to occur when the fracture had been due to antero-posterior compressive force; that injuries to the urethra were more apt to occur when the fracture was due to transverse compressive force; that the present indications were to open at once the space of Retzius and make a reverse catheterization and perineal section with lateral incisions in the groin and perineum for drainage of all areolar planes. With this technic the mortality should be reduced to about 33% as against 60%.

DISCUSSION.

DR. ARPAD G. GERSTER, of New York: I have in my experience a case of fracture of the female pelvis on the left side in which there was no injury of the urethra, although it was compressed to such an extent by a solid blood clot that retention followed and had to be relieved for fifteen or sixteen days by the use of the catheter. The woman recovered, there was no other injury present. Another case was one in which there was fatal hemorrhage following fracture of the pelvis. Post-mortem revealed extensive laceration of one of the common iliac arteries and subperitoneal hemorrhage.

ON MOMBURG'S METHOD OF ARTIFICIAL ANEMIA BY SUPRAPELVIC CONSTRICTION.

ARPAD G. GERSTER, M.D., of New York, N. Y.: In reporting a successful case of his own, the author presents the history and present status of the method of obtaining artificial anemia of the pelvis, its organs and of the lower extremities by the elastic constriction of the abdominal aorta. The procedure has been employed hitherto in Germany in more than 300 cases by a large number of surgeons, gynecologists and obstetricians, whose reports are in the main very favorable.

The method consists in the application of the Esmarch principle to the waist and to the abdominal aorta, which thus, by the superposition of from two to six turns of the elastic cord, is compressed against the lumbar spine. The apprehension that the necessary amount of constriction might damage the gut has not been justified by experience. The interruption of the aortic blood current is regularly followed by a marked rise of the blood pressure, and its restoration by a still more marked cardiac depression, which, in patients afflicted with arteriosclerosis, myocarditis or even well-compensated valvulous lesions, may attain alarming proportions. Hence, Momburg's method is not suitable in these cases. In healthy and young individuals, however, its use is free from danger.

By this procedure the surgery of injuries, tumors and of acute or chronic suppurative disorders of the pelvic skeleton and contents has been rendered infinitely more safe than ever before.

Gynecology also has readily appropriated the new procedure. Mackenroot has shown that the most radical forms of attacking carcinomata of the uterus have become safe and bloodless by its aid. Isolation of the ureters and the removal of the retroperitoneal lymphatics along with the diseased womb are thus done with the bloodless precision of a post-mortem dissection.

The method's greatest utility for life-saving, however, has been demonstrated in post-partum hemorrhage, where Momburg's constriction affords the advantage of an easy and prompt control of the loss of blood, a measure which on account of its simplicity is available to every practitioner, to the midwife and even to intelligent laymen. An additional advantage of the measure is that not only is the bleeding arrested by it, but an energetic and lasting contraction of the flaccid womb follows the artificial anemia.

DISCUSSION.

DR. JOSEPH RANSOHOFF, of Cincinnati: I have seen this method pursued in one case, and in this no ill effects resulted from its employment.

DR. HARRY M. SHERMAN, of San Francisco: I would suggest that where this method is used there is the same vasomotor paralysis below the point of constriction as after the employment of the ordinary Esmarch bandage on the extremities, and that this may be a reason for returning the vessels to the circulation gradually, otherwise there might be hemorrhage into the arteries.

DR. RUDOLPH MATAS, of New Orleans: I have pursued some experiments among some students with this method, but found that a fair test of it could not be made unless the patient was anesthetized in order to gain complete relaxation. From our very imperfect experiments, however, it was shown that in all weak hearts you are liable to have prompt failure; instead of noting the usual increase in blood pressure, there will be a fall, and this we feel indicates an inability on the part of the heart to keep up. I would not advise the use of the Momburg constrictor in any patients suspected of having any cardiac irregularity, but believe it will prove of great benefit in producing artificial anemia in strong, robust individuals without being followed by any ill effects.

DR. ARPAD G. GERSTER, of New York (in closing): I would especially emphasize the point that this constrictor is not indicated in cases in which there is any disturbance with the cardiac function. It has proven particularly valuable in post-partum hemorrhage in healthy individuals.

Book Review.

Symptomatic and Regional Therapeutics. By GEORGE HOWARD HOXIE, A.M., M.D. With 58 illustrations in the text. New York and London: D. Appleton & Co. 1910.

As is stated in the preface, this volume contains "the material collected for the course in general therapeutics recommended by the Committee on Curriculum of the American Medical Association — a recommendation adopted also by the Curriculum Committee of the Association of American Medical Colleges." After an exposition of the principles and methods of general treatment of pain, fever, itching, insomnia, constipation, vomiting, hiccough, cough, asthma, shock, emaciation, obesity, convulsions and localized inflammations, there is presented a systematic consideration of the treatment of the principal diseases regionally grouped. The volume concludes with miscellaneous notes on remedies and a brief *materia medica* based on the United States Pharmacopeia, giving the properties, dosage and uses of one hundred and twenty-five common drugs. The book, which contains a great deal of valuable information, is well written, arranged and illustrated, and should be an exceedingly useful work of therapeutic reference for general practitioners.

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W. M. LEONARD,
101 TREMONT STREET, BOSTON, MASS.

MEDICAL ASPECTS OF LATE MARRIAGE.

IT has become the fashion nowadays to decry late marriages as involving not only disappointment to individuals, but detriment to the race. This attitude proceeds partly no doubt from the natural assumption that the sooner one enters the blessed state of matrimony, the happier he must be, and partly from certain so-called anti-race-suicide propaganda which have led us to believe that the earlier a family begins to raise its children, the more and the better will be the progeny. No doubt in some cases this is true. *A priori* it would seem that children born during the years of their parents' most exuberant physical vigor should have a better chance in the struggle for existence than those begotten after the years of decline have begun. Nevertheless, it is not certain that this is necessarily the fact. Certain forms of life, particularly some plants, put forth their greatest reproductive energies late in life. Moreover, even if it were true that the children of young parents have an advantage over others, it must be remembered that fitness for survival does not consist solely in physical efficiency, but in such a combination of physical, mental and moral qualities as shall best enable the individual to escape the dangers and adapt himself to the conditions of his environment.

Now in our day, and especially among the classes in which late marriages prevail, those conditions are highly complex and require, almost more than physical efficiency of the animal type, the higher qualifications which only civilization can produce. Such qualities may conceivably be more fully transmitted, because more fully attained, by parents beyond the first flush of youth. From this point of view late marriage becomes an actual process of natural selection, an inevitable stage in evolution.

One of the weightiest arguments against late marriage is that it protracts the period of celibate temptation, during which men are liable to commit indiscretions that may have the gravest effect for evil on succeeding generations. Those who survive this period unscathed, however, are thereby the better fitted for survival and the more likely to transmit to posterity the powers of inhibition which have raised man above the brutes.

It is unfortunately true that late marriages often mean small families, but this is not necessarily so, and if they mean also the development of a fitter type, the price is well paid and no greater than the sacrifices man has been compelled to make at every step of his ascent. In children born of older parents, too, there is sometimes observed a delay of maturity, which protracts for them the early years of educational acquisition and lessens the hardship of late marriage. People are accustomed in this world to value most the things they have to wait for, and the experience of our race has shown that everything which tends to raise ideals of marriage is for the ultimate good of the race, though it may seem to sacrifice the individual. Really it does not sacrifice the individual, except in outward and inconsiderable ways.

Unquestionably in our country the age at marriage is steadily rising, especially among the more educated classes. From a medical as well as a sociologic point of view, however, it does not seem that this need be regarded with alarm as an unmixed evil spelling ruin to the race. It is rather a natural evolutionary phenomenon, as much a part of our progress as our first step in the erect posture. No doubt there is a point beyond which late marriage becomes absolutely destructive and undesirable, but on this side of that point there is still a sufficient margin to permit the advantages which accrue from later marriage without sacrificing the higher happiness of the individual or the ultimate good of the race.

CULTIVATION OF ANIMAL CELLS OUTSIDE THE BODY.

ATTENTION is called to the important experimental work, recently reported by Carrel and Burrows in the *Journal of the American Medical Association*, on the "cultivation of adult tissues and organs outside the body." The results of this research are not merely of scientific interest,

but may offer possibilities of great practical value. If the cells of various human and animal tissues and organs can be successfully grown on culture media, after the fashion of micro-organisms, and transplanted into successive cultures, there will be available opportunities never before open for the study of cellular biology, for observing the physiology and habits of animal cells and investigating the very nature of the life process. Not only normal but pathologic cells may be so studied, and in particular those anarchistic cell-growths known as neoplasms. Moreover, it is conceivable that such cells, cultivated outside the body, might be available under certain conditions for retransplantation into the body of the original or of another host.

Much yet remains to be learned in all these subjects, but the observations of Carrel and Burrows seem, according to their promise at least, of great potential value, and a worthy contribution to contemporary medicine from the Institute of which the profession has such high hopes for the future.

CERTIFIED MILK.

In a bulletin issued on Oct. 15, the Milk Commission of the Suffolk District Medical Society announces its certification of the following dairies: "The Warelands," Highland Lake, Mass.; Massachusetts Agricultural College, Amherst, Mass.; Cherry Hill Farm, Beverly, Mass.; Middlebrook Farm, Dover, N. H.; and Miles River Farm, Hamilton, Mass.

The problem of securing and maintaining reliable sources of pure milk supply will always be one of the greatest importance to any community. At a hearing before the State Cattle Bureau in Lowell, Mass., on Oct. 21, questions of milk inspection were discussed from the standpoint of the consumer, of the producer and of the physician. There is undoubtedly considerable dislike on the part of farmers to inspection by the State Board of Agriculture. Whether such inspection would be more satisfactory to all if placed in the hands of the State Board of Health is a proposition that has been suggested and has found many advocates. Such a system has been opposed on the ground that it gives undue authority to the medical profession, whose standards may perhaps be unreasonably high, but on the other hand it would give consumers a greater sense of security, would insure uniformity of inspection methods and would generalize the advantages of certified milk now enjoyed only in certain localities.

HEALTH OF THE UNITED STATES ARMY.

The recently published annual report of the Surgeon-General at Washington indicates continued improvement in the health of troops in the United States army service. The total number of deaths in the army during the past fiscal year was 370, of which 228 were from disease and 142 from trauma. The admission rate for sickness, representing the number excused from duty for any ailment, was approximately 86.6%. This seems extraordinarily high, and is indeed higher than in other countries, but is lower than it has been in the United States in former years. The non-effective rate, which is the real measure of disability from injury and disease, was during the past year only 41.48 per thousand, as contrasted with 42.68, 46.17 and 49.79 for the three preceding years. It is interesting to note, in comparison, the statement recently published in England, that the non-effective rate of the British army in India has been reduced 50% in the past ten years.

The Surgeon-General's report contains the further important information that of 11,338 persons in the army who have thus far received antityphoid inoculation, only 3 have since had typhoid fever, and none of these has died. On the basis of these convincing figures it is recommended that this protective inoculation be made a routine compulsory procedure throughout the army.

FURTHER CONDEMNATION OF OYSTER BEDS.

In the issue of the Journal for Oct. 6 we noted the recent condemnation, by the Rhode Island Board of Shellfish Commissioners, of "275 acres of oyster beds at Bristol, in that state, as unfit for use on account of pollution by sewage from the city." This action was in consequence of the question raised some time ago by Dr. Wiley, of the United States Public Health and Marine-Hospital Service, whether the growing of oysters in waters used for drainage does not violate the provisions of the pure food law. As a result the local commissioners have made a complete investigation of the waters of Narragansett Bay, which have been divided on the basis of bacterial cultures into three classes: good, doubtful and bad; and all beds of those of the latter class have been condemned. In addition to those condemned at Bristol, beds at Providence have also been condemned to the value of $30,000, and at Warren, beds valued at $50,000. This action should result in improving the quality of oysters on the

market, and in making them safer for consumption as food. Nevertheless, even though protected by antityphoid inoculation, the cautious and discreet will probably for some time still "beware the mollusca," and refrain from the raw oyster as a dietetic luxury, unless they know where he was raised.

CONTINUANCE OF THE BOSTON HOSPITAL SCHOOL.

In the issue of the Journal for Oct. 13 we commented editorially on the proposed discontinuance of the Boston Hospital School at Franklin Park. Protests against the closing of this school were made by many physicians and by the Boston Association for the Relief and Control of Tuberculosis. Last week a conference was held between the mayor, the Board of Trustees of the Boston Consumptives' Hospital, the Boston School Board and the Boston Board of Health, as a result of which it was announced that the Hospital School will be continued for the present. It was also recommended at this meeting that in every school building hereafter erected by the city there be provided an open-air room for tuberculous and pre-tuberculous children.

In commenting on this recommendation an editorial in one of our daily papers pertinently remarks that fresh air should not be limited to such rooms, but should be more liberally admitted to all schoolrooms. This suggestion might well be extended to many public and private buildings. The prophylaxis of tuberculosis is even better than the continuance of hospital schools for its cure.

DENTISTS IN THE ARMY AND NAVY.

At the annual meeting of the Northeastern Dental Association, held in Boston last week, there was considerable discussion over the failure of the national government to afford proper recognition to dentists in the army and navy of the United States. At present, instead of ranking with officers of the line, they are classed with masons, mechanics and other contractors. For some years a committee of the National Dental Association has been endeavoring to secure at Washington the legislation necessary to modify these conditions and establish a satisfactory status for dentists.

Other subjects under discussion were the provision of free dental clinics and public dispensaries in large cities, and the teaching of dental and oral hygiene in the public schools. At the closing session, Dr. Henry A. Kelley, of Portland, Me., was elected president for the ensuing year; Dr. Frederic T. Murless, Jr., of Hartford, Conn., and Dr. Andrew J. Sawyer, of Manchester, N. H., vice-presidents; Dr. David Manson, of Burlington, Vt., treasurer; and Dr. Edgar O. Kinsman, of Cambridge, Mass., secretary.

MEDICAL NOTES.

Annual Meeting of the American Medical Association. — The annual meeting in 1911 will be held at Los Angeles, June 27 to 30 inclusive.

Hospital Burned at Winnipeg. — On the night of Oct. 18 a building at Winnipeg, which was in temporary use as a scarlet-fever hospital, was destroyed by fire. Forty-four children, patients in the building, were all safely removed.

Some Death-Rates in 1909. — Mortality statistics for the year 1909 show that of American cities with a population of 100,000 or over, New Orleans, La., that year had the highest death-rate, 20.2 per 1,000. Fall River, Mass., stood second, with a rate of 19.1, and Washington, D. C., third, with a rate of 19.

Free Distribution of Tuberculin. — As an evidence of the extent to which cattle in this country are tested for tuberculosis by their owners, it is stated that during the past year 400,000 ampoules of tuberculin were distributed free by the Federal Bureau of Animal Industry to cattlemen for use in making this test.

Death of Prince Francis of Teck. — News from London reports the death on Oct. 22 of Prince Francis of Teck, brother to the present Queen Mary of England. Presumably his Royal Highness died of empyema, as he is said to have recently undergone two surgical operations after a long illness with pleurisy.

Nobel Medical Prize. — The Nobel medical prize has been awarded to Prof. Albrecht Kossel, of Heidelberg. Professor Kossel is in his fifty-eighth year. He is a native of Rostock and he studied medicine there and in Strassburg. He devoted himself from his graduation in 1881 to physiological chemistry. He has done much pioneer work in the artificial production of organic material.

American Association of Railway Surgeons. — The seventh annual convention of the

American Association of Railway Surgeons, which was held last week at Chicago, was attended by about 400 members. Among the subjects discussed were the abolition of the common drinking cup, the ventilation of cars and the abatement of smoke and dust. A special committee of five was appointed to co-operate with state and municipal boards of health to secure better sanitary conditions in railroad cars and stations and along railroad rights of way.

The Cholera Situation. — There seems to have been little change in the cholera situation in Italy during the past week. From Oct. 17 to Oct. 23, 111 new cases of the disease were reported in that country, with 55 deaths. These figures, which show a slight increase over those of the previous week, probably under-represent the true incidence and mortality of the infection. Report from Brazil states that the steamer *Araguaya*, from Southampton and Lisbon, is now under quarantine at the port of Rio Janiero, owing to the occurrence of several deaths from cholera on board during the voyage. No further cases or suspected cases have been discovered on ships reaching the United States during the past week. Of the three actual cases of cholera detained at the Swinburne Island Hospital, one has died and two are now convalescent.

Alvarenga Prize of the College of Physicians of Philadelphia. — The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1911, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered.

Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten and must be received by the secretary of the college on or before May 1, 1911.

The Alvarenga Prize for 1910 has been awarded to Dr. M. Katzenstein, of Berlin, Germany, for his essay entitled "The Formation of an Arterial Collateral Circulation in the Kidney."

Increased Supply of Radium. — In an editorial in the issue of the Journal for Oct. 20, we announced the special meeting of the Surgical Section of the Suffolk District Medical Society next Monday, Oct. 31, to be addressed by Dr. Wickham on the clinical use of radium. In a recent number we have also noted the enormous cost of radium. It is interesting in this connection to learn by report from London that a considerably increased yield of radium is now being obtained from the pitchblende mines of Cornwall. Pitchblende is an ore of uranium, from which radium is extracted by a special process devised by Sir William Ramsey. During the past month 55 cgm. of pure radium have been produced at the Trenwith mines near St. Ives, and it is expected to increase the output to a gram a month. This not only assures a continuous supply of radium, but will probably lead to some decrease in its cost.

Suit for Late Arrival in an Obstetric Case. — An interesting suit for $5,000 damages has recently been filed before the Supreme Court of the District of Columbia by a patient against her physician for failure to reach her in time to render the obstetric services for which he had been engaged. The plaintiff alleges that the physician absented himself from his office without leaving word where he could be found, as a result of which he did not receive her summons till three hours after it was sent, and in consequence reached her house after the baby was born. The plaintiff further avers that, owing to the physician's absence at this time, she sustained personal injury resulting in subsequent disability, on the ground of which the claim for damages is made.

The moral obligation of a physician to hold himself in readiness for an expected obstetric call is, of course, generally recognized. Whatever the merits of the present case, it will be important to learn to what extent he may be held legally responsible for failure to answer such a call with sufficient promptness, if the fault for that delay can be proved to be his own.

Electricity for Cataract and Seasickness. — One is sometimes led to wonder if there be any ailment of the flesh, from warts to apoplexy, which electricity has not been alleged to cure. It is unfortunate that an agent of known therapeutic value should be so woefully abused and paraded as an advertising snare. But the mysterious is always attractive, and many would rather be healed by the occult than by the rational. The two latest suggestions for the medical use of electricity are in the treatment of cataract and of seasickness.

Of course these are hardly to be taken seriously. It is not so surprising that electricity should seem to cure seasickness, in which the treatment

is largely suggestion. That it should offer prospect of benefit in cataract seems so remote a possibility as to be hardly worth consideration as long as surgery offers such excellent relief. It is to be feared that it will hardly remove the opacity of the patient's eye better than that of the mind's eye in him who employs it.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Oct. 25, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 19, typhoid fever 35, measles 17, smallpox 0, tuberculosis 68.

The death-rate of the reported deaths for the week ending Oct. 25, 1910, was 14.35.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 15, 1910, was 205, against 181 the corresponding week of last year, showing an increase of 24 deaths, and making the death-rate for the week, 15.94. Of this number 109 were males and 96 were females; 200 were white and 5 colored; 138 were born in the United States, 64 in foreign countries and 3 unknown; 51 were of American parentage, 126 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 9 cases and 0 deaths; typhoid fever, 30 cases and 2 deaths; measles, 4 cases and 0 deaths; tuberculosis, 42 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 2, heart disease 31, bronchitis 3. There were 16 deaths from violent causes. The number of children who died under one year was 50; the number under five years, 64. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 83. Anterior poliomyelitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 3 cases and 5 deaths. Scarlet fever, 1 case. Typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 174 and the death-rate is then 13.53.

Massachusetts Medical Benevolent Society. — The annual meeting of the Massachusetts Medical Benevolent Society is to be held this afternoon, Oct. 27, at the Boston Medical Library.

Diphtheria at Worcester. — On Oct. 21 five cases of diphtheria in a single school were reported to the Board of Health at Worcester, Mass. Suitable precautions have been taken to prevent the spread of this minor outbreak.

Bequests to Medical Charities. — The will of the late Mary A. Puffer, of Lynn, Mass., filed for probate at Salem, Mass., last week, contains the following bequests to medical charitable institutions: To the Lynn Hospital, $5,000; to the Union Hospital of Lynn, $1,000 and one third of the residuary estate; to the New England Peabody Home for Crippled Children, Boston, $1,000; and to the Boston Floating Hospital, $1,000.

Violations of Milk Laws in Malden. — In the district court at Malden, Mass., a local dealer was last week fined $50 on each of two counts, the first for having in his possession for sale milk to which 12% of water had been added, the second for having in possession milk containing formaldehyde. Another dealer before the same court was fined $25 for offering for sale cream below the required standard. The occurrence of such violations shows the need of continued vigilance on the part of milk inspectors.

Hospital Concerts for November. — It is announced that during the month of November the concerts of the Hospital Music Fund will be given as follows: On Nov. 2, at the Soldiers' Home, Chelsea; on Nov. 6, at the Free Hospital for Women, Brookline; on Nov. 13, at the Somerville Hospital; on Nov. 20, at the House of the Good Samaritan, Brookline; on Nov. 24 (Thanksgiving Day), at the Massachusetts General Hospital; and on Nov. 27, at the Vincent Memorial Hospital, Roxbury.

NEW YORK.

Diphtheria at Hamilton College. — An outbreak of diphtheria, stated to be rather mild in character, has occurred at Hamilton College, in Clinton, and as a result the forty students and one of the faculty with quarters in Emerson Hall have been placed under quarantine. Up to Oct. 7 twelve cases had been reported.

A Death from Cholera at Sea. — The steamship *Taormina*, from Naples and Genoa, which arrived at quarantine on Oct. 22, reported that on the 18th a woman steerage passenger had died at sea from cholera, after three days' illness, and by way of precaution Health Officer Doty had all the steerage passengers of the vessel transferred to Hoffman Island for observation.

ENDOWMENT OF ROCKEFELLER INSTITUTE. — On the day that the new hospital of the Rockefeller Institute was opened it was announced that Mr. Rockefeller had added to the endowment of the institute $3,820,000 in securities having a par value of that amount. This makes the total income-bearing endowment $6,420,000, and the total amount of Mr. Rockefeller's gifts to the institute, including land and buildings and earlier gifts for medical research, $8,240,000. A formal statement issued on this occasion by the trustees is in part as follows: "The latest addition to the resources of the institute has also been made the occasion for an important development in the organization of the institution as a public trust. To-day for the first time the Board of Trustees contemplated by the charter has come into being, and has legally taken possession of all the property of the institute, thus establishing it perpetually as an independent foundation. The Board of Trustees is initially constituted as follows: John D. Rockefeller, Jr., Frederick T. Gates, William H. Welch, Starr J. Murphy and Simon Flexner. The function of this board is to hold and care for the property of the institute, including the investment of its endowment funds, and to hold the entire income at the disposal and under the full control of the Board of Scientific Directors, which is constituted as follows: Dr. William H. Welch, of Baltimore, president; Dr. T. Mitchell Prudden, of New York; Dr. L. Emmett Holt, of New York, secretary and treasurer; Dr. Christian A. Herter, of New York; Dr. Simon Flexner, of New York, director of laboratories; Dr. Hermann M. Biggs, of New York, and Dr. Theobald Smith, of Boston. The final establishment of the Rockefeller Institute, with its present generous endowment, is the culmination of a series of carefully considered gifts, each one based on a thorough demonstration of existing needs and on evidence of competent stewardship of funds previously intrusted. . . . The hospital, which will profit largely by the new income, is not to be regarded as a separate institution; it is merely a part of the working equipment for medical research controlled by the one board of directors. Being now intrusted with by far the largest sum of money available for medical research, and with a wonderfully generous and perfect equipment at their command, the directors have a high sense of their responsibility to the public for the careful discharge of their great trust." Some realization of the care bestowed upon construction and the perfection of detail in the hospital may be obtained from the fact that it is estimated that, according to the expense of erection and equipment, each of the seventy beds which form its complement cost the large amount of $16,000.

Current Literature.

MEDICAL RECORD.

OCT. 15, 1910.

1. TAYLOR, H. L. *Practical Points in the Management of Poliomyelitis and Its Sequelæ.*
2. CRAIG, H. A. *Bacterial Vaccines in the Treatment of Diseases among the Aged.*
3. BUERGER, L., AND KALISKI, D. J. *Complement-Fixation Tests in Thrombo-angiitis Obliterans.*
4. STOLL, H. F. *The Relative Value of Symptoms, Physical Signs, Tuberculin and the X-Ray in the Diagnosis of Tuberculosis.*
5. *WOLBARST, A. L. *Personal Observations on the Ehrlich-Hata "606."*
6. ZIGLER, M. *Report of Three Cases Treated with Antigonococcus Serum.*
7. ABBE, T. *A Fracture of the Pubic Bone.*

5. Wolbarst gives some of his observations on the effect of Ehrlich's "606," and reports seven cases of his own. He concludes that, if not a complete specific, it is certainly the most potent remedy for syphilis yet produced. The primary lesion shows distinct evidences of healing within a few days. Secondary lesions disappear within two weeks. In many cases gummata that have resisted mercury and the iodides for years have disappeared in from three to six weeks and have not since recurred. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

OCT. 15, 1910.

1. COLLINS, J. *The Relationship of Neurology to Preventive Medicine.*
2. SHOEMAKER, G. E. *Papillary Cystadenoma of the Kidney, with Myoma of the Uterus and Spinal Caries.*
3. WELTY, C. F. *Combined Forceps and Tonsillar Separator.*
4. ALBERT, H. *Diffuse Idiopathic Hypertrophy of the Mammary Glands of the Female.*
5. *CABOT, R. C. *A Study of Mistaken Diagnoses, Based on an Analysis of One Thousand Autopsies and a Comparison with Clinical Findings.*
6. BARKER, L. F., HIRSCHFELDER, A. D., AND BOND, G. S. *The Electrocardiogram in Clinical Diagnosis.*
7. VAN DERSHA, J. W. *Rachitis.*
8. GANT, S. G. *Etiology, Diagnosis and Treatment of Colonic, Sigmoidal, Rectal and Anal Affections in Infants and Children under Twelve Years of Age.*
9. GOFFE, J. R. *Tuberculosis of the Female Organs of Generation and the Peritoneum.*
10. WILBERT, M. I. *A Forecast of the United States Pharmacopœa IX.*
11. HIRSCHMAN, L. J. *A Simple Bloodless Operation for Hemorrhoids.*
12. ROSENBERRY, B. P. *A Case of Pernicious Anemia.*
13. CARROLL, A. H. *Adiposis Dolorosa (Dercum's Disease) in Mother and Daughter.*
14. *HIRSHBERG, L. K. *Anaphylactin. A Preliminary Note.*
15. EISENDRATH, D. N., AND STRAUSS, D. C. *Surgical Importance of Accessory Renal Arteries.*
16. DOLLY, G. C. *Gangrene of the Lung with Trichomonas as the Only Apparent Etiologic Factor.*
17. LITTERER, W. *The Non-Oviparous Female Hookworm.*
18. CARREL, A., AND BURROWS, M. T. *Cultivation of Adult Tissues and Organs outside of the Body.*

5. Cabot, in an analysis of 1,000 autopsies and clinical findings, studies mistakes in diagnoses. In brief, he

found correct diagnoses made in aortic stenosis, in 61% of the cases; in aortic regurgitation, in 84%; in chronic myocarditis, in 22%; in arteriosclerosis, in 60%; in thoracic aneurysm, in 50%; in cardiac hypertrophy and dilatation, in 66%; acute and ulcerative endocarditis, 39%; acute pericarditis, 20%; lobar pneumonia, 74%; bronchopneumonia, 33%; phthisis, 59%; miliary tuberculosis, 52%; acute nephritis, 16%; chronic glomerular nephritis, 74%; chronic interstitial nephritis, 50%; cerebral hemorrhage, 67%; cerebral tumor, 72½%; septic meningitis, 64%; tuberculous meningitis, 72%; gastric cancer, 72%; peptic ulcer, 36%; hepatic cirrhosis, 61%; typhoid fever, 92%; diabetes mellitus, 95%. He draws the following conclusions from his analyses: (1) Never make a diagnosis of uremia in a patient seen for the first time in an acute illness characterized by coma or convulsions. Such diagnoses rarely turn out right. (2) Never make a diagnosis of ptomaine poisoning without definite chemical evidence. General peritonitis or a tabetic crisis is usually the correct diagnosis. (3) In patients whose symptoms begin after forty-five years the actual diagnosis is more likely to be arteriosclerosis, hyperthyroidism, dementia paralytica or pernicious anemia rather than hysteria, neurasthenia or psychoneurosis. (4) Diagnoses of tertian malaria in patients whose symptoms resist quinine more than three days are almost invariably wrong. (5) Bronchial asthma beginning after forty usually spells heart or kidney disease. (6) Epilepsy beginning after forty usually means dementia paralytica or cerebral arteriosclerosis. (7) Typical migraine is often a symptom of unrecognised brain tumor or chronic nephritis. (8) Most cases of "bronchitis" mean tuberculosis, bronchopneumonia or multiple bronchiectatic cavities. (9) Aside from the immediate results of acute infections (such as scarlet fever, diphtheria, tonsillitis and pneumonia), "acute" nephritis usually turns out to be chronic. (10) Acute gastritis and gastralgia usually mean appendicitis, gallstones or peptic ulcer. (11) Pus in or near the liver is often mistaken for serous or purulent pleurisy, for it produces identical signs in the right chest, posteriorly. (12) An x-ray of the shinbones may give the first hint of an active syphilitic process in the joints or internal viscera.

14. Hirshberg advances the novel theory that the reactions such as urticaria, hyperemias, albuminuria, glandular swellings, resulting from the ingestion of certain foods, such as crabs, lobsters, berries, mushrooms, oatmeal and tomatoes, are anaphylactic phenomena, the system becoming sensitized to these various substances.

[E. H. R.]

The Journal of Medical Research.

October, 1910.

1. *Smith, T. *The Reaction Curve of the Human and the Bovine Type of the Tubercle Bacillus in Glycerine Bouillon.*
2. *Park, W. H., and Krumwiede, C., Jr. *The Relative Importance of the Human and Bovine Types of Tubercle Bacilli in the Different Forms of Human Tuberculosis.*
3. De Witt, L. M. *Some Observations on Phenol as a Clearing Agent in Histologic Work.*
4. Torrey, J. C. *The Viscosimeter as an Aid in the Detection of Liquefying Bacteria.*

1. Theobald Smith reports in this article further study of the "reaction curve" derived from the culture of tubercle bacilli. The "curve" is the record of the reaction change in the medium in which the bacilli are grown. The author uses bouillon with 5% glycerine added; enough of this is placed in flasks of uniform size to make a layer 1.5 cm. deep; the flasks are then plugged with cotton-wool and the mouths covered with tin-foil. From time to time 5 ccm. of the bouillon are withdrawn and titrated. From the experiments which he has made, he has found that with bacilli of the human type there is a decrease of acidity for the first ten to fifteen days, after which there is a rapid increase, which reaches a maximum in from thirty to forty days. Cultures of the bovine type, on the other hand, show a decrease in acidity which in twenty to thirty days reaches alkalinity. The reaction then remains alkaline for at least thirty days more, and then slowly becomes acid.

Several other observers agree with these results. Griffith's results, which differed, were shown to have been secured by growing the bacilli in a thicker layer of bouillon which did not contain enough glycerine to insure an excess of what the bacteria could use, thus materially altering the conditions of the test.

The curve, Smith believes, is a valuable means for differentiating the two species of bacilli.

2. Park and Krumwiede present an exhaustive study of the question, how much of the tuberculosis in human beings shows evidence of bovine origin. Investigating 436 cases, they found that in the great majority of these the bacilli isolated could be grouped, according to their virulence and peculiarities of growth, in one of two quite distinct classes, i. e., as of the human or as of the bovine type. Their differences the authors believe to have been acquired by long-continued growth in cattle or in men; it is not possible, they think, for one type to acquire the characteristics of the other with any rapidity.

The writers give at length analytical tables of their own cases and of those reported by others. The final summing up is as follows: Of 1,042 cases, there were in adults sixteen years and over, 677 human, 9 bovine; in children five to sixteen years, 99 human, 33 bovine; in children under five years, 161 human, 59 bovine. From these figures it appears that the possibility of infection from milk, milk-products and meat, especially in children, is a matter of large importance.

[G. G. S.]

Bulletin of the Johns Hopkins Hospital.

October, 1910.

1. Judd, C. C. W. *The Life and Work of Lister.*
2. Thomas, H. M. *Decussation of the Pyramids. An Historical Inquiry.*
3. Smith, J. T. *An Historical Sketch of Bloodletting.*
4. Von Pirquet, C. F. *The Importance of a Thorough Teaching of Infectious Diseases of Childhood in the Medical Curriculum.*

The Practitioner.

September, 1910.

1. *Morris, H. *Some Points for Consideration in Relation to the Surgical Treatment of Renal Calculus.*
2. Leishman, W. B. *Some Points Concerning Typhoid Vaccine.*
3. Horder, T. J. *On Vaccine Therapy.*
4. *Bolton, C. *The Treatment and Pathology of Chronic Gastric Ulcer.*
5. *McCann, F. *On the Early Recognition of Cancer of the Bowels.*
6. Alexander, D. M. *The Auto-Intoxications of Epilepsy.*
7. McCrea, H. M. *Coli-Uria.*
9. Williamson, R. T. *Cases of Ataxia due to Diseases of the Cerebellum or of the Adjacent Parts.*
10. Stephens, G. A. *The Part played by Colloids in Physiology and Pathology.*
11. Higgins, H. *Certain Urinary Reactions and Their Significance in Chronic Conditions of Faulty Metabolism.*
12. Yearsley, M. *A Retrospect of Otology.*

1. Morris, discussing the surgical treatment of renal calculus, considers the following points: (1) When bilateral renal calculus should be operated upon simultaneously; (2) when nephrectomy should be the treatment for ureteral calculus; and (3) when the surgical treatment of renal calculus should not be checked or modified because of the presence of tubercle bacilli in the urine.

4. Bolton considers the following questions: (*a*) How does an acute gastric ulcer heal? (*b*) Do any conditions exist which can delay the healing of such an ulcer? (*c*) Why does a chronic ulcer not heal? He has studied these questions by means of artificially produced ulcers in cats. By injecting a gastro-toxin (prepared from goat serum by rendering the goats immune to injected gastric cells of a cat) into the stomach wall of cats he was able to produce at will typical gastric ulcers. He has studied the healing on a normal diet, the effects of position, of the hyperacidity of the gastric juice, and the effect of diminished acidity;

the effects of acute ulcer upon the production of hydrochloric acid and the effects of bacterial finding. He goes into the production of motor insufficiency and the effects of pyloric stenosis upon the healing of acute gastric ulcer. All these points studied in the cat he applies to ulcer in human beings, citing several cases.

5. In discussing the early recognition of cancer of the womb, the writer concludes as follows: (1) Attend to all symptoms suspicious of cancer and instruct the patients upon the importance of them. (2) Examine all cases of bleeding or abnormal discharge. (3) Operate as soon as the diagnosis is established, if the disease is not too far advanced. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 38.

SEPT. 22, 1910.

1. *RICHTER, P. F. *Renal Dropsy.*
2. HERMES, O. *Peritonitis following Perforation of Typhoid Ulcer.*
3. GORDON. *Concerning Endotoxim, the Specific Substance Isolated in A. T. (Koch).*
4. GOWNVITSCH, M., AND BOURMANN, S. *Ehrlich's Preparation "606."*
5. KNAUTH. *Clinical and Bacteriologic Observations on a Case of Mixed Infection with Streptococcus and Tubercle Bacilli and Another Case of Cryptogenic Staphylococcus Sepsis.*
6. SAVELS, A. *Cause of Nitrite Poisoning by Inhalation of Nitric Acid.*
7. RHESE. *Diagnosis of Disease of the Ethmoid and Sphenoid Bones by Means of the Röntgen Ray.*
8. TÖPFER, H. *Vaginal Cesarean Section.*
9. FISCHER, H. *A Method of Anesthesia with Alypin.*
10. SKUTETZKY, A. *Permanent Preparations of Urinary Sediment.*
11. WALTERHÖFER, G. *The Therapeutic Value of Fibrolysins.*
12. MEYER, L. *The Cause of the Wassermann Reaction. (Remarks on a Paper in No. 35 of this Journal on This Subject.)*

1. Richter takes up the question of renal dropsy, mentioning many of the different theories and the experimental proof which supports or refutes them. Our present knowledge shows that there must be present three factors. These are an injury to the kidney which causes retention of salt and water, a hydremia dependent upon this, and, finally, an injury to the vessel wall with increase of permeability. He considers that the salt retention is the cause of the water retention, but not of the edema which is dependent on the vessel injury. The practical point of treatment, however, rests upon the salt retention and its hydremia because this is the only factor that can be influenced by treatment. At present we have no method of curing the renal or circulatory injuries. [C. F., JR.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 39.

SEPT. 26, 1910.

1. AUFRECHT. *The Path of Infection in Tuberculosis of the Lungs; Its Clinical and Therapeutic Importance.*
2. SHALSLEE, A. O., AND MELTZER, S. J. *Experimental Results Concerning the Treatment of Strychnine Poisoning with the Help of Intratracheal Insufflation.*
3. MOSLER, E., AND VALENTIN, B. *Pathology of Acute Articular Rheumatism.*
4. COHN, M. *The Examination of the Stomach with the Bismuth Capsule.*
5. DERJUSHINSKI, S. *Four Cases of Resection of the Pylorus with Restoration to Health.*
6. FISCHER, A. *Another Case of Torsion of the Pedicle of the Gall Bladder.*
7. HEIM, P. *The Rôle of the Constitution in Pediatrics.*
8. LEDERMANN, R. *Concerning the Relation of Syphilis to Nervous and Other Internal Diseases on the Results of 573 Serum Examinations.*
9. *KROMAYER. *Ehrlich's "606" in the Treatment of "Walking Cases."*
10. ENGEL, C. S. *Concerning a Method of Microdiagnosis in Syphilis.*
11. *HEYMANN, F. *The Combating of Postpartum Hemorrhage and the Avoidance of Manual Removal of the Placenta, by the Use of the Mombery Constriction Tube.*
12. BACHEM, C. *New Remedies, Patent Medicines and Specialties.*
13. COENEN, H. *The New Attempts in the Treatment of Fractures.*

9. Kromayer states that it is as easy to treat patients with "Preparation 606" as with mercury, and that he has not found confinement in bed necessary. He uses small doses and administers the drug once or twice a day and allows his patients to walk about as they will during the course of the treatment.

11. Heymann reports two cases of postpartum hemorrhage successfully checked by means of the Momberg constriction. Not only does this have the effect of mechanically checking the hemorrhage by pressure on the blood supply of the pelvic organs, but also, by the anemia produced in the uterus, that organ contracts most firmly and forcibly, expelling the placenta and making manual extraction unnecessary. He quotes authorities who have had good results with this method, and one who reports failure. [J. L. H.]

ANNALES DE L'INSTITUT PASTEUR.

AUG. 25, 1910.

1. *RICHET, C. *New Experiences with Crepitine and Actino-Congestine (Anaphylaxis and Immunity).*
2. BERTRAND, G., AND ROSENBLATT. *The Temperature Destructive to the Vegetable Tyrosinases.*
3. BONET, G., AND ROUBAND, E. *Different Experiences with the Transmission of Trypanosomes by Flies.*
4. AGULHON, H. *Influence of the Reaction of the Media upon the Formation of Melanine by Diastatic Oxidation.*

1. Richet has continued his experiments with crepitine and has further facts to report than in his recent publication in this journal. As a result of his experimental work he concludes that with the injection of an antigen both toxogenic substance and an antitoxic substance are formed. This former substance, when united with some more of the antigen, forms a substance which he calls "apotoxin" and which is very poisonous and causes symptoms ranging from excitability and pruritus to coma and death from respiratory paralysis.

He presents a number of observations which in themselves individually point to the correctness of this view, but which taken collectively make it almost absolutely certain.

His theory is that anaphylaxis is a method of the body to keep a foreign albumen from getting a hold on the individual cells. In this way the specificity of the organisms are maintained. Chemical poisons do not seem to act in the same manner as these albuminoid ones.

[C. F., JR.]

REVUE DE CHIRURGIE.

JUNE, 1910.

1. DELBET, P., AND DUPONT, R. *Chloroform, Chloral, Scopolamine.*
2. *CARREL, A. *Remote Results of the Transplantation of Veins into Arteries.*
3. FAIX, A. *Fifteen Cases of Malignant Tumors of the Orbit.*
4. LERICHE, R., AND COTTE, G. *Classification and Pathogenesis of Tumors of the Jaws of Dental Origin.*
5. CAPDEPONT, C. *The Rôle and Mechanism of Infection in Accidents of the Wisdom Tooth.*
6. MONOD, C., AND VANVERTS, J. *Documents and Remarks on the Treatment of Arterial Aneurysms.* (To be continued.)

2. After reviewing previous work on arteriovenous anastomosis and describing the technic of transplanting a section of vein into an artery, Carrel reports examination, after death from other cause, of two cases in which such experimental implantation in dogs had been done nearly two years before. In both the venous segment was found in perfect histologic and functional condition. Whether this would continue true after a longer time, or in human beings, remains to be determined. [R. M. G.

JULY, 1910.

1. QUÉNU, E., AND MATHIEU, P. *Treatment of Vicious Ankyloses of the Hip by Oblique Transtrochanteric Osteotomy.*
2. PATEL, M., AND COTTE, G. *Umbilical Fistulæ following Calculous Cholecystitides.*
3. KENDIRDJY, L., AND SEJOURNET, P. *Torsion and Strangulation of the Sero-Appendices Epiploicæ in Hernial Sacs.*
4. CALVÉ, J. *A Peculiar Form of Pseudo-Coxalgia.*
5. SEJOURNET, P. *Chronic Simultaneous Hypertrophy of the Lachrymal and Salivary Glands.*
6. BOECKEL, A. *Traumatic Dislocations of the Tarsal Scaphoid, Particularly Double Dislocations.* (To be continued.)
7. HALLOPEAU, P. *Lateral Suture of the Portal Vein.*
8. MONOD, C., AND VANVERTS, J. *Documents and Remarks on the Treatment of Arterial Aneurysms.* (To be continued.)
9. PICQUÉ, R. *Subphrenic Abscesses.* (To be continued.)

AUGUST, 1910.

1. *QUÉNU, E. *Icterus in Hydatid Cysts of the Liver.*
2. BOECKEL, A. *Traumatic Dislocations of the Tarsal Scaphoid, Particularly Double Dislocations.* (Continuation.)
3. KÜSS, G. *Pelvic Pericolic Strictures, Principally in the Female.* (Conclusion).
4. MONOD, C., AND VANVERTS, J. *Documents and Remarks on the Treatment of Arterial Aneurysms.* (Conclusion.)

1. From a study of 50 personal cases of hepatic echinococcosis, and comparison of these with others reported in the literature, Quénu concludes that icterus is much commoner in the course of hydatid disease than is generally supposed; that such icterus may be due to compression of the biliary passages at the hilus or to angiocholitis; that the former, however, is an exceptional, and the latter the habitual, cause. In a few cases he considers that the angiocholitis is the terminal episode of a septicemia occasioned by an infected hydatid cyst; more often that it is the result of the irruption into a primary duct of the contents of a broken cyst. Such rupture may be spontaneous, or may be due to minor trifling accidental violence. Clinically, the jaundice due to angiocholitis is variable; that due to compression is progressive.
[R. M. G.]

SEPTEMBER, 1910.

1. GUINÉ, M. *Laceration of the Mesentery in Strangulated Hernia.*
2. ABADIE, J., AND RANGÉ. *Fractures of the Tarsal Scaphoid.*
3. *LE DAMANY, P., AND SAIGET, J. *Partial and Complete Dislocation of the Hip in the Newborn.*
4. DELORE, X., AND ALAMARTINE, H. *Post-Operative Tetania Parathyreopriva, and the Technic of Thyroidectomy, Principally in Basedow's Disease.*
5. PICQUÉ, R. *Subphrenic Abscesses.* (Conclusion.)

3. The authors present a further study on the ever-fertile subject of the causes of congenital dislocation of the hip. They conclude that any anomalous position of the lower extremity may cause dislocation of the hip after the first half of fetal life. Certain pelvic malformations may produce the same result. The immediate cause of such dislocations is often dystrophy of the peri-articular muscles. In newborn children, especially in girls, the hip can often be easily dislocated. The writers believe that so-called anthropologic congenital dislocation of the hip occurs in reality after birth.
[R. M. G.]

IL POLICLINICO.

JULY, 1910.

MEDICAL SECTION.

1. GOSIO, B. *Robert Koch and His Work.*
2. BOSELLINI, P. L. *General Erythematous Desquamative Tuberculosis of the Skin.*
3. STRADIOTTI, G. *A Case of Multiple Calcifications of the Subcutaneous Tissue of Syphilitic Origin.*
4. PANICHI, L., AND VARNI, R. *The Action of Extracts Derived from Malignant Tumors of the Endocardium.* (To be continued.)

SURGICAL SECTION.

1. *MARAGLIANO, D. *Active Anaphylaxis and Carcinoma.*
2. *ISAJA, A. *Passive Anaphylaxis as a Means of Diagnosis of Malignant Tumors.*
3. GUSSIO, S. *A New Surgical Intervention for Salivary Fistula.* (Conclusion.)
4. *BRUGNATELLI, E. *Tumors of Suprarenal Type and Unknown Seat with Multiple Subcutaneous and Submucous Metastases.*
5. MANTELLI, C. *Contribution to the Study of Oblique Internal or Vesico-Pubic Inguinal Hernia.* (To be continued.)

1 and 2. The question of anaphylaxis in malignant disease is one of considerable importance, on which little work has as yet been done. The authors of these two papers consider it from different points of view. From two series of experiments on guinea pigs Maragliano concludes that it is impossible to obtain in them a specific active anaphylaxis of carcinoma. From four series of similar experiments Isaja concludes that the fall of temperature following the injection of cancerous human serum into guinea pigs is not a specific anaphylactic phenomenon, and that, therefore, passive anaphylaxis in guinea pigs cannot be used as an aid in the diagnosis of malignant tumors.

4. Brugnatelli's article emphasizes the importance of histologic examination of metastases in the diagnosis of a primary tumor.
[R. M. G.]

AUGUST, 1910.

MEDICAL SECTION.

1. *INADRI, G. *A Contribution to the Study of Anemia from Necator Americanus (Stiles).*
2. NOÈ, G. *Special Points and General Considerations on the Percentage of Infected Anopheles found in the Roman Campagna during the Malarial Season of the Year 1909.*
3. CANTONI, G. *The Desmoid Reaction of Sahli.*
4. PANICHI, L., AND VARNI, R. *The Action of Extracts Derived from Malignant Tumors of the Endocardium.*
5. FRUGONI, C. *Clinical Studies on Alterations of the Respiratory Rhythm, with Special Reference to the Anginal and Neurotic Forms.* (To be continued.)

1. Madri reports a case of severe anemia due to Necator Americanus (a species of ankylostoma) in a young peasant of Modena. The blood was that of secondary anemia of chlorotic type with leucocytosis, moderate eosinophilia and marked excess of platelets. The cryoscopic point of the blood serum was normal, the viscosity of the blood diminished, the electric conductivity increased. The Wassermann test was negative and the amount of alexin in the blood was somewhat diminished.
[L. D. C.]

SURGICAL SECTION.

1. FICHERA, G. *Hypophysis and Castration.*
2. MANTELLI, C. *Contribution to the Study of Oblique Internal or Vesico-Pubic Inguinal Hernia.* (Conclusion.)
3. *ABETTI, M. *The Granulations of Leucocytes in Pus.*
4. GAMBAGLIO, R. *Fractures of the Carpal Scaphoid.* (To be continued.)

3. Abetti made a study of the leucocytic granulations in pus from 24 cases of suppurative disease of various origin to determine whether there were any relations between the causative agent of the infection and the nature of the leucocytes. His conclusions are as follows:

(1) That in the majority of bacterial suppurations, the principal constituent elements of the pus are polymorphonuclear neutrophiles.

(2) That in gonorrheal suppurations there is a slight proportional increase of polymorphonuclear eosinophiles

(3) That in chemical subcutaneous suppurations there is an exudation of polymorphonuclear neutrophiles with desquamation of the lymphatic endothelium.

(4) That the iodophilic reaction is always positive, whatever the nature of the suppuration.

These results are the same as those reached by Leoncini in his study of the cytology of peritoneal exudates.

[R. M. G.]

Correspondence.

PARIS LETTER.

SOLAR CURE OF SURGICAL TUBERCULOSIS.

[*From Our Special Correspondent.*]

PARIS, Sept. 27, 1910.

Mr. Editor: A friend of mine, just back from Switzerland, tells a remarkable tale about an experiment he has there seen in the matter of treatment of surgical tubercular lesions of all varieties, osseous, nodular and serous. Experiment, however, is hardly the proper term, as the treatment has now been in use for seven years; the establishment my friend visited consists of three sanatoria, capable of accommodating upwards of three hundred patients, and is directed by a certain Dr. Rollier, with an assistant at each sanatorium. It will perhaps be best to relate the entire history of this place.

Dr. Rollier is a young surgeon who for four years was assistant to Kocher at Berne. In 1903 his wife showed signs of pulmonary trouble, and he took her off to Leysin for the altitude cure. Leysin is a place that deserves a few words of description.

Most travelers are familiar with the eastern end of Lake Geneva, the Dent du Midi, and the Valais, leading to the Simplon. On the northern side of this valley, above Aigle and almost opposite the Dent du Midi, at an altitude of 1,200 to 1,500 meters, lies a beautiful alp, as the Swiss call it, a high pasture-ground, sloping gently up to the pines and rocks, and facing due south. On this slope there has always been a peasant's agglomeration of chalets, but a few years ago, when the sanatorium movement became so popular, the natural advantages of the spot were discerned and one sanatorium after another was erected along the upper edge of this alp. These were, however, solely for pulmonary tuberculosis, and the results obtained from them have been very satisfactory, owing to certain peculiarities inherent in Leysin's position: unusual absence of wind, intense solar radiation, and great purity of air.



The village of Leysin and the Dent du Midi.

It was to this resort that Dr. Rollier accompanied his patient, and as he himself had no other resources but his practice, and as there was no vacancy for him on the staff of the sanatoria, he established himself in the village as local general practitioner. About this time he heard reports of what Dr. Bernhardt, of Samaden in the Engadine, was doing in the way of treating sluggish wounds of all sorts by solar radiation, and went over there to look into the method; he then returend to Leysin, began little by little to apply the system to surgical tuberculosis, and has now evolved a treatment of which he is perfectly master and which bids fair to place him in the foremost rank of the men who have been of use in the fight against tuberculosis. His system is as yet hardly known, as his communications on the subject have scarcely spread beyond local societies; but my informant is a first-class Paris surgeon, who went carefully over the ground for his own instruction, so that I fancy there is no mistake about the matter. It is guaranteed, furthermore, by Dr. Rollier's personal surgical qualifications, and again by the evident practical success of the venture from a business point of view.

He takes no medical cases, though naturally he gets a few in patients with external lesions as well, but he says that the method appears to work admirably in pulmonary trouble, as was also demonstrated by the entire recovery of his wife. His ordinary patients are cases of fungous arthritis, Pott's disease, tubercular cystitis, peritonitis, glands of all sorts, tubercular skin lesions, etc., as well in adults as in children, though of course the majority of his patients are children. He does not neglect the usual means of treatment, — injections, plaster jackets, x-rays, etc., — but combines them with his method, which consists in acting on the system in general, not on the local lesion, by solar radiation.



Leysin, les Frênes, altitude 1,360 meters. Dr. Rollier's clinic.

His sanatoria face the sun, as was to be expected, and are abundantly provided with balconies and open roofs on to which the beds are wheeled from the rooms and dormitories. The patient's entire body, front and back, is



Sun-cure in winter. A gallery of the chalet.

exposed to the sun, with or without apparatus, and winter as well as summer, during a time that varies according to the child's condition of health and state of training. He begins with exposure of the feet only for five minutes *ter die*, first one side, then the other. The patient must be apyretic or almost so, — under 38°. The period of exposure is then gradually lengthened until it reaches as

much as six and seven hours *per diem*. So great has become Dr. Rollier's skill and so delicate his "touch" that he breaks his patients in without so much as an acute sunburn, until finally they become an almost walnut-brown hue. And he has found that the quicker and more intense this pigmentation, the better the patient's outlook; it takes place most rapidly with dark subjects, less so with blonds, and least so with the venetian-red type, which corresponds with our ordinary basis of prognosis in this complaint.

At first sight the idea of a little child being exposed *naked* to several hours of sunlight on a balcony in Switzerland in midwinter at an altitude of 1,500 meters, with everything about it covered with several feet of snow, is simply terrifying. What mother could be brought to accept such apparent risks as these! This difficulty has to be turned by getting the parents used to the treatment by degrees, in the same manner as is done with the patients. They are shown the initial five-minute exposure, which is not very dreadful, and the rest is a question of time. Besides, ideas are contagious; the parents meet other patients in the hotels, and are told of the anguish the latter passed through, but how pleased they now are with the results, so that the trouble on this score is not very great. But for the uninitiated to see a picture of a lot of naked, brown children, some with plaster jackets on, playing on beds in the brilliant sunshine in midwinter with the country about them buried in snow, is, to say the least, startling. Some cases, Pott's disease of the spine, for instance, are made to lie still in the sun on their beds; these children wear white hats, and flying screens are put up to keep the glare out of their faces.



The galleries in winter.

The treatment at Leysin is based partly on altitude and partly on solar radiation, and the explanation of the tolerance of even little children in a state of nudity to solar exposure in winter at that altitude lies, of course, in the fact that the circumambiant air is not at all what a person would be inclined to think. It is in reality very hot on those balconies, the temperature reaching 45 and 50° C. even in December, January and February (113–122° F.). So it is not surprising that the children not only stand it, but like it. This is furthermore helped out by the almost total absence of wind, for it is doubtful whether such a treatment could be carried out in a place exposed to cold winds, no matter how much sun there were.

Not among the least of the attractions of Leysin is the view from the sanatoria, though probably this is a matter of minor interest to the children than the toys on their beds. In the foreground is the snow-covered alp, and the low, flat chalets, also buried in snow; then some dark, pine-grown hills, and back of them still the magnificent Dent du Midi with the group of snow mountains of which it is the most prominent portion.

One of the first results of the solar radiation treatment is the disappearance of pain, — in coxálgia, for instance, where this symptom decreases or is relieved sometimes by a single exposure. As regards tubercular glands, Dr. Rollier says that this is certainly the best treatment known; they are either absorbed spontaneously and vanish, or else soften under the influence of the light and disappear after one or two evacuating punctures without leaving any mark.

The solar radiation has not only an extraordinary invigorating action on the system in general, but is a most powerful bactericidal agent as well, particularly in winter, when the power of the heat rays is far distanced by that of the light rays. There is then no dust at all at Leysin, on account of the blanket of snow that is spread over everything, and there is nothing whatever in the atmosphere (very little moisture, even) to absorb rays; the sky is of an indigo blue, and the excursus between the maximum and minimum temperature of the twenty-four hours can be as much as 120° F.

Here is what Dr. Rollier has to say about mountain climates in general: "A high mountain or alpine climate is the most favorable one for solar treatment. Solar radiation only reaches the lowlands after having passed through the atmospheric layer. The lower levels of this atmosphere, and in particular those of cities, are thick with dust, micro-organisms, aqueous vapors and humanity which absorb light in proportions that may extend to 90%; these layers of air laden with dust, which a physicist has called atmospheric sediment, are powerful absorbers of luminous and caloric radiations whose intensity is in direct relation to altitude. Furthermore, in the lowlands these opaque layers of air absorb the heat rays and protect the ground against their action; the air is hot there as well as the soil. In the mountains the case is altogether different. The transparent and dust-free air allows the solar radiation to pass freely through it so that none of its energy is held back. It can, therefore, act altogether on the soil and transmit its heat, while the air remains quite cool. This contrast between the power of the direct rays of the sun and the coolness of the atmosphere is one of the characteristics of mountain climates and is most favorable to the sun treatment, since the heat, modified by the cool air, is never unpleasant to patients as is the case in the lowlands, and the duration of the sun baths can be prolonged without any risk."

Patients are now coming to Dr. Rollier from all over Europe, but in particular from Switzerland, Germany, Austria and Russia.

My informant describes the results obtained by this method as "absolutely admirable." Its essential action resides in transforming the patient's general condition by this total exposure of the surface of the body to the action of the sun's rays. In treating spinal or hip trouble of tubercular origin the surgeon generally aims at ankylosis in a good position as the best he can do for the patient, and is quite content if he gets that, but with Dr. Rollier's system a *restitutio ad integrum* is frequently obtained, with free movements in the joints affected. Not only can this result be accomplished in the favorable cases of closed lesions at an early stage, but in some cases of open lesions, even in adults! Cases that formerly were considered practically hopeless, such as Pott's disease of the spine, with abscess by congestion open and infected, recover under the sun treatment, though such results are naturally not as brilliant as when the case can be treated earlier in the disorder. One patient that came under Dr. Rollier's care had twenty-five different tubercular lesions disseminated about the body and recovered! Another adult patient at the sanatorium gained 38 lb. in weight in six months on the sun baths alone.

The treatment is not a rapid one, nor was that to have been expected: all chronic disorders imply a chronic treatment. An ordinary case requires upwards of two years in the mountains. But even this is better than the classical surgical treatment by immobilization, and as has been remarked above, the ultimate outcome is far superior, with a free joint. It is preferable to send patients to Leysin in December and May, the beginning of the fine seasons, when they are going there for the first time; the winter treatment is superior to the summer, there is less wind, and all dust is smothered under the snow.

Dr. Rollier's success is all the more creditable to him in that it was achieved in spite of the united opposition of his medical confrères up at the pulmonary sanatoria; and one of the best proofs of the credibility of the reports that have come about his treatment is that the well-known surgeon, Roux, of Lausanne, is sending his cases up to Leysin.

"S."

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 15, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,180	419	Waltham	4	1
Chicago	553	163	Pittsfield	12	3
Philadelphia	—	—	Brookline	6	—
St. Louis	—	—	Gloucester	4	—
Baltimore	—	—	North Adams	6	1
Cleveland	—	—	Northampton	4	1
Buffalo	—	—	Chicopee	7	1
Pittsburg	—	—	Medford	3	—
Cincinnati	—	—	Beverly	2	1
Milwaukee	—	—	Leominster	2	—
Washington	—	—	Hyde Park	7	1
Providence	—	—	Melrose	2	2
Boston	205	64	Newburyport	3	2
Worcester	40	8	Revere	4	1
Fall River	30	12	Westfield	5	2
Cambridge	31	7	Woburn	2	2
Lowell	40	21	Peabody	—	—
New Bedford	26	14	Marlboro	2	1
Lynn	20	6	Attleboro	5	2
Springfield	29	5	Adams	—	—
Lawrence	29	10	Clinton	1	1
Somerville	9	1	Gardner	8	6
Brockton	11	3	Milford	—	—
Holyoke	21	12	Watertown	5	0
Malden	5	—	Plymouth	—	—
Chelsea	11	—	Southbridge	2	2
Newton	7	5	Weymouth	—	—
Salem	10	5	Framingham	5	2
Haverhill	12	5	Wakefield	—	—
Fitchburg	—	—	Webster	2	—
Everett	9	6	Arlington	—	—
Quincy	—	—	Greenfield	2	—
Taunton	13	5			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 12, 1910.

WICKES, H. W., surgeon. Directed to proceed to New Orleans (Quarantine), La., upon special temporary duty. Oct. 10, 1910.

LUMSDEN, L. L., passed assistant surgeon. Directed to proceed to Huntsville, Ala., upon special temporary duty. Oct. 7, 1910.

MCCLINTIC, T. B. passed assistant surgeon. Granted fourteen days' leave of absence from Oct. 5, 1910.

MCLAUGHLIN, A. J., passed assistant surgeon. Directed to proceed to Chicago, Ill., upon special temporary duty. Oct. 10, 1910.

FRANCIS, EDWARD, passed assistant surgeon. Granted thirty days' leave of absence from Oct. 3, 1910.

RUCKER, W. G., passed assistant surgeon. Directed to proceed to Baltimore, Md., upon special temporary duty. Oct. 7, 1910.

SPRATT, R. D., passed assistant surgeon. Granted four days' leave of absence from Sept. 28, 1910, on account of sickness.

ALFORD, NEIL, acting assistant surgeon. Granted thirty days' extension of leave of absence from Aug. 29, 1910, on account of sickness, and fourteen days' annual leave from Sept. 28, 1910.

BARCLAY, JAMES, acting assistant surgeon. Granted thirteen days' leave of absence from Oct. 10, 1910.

BINGHAM, E. O., acting assistant surgeon. Granted fifteen days' leave of absence from Oct. 15, 1910.

GOLDTHWAITE, HENRY, acting assistant surgeon. Granted seven days' leave of absence from Oct. 6, 1910.

SCOTT, E. B., pharmacist. Granted twenty-three days' leave of absence from Oct. 17, 1910.

BOARD CONVENED.

Board of medical officers convened to meet at Stapleton, N. Y., Oct. 18, 1910, for the purpose of making a physical examination of a cadet of the United States Revenue Cutter Service. Detail for the board: Surgeon H. W. Austin, chairman; passed assistant surgeon W. A. Korn, recorder. Oct. 11, 1910.

SOCIETY NOTICES.

ASSOCIATION OF RAILWAY SURGEONS. — The twentieth annual meeting of the New York and New England Association of Railway Surgeons will be held at Hotel Astor, Broadway and 44th Street, New York City, Thursday and Friday, Nov. 3 and 4, 1910.

THE HARVEY SOCIETY. — The second lecture of the Harvey Society will be delivered by Prof. W. E. Castle, of Harvard University, on Saturday, Nov. 5, at 8.30 P.M., in the Academy of Medicine, 17 West 43d St., New York. Subject: Unit Characters in Heredity.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY. — Medical section meeting, John Ware Hall, Wednesday, Nov. 16, 1910, at 8.15 P.M. "Acute Poliomyelitis," John Lovett Morse, M.D. Discussion by Drs. R. W. Lovett, W. E. Paul and W. P. Lucas.

EDWIN A. LOCKE, M.D., *Secretary*, 311 Beacon St. HENRY JACKSON, M.D., *Chairman*, 380 Marlborough St.

SUFFOLK DISTRICT MEDICAL SOCIETY. — Stated meeting, Saturday, Oct. 29, at 8.15 P.M. "What Medical Societies can do for the Health of the People." Paper: By Mr. John Ritchie, Jr. (For two years member of the Boston Board of Health.) Discussion: Formal discussion by invited guests will be omitted; instead, it is hoped that there will be free general discussion by the members of the Society. Business: Election of Nominating Committee; Revision of the By-Laws of Suffolk District Medical Society. Refreshments after the meeting.

GEO. H. MONKS, *President*. DAVID D. SCANNELL, M.D., *Secretary*.

RECENT DEATHS.

DR. WILLIAM W. BALDWIN, who died of apoplexy last week at Great Bend, Pa., spent the greater part of his professional life in Italy, where he practised medicine at Rome and at Florence. He is survived by his widow, four sons and two daughters.

DR. GEORGE WHIPPLE PORTER, who died at Dorchester on Oct. 15, was born in 1847. He received the degree of A.B. from Brown University in 1870 and that of M.D. from the Harvard Medical School in 1874. He practised medicine in Providence, R. I.

DR. ABRAM BROTHERS, of New York, died on Oct. 15. He was graduated from the College of Physicians and Surgeons, New York, and afterwards served as interne at Bellevue Hospital. At the time of his death he was adjunct professor of diseases of women in the New York Post-Graduate Medical School and visiting gynecologist to the Post-Graduate and Beth Israel hospitals.

JAMES H. DENNY, M.D., formerly of Boston, and at one time a visiting physician at the Boston City Hospital, died at Vienna, Austria, Oct. 16, at the age of seventy-one years. He was a member of The Massachusetts Medical Society from 1863 to 1892.

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department, Hygienic Laboratory, Bulletin No. 63. Digest of Comments on the Pharmacopeia of the United States of America and the National Formulary for the year ending Dec. 31, 1907. By Murray Galt Motter and Martin I. Wilbert.

Treasury Department, Hygienic Laboratory, Bulletin No. 67. The Solubilities of the Pharmacopeial Organic Acids and their Salts. By Atherton Seidell.

The Role of Obstetrics in Preventive Medicine. By W. P. Manton, Detroit. Reprint.

Further Observations on the Milk Supply of Washington, D. C. By G. Lloyd Magruder, Washington, D. C. Reprint.

Further Observations of Parameba Hominis, an Intestinal Parasite of Man. By Charles F. Craig, M.D., Washington, D. C. Reprint.

"Go Ye into all the World; Preach the Gospel; Heal the Sick." By DeWitt G. Wilcox, M.D., Boston, Mass. Reprint.

Cranial Injuries as Productive Factors in Criminality. By DeWitt G. Wilcox, M.D., Boston, Mass. Reprint.

The Education of Women Relative to Diseases Incident to the Menopause. By DeWitt G. Wilcox, M.D., Boston, Mass. Reprint.

Report of Three Unusual Cases. By W. P. Manton, M.D., Detroit. Reprint.

The Histogenesis of the Blood Platelets. By James Homer Wright, M.D. Reprint.

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Original Articles.

THE ETIOLOGY OF CHOLECYSTIC GALL-STONES.

BY W. IRVING CLARK, M.D., WORCESTER, MASS.

THE pathogenesis of gallstones has been a subject of great interest and continual investigation since the days of Galen. The large percentage of stones found at autopsy (7–10%) and the severity of the symptoms and complications have lead to an exhaustive study of the subject. While the definite cause of gallstones has not yet been established, so much progress has been made that it is now possible at least to draw a hypothetical picture of the different steps of gallstone formation derived from the hypotheses and results of various investigators. Such a picture should be of interest to the physician and surgeon in view of the wide range of complications which follow this condition.

In this paper a résumé of the theories of gallstone pathogenesis will be given, with a subsequent hypothetical picture of typical gallstone formation.

The hypotheses of pathogenesis of gallstones have considered almost every conceivable factor. Upon examination, however, these hypotheses fall into three broad groups which may be roughly classed as metabolic, histological and chemical.

Since gallstones consist principally of cholesterin and bilirubin calcium, the probable source of an over supply of these substances and the question of the method of their precipitation has formed the basis of each hypothesis.

In order to obtain a clear view of the field these hypotheses will be stated in brief and then considered in detail.

I. *Metabolic hypothesis.* — This hypothesis conceives increased biliary cholesterin and bilirubin calcium to be the result of some change in metabolism, which causes an increase of these substances in the blood. The liver then excretes them from the blood; they appear in the bile in abnormal amounts.

II. *Chemical hypothesis.* — This hypothesis conceives a precipitation of the cholesterin and bile pigment from the bile by some chemical change in the bile itself, due either to autolysis or to bacterial action.

III. *Histological or mucous membrane hypothesis.* — This hypothesis conceives the cholesterin and calcium of the bile to be formed entirely by the mucous membrane of the gall bladder and bile ducts, a catarrhal inflammation increasing the production of cholesterin and calcium.

The metabolic hypothesis was much favored up to the time of Naunyn. Austin Flint, Du Jardin-Beaumetz, Frerichs and others held this view, but following the work of Naunyn and his pupils the theory was not given as much support.

This was due to the fact that Naunyn fed dogs large quantities of cholesterin, and also injected it hypodermically, but was unable to recover an increased percentage of cholesterin from their bile.

These experiments, though apparently convincing at the time, are not above criticism. Thus, Herter[1] says that "it is impossible to insure prompt absorption from the intestine or from the peritoneum, and intravenous injections of finely divided substance (cholesterin is extremely insoluble) cause death from embolism." He furthermore concludes that "we cannot exclude the possibility that there are occasional disorders of nutrition attended with an increase of cholesterin in the blood serum and hence with an increase in the bile." As possible etiological factors he considers diabetes, arteriosclerosis and nephritis, basing his conclusion upon the finding of high cholesterin percentages or the presence of gallstones upon autopsy in these diseases.

Beer[2] has recently supported the metabolic hypotheses in an investigation of intrahepatic stones. He collected autopsy statistics upon twelve cases in which there had been obstruction of the common bile duct for a period of four to five weeks, accompanied by inflammation of the extra- and intra-hepatic ducts. These cases showed the classical conditions necessary for the production of gallstones, according to Naunyn. In seven of these cases the common duct was obstructed by stones; in five cases, by tumors. In the first series (the stone cases) he found many stones in the liver ducts, but in the second series of five cases, no stones were present. From this he argues that since the pathological conditions of the bile ducts were identical in both series, and one series, which already had gallstones lower down the tract, developed stones in the liver ducts, while the other series showed no stone formation; therefore, something more than mere stagnation of bile and infection of bile passages is necessary in the formation of stones. He suggests a derangement in the metabolic function of the liver as a probable etiological factor.

Howell,[3] in 1908, says, "It is assumed that cholesterin . . . is eliminated by the liver cells from the blood, which collects it from the various tissues of the body," while Hemmeter,[4] 1909, believes that gallstone formation may be due to pathologic metabolism of the liver.

Thus, though most authors hold strongly to some modification of Naunyn's mucous membrane hypothesis, they are not prepared to ignore the possibility of general metabolism as a factor in cholesterin and calcium production in the bile.

Chemical hypothesis. — Established by Thudicum[5] in days before the rôle of bacteria in disease was known, this hypothesis has had many supporters up to Naunyn. Following Naunyn's work the theory was allowed to drop until revived by Halia,[6] Gérard,[7] Kramer[8] and Bacmeister,[9] in the last four years.

Thudicum's hypothesis held that cholesterin and bile pigment were precipitated from stagnant bile as the result of an acidity which appeared in the bile after long standing. He believed that the acidity was due to the mucus in the bile and that this acidity caused a decomposition of the bile salts and alkaline carbonates which initiated a precipitation of cholesterin and bilirubin calcium. The possibility of such a reaction has

been acknowledged by all investigators, and since the discovery of bacterial action, attempts have been made to show that this acidity could be produced by such action upon the bile.

Thus Halia [6] inoculated sterile and filtered ox bile, rendered alkaline, with typhoid and colon bacilli, with a resulting change of reaction of the media to acid. Dunham,[10] however, repeating this experiment upon human bile, found that even a considerable growth of these bacilli produced a hardly perceptible change of reaction toward acidity in from seven to ten days. Criticism has been made that Dunham's experiments were not carried on over a long enough period.

Gérard [7] added colon bacilli to sterile bile. He then incubated and after some weeks obtained a precipitation of cholesterin. This precipitation he believed was due to a dissolution of the bile salts (through acidity of the bile).

Kramer [8] has recently (1907) performed an interesting series of test-tube experiments in which sterile tubes of mixed bile and bouillon were inoculated with B. typhosus and B. coli communis. After six months there was a semi-solid precipitate taking the form of the bottom of the tube and consisting of all the constituents of gallstones. Kramer concluded that gallstone formation was the direct result of the growth of micro-organisms in the bile. Just what the exact chemical nature of the decomposition is he is unable to say, but suggests that it is due to acid production by the bacteria. This would agree with Halia's findings. Baldwin,[11] examining the gall bladders of a number of cases having cholecystitis following acute infectious diseases, found the bile to be acid or neutral.

Following Kramer's work, Bacmeister [9] began publishing a series of revolutionary papers. He found that B. pyocyaneus and B. proteus likewise cause a precipitation of cholesterin in the bile. Not satisfied with this, he carried out experiments still further and found that cholesterin would separate out of sterile bile on long standing. He describes the successive steps of crystal formation which he was able to watch under the microscope. The first phase of the cholesterin is in the form of myelin droplets, at first very minute, but gradually increasing in size and forming amorphous clumps of cholesterin. Fine crystals, needle-like in form, as well as the typical flat platelets of cholesterin, separate from the droplets or the amorphous masses.

He viewed this process in sterile and infected bile, but noted that it occurred much more rapidly if epithelial cells were present. From these experiments he believes that cholesterin precipitation is due to autolysis of the bile which is markedly hastened by the presence of bacteria or epithelial cells.

Summing up in his monograph with Aschoff,[12] he says: "We find the radiate cholesterin stone, as a rule, in non-infected simply stagnant gall bladders.

"The morphology of radial cholesterin stone shows a slow crystallization out of the bile. The chemical building up of the stone arises from synthesis of normal, not decomposition of infected, bile.

"The constituents of the stone can be precipitated from normal bile without infection through simple decomposition (test tube experiments). The radiate cholesterin stone occurs almost solely as a single stone."

Mucous membrane hypothesis. — This hypothesis is also an old one. It was suggested by Budd as far back as 1845, and revived in 1887 by Bristowe, but it received its strongest support in 1892, when Naunyn [13] published his classical monograph on cholesterin.

According to Naunyn, the steps in the pathogenesis of gallstones are as follows:

I. Stagnation of bile in the gall bladder.

II. Introduction of non-virulent bacteria into the gall bladder, these bacteria setting up a catarrhal inflammation of the mucous membrane.

III. An extrusion of cholesterin in amorphous or myelogenous form from the diseased mucous membrane.

IV. Collection of amorphous cholesterin about small masses of detritus and bacteria with subsequent crystallization.

V. Increasing precipitation of cholesterin from the inflamed mucous membrane.

VI. Precipitation of bilirubin calcium from the bile around the cholesterin nucleus.

VII. Replacement of the calcium in whole or in part by cholesterin through infiltration.

This theory has been slightly modified by subsequent experiments. Thus Wakeman [14] injected strong solutions of bichloride of mercury, carbolic acid and other irritating sterile drugs into the gall bladders of dogs. After starving the dogs for three days, they were killed and the bile analyzed. In all the dogs thus treated, the cholesterin content of the bile was much increased and there was proliferation and desquamation of the epithelial cells. He, therefore, concludes that bacteria *per se* are not necessary to cause cholesterin precipitation, as a catarrh of sterile origin produces a like result.

Adami and Aschoff [15] consider the amorphous form of cholesterin in the degenerated cells to be cholesteryl-oleate. They believe that the fatty acid unites with alkaline salts in the bile in the form of soluble soaps, and that there is a consequent precipitation of cholesterin. This view is based upon the refracting property of the amorphous globules. They are unable, however, to prove definitely that the amorphous bodies are chemically cholesteryl-oleate.

If the hypothesis of Adami and Aschoff proves correct, a most important question will be answered, viz., What initiates the primary precipitation of cholesterin crystals?

Baldwin [16] has shown that the desquamation of cells is considerable in infectious cholelithiasis and that cholesterin can be demonstrated in these desquamated cells.

Naunyn's hypothesis has been further strengthened by the experimental formation of gallstones, the experiments fulfilling as nearly as possible the laws he laid down. Thus experimentally,

gallstones have been produced in dogs, rabbits and guinea pigs by injecting an attenuated culture of typhoid or colon bacilli into the gall bladder after ligation of the cystic duct, or having placed a sterile foreign body in the gall bladder.

It was found that injections of virulent bacteria produced an acute cholecystitis without resulting gallstones, and that unless there was a stagnation of bile such as caused by a complete or partial obstruction, the bile quickly became sterile and no stones were formed. Foreign bodies were introduced aseptically, but these failed to produce stones unless accompanied by bacteria. Thus we see that stagnation of bile and a catarrh of the mucous membrane are two essential conditions in the formation of gallstones.

Calcium. — So far only the precipitation of cholesterin has been considered. It must be remembered, however, that calcium in conjunction with bile pigment enters largely into every gallstone. It is generally believed that calcium is produced by catarrhal inflammation of the mucous membrane of the bile ducts and gall bladder and precipitates about a nucleus. In every catarrhal inflammation there is an extrusion of albuminous matter from the inflamed membrane. Naunyn found that on adding egg albumin to bile there was an immediate precipitation of bilirubin calcium. Herter says, "The view expressed by Gilbert that the biliary calcium is largely derived from the mucous membrane of the gall bladder, through its mucous and desquamated epithelium, is probably in large part correct. . . . But, so far as I am aware, careful experimental data relating to the point are lacking."

Funke considers that "the weight of evidence seems to point to the fact that the salts contained within biliary concretions are largely a product of the mucous membrane. Baldwin found a marked increase in calcium in the fifteen cases of cholelithiasis which upon examination showed acid or neutral bile. He considers the acid as a probable factor in the calcium formation. This is diametrically opposed to Herter, who considers a superalkaline bile a possible cause. Bacmeister believes that the calcium is present in the mucus, which is enormously over-produced in the catarrhal conditions of cholelithiasis. The calcium, he believes, unites with the bilirubin of the bile and is precipitated about the cholesterin nucleus.

Rôle of bacteria in gallstone formation. — The question of bacteria *per se* as a cause has been carefully considered; that is, whether bacteria in the gall bladder do not act as a foreign body and initiate a precipitation of cholesterin. Thus Cushing [17] has advanced the theory that bacteria agglutinate in the gall bladder, thus forming a nucleus for precipitation. He has further demonstrated agglutination of typhoid bacilli, obtained from gall bladders, by serum of typhoid patients.

Richardson [18] found large clumps of typhoid bacilli in the gall bladder of five out of six cases of typhoid in autopsy.

Cantari [19] has found that the agglutinating power of bile in animals immunized against typhoid, colon and influenza bacilli is considerable, but not so great as is the blood serum.

Numerous investigators have examined gallstones for bacteria, both by culture and stain. Gilbert and Dominici [20] observed that bacteria were almost always demonstrable in recently formed calculi. Fournier [21] obtained growths from the nuclei of 47 out of 72 stones examined. Further work of a similar nature has been done by Pratt,[22] Gilbert and Fournier, Dufort, and Blumenthal. The most recent investigation is by Funke,[23] who examined 102 calculi by stain and culture. He obtained positive cultures in 31 stones. The bacteria found were B. typhosus, B. coli communis (these two formed the great majority), but also B. lumbatus, B. gasoformans, B. oxygenes, B. Friedländer, B. lact. aerogenes, B. tenacatis, B. subtilis. The wide variation of organisms is interesting, but it must be remembered that the finding of bacteria in gallstones is not of great etiological significance, since they may penetrate the stone from without.

The way in which bacteria reach the gall bladder has not been demonstrated. The possible modes of infection are four in number:

I. Direct from the peritoneum.

II. By the blood from the cystic artery.

III. By the common bile and cystic duct from the duodenum.

IV. In the bile from the liver by way of the portal circulation from the intestines.

Most recent authors believe that the last is the most probable route. In support of ascending infection from the duodenum, Bond [25] has shown that there are reverse currents in the intestines and that indigo-carmine particles have been carried from anus to gall bladder, and this mode of infection has been advocated by many. The work of Lartigau [26] and others in recent years has led to a reversal of opinion, and Mayo [27] in a recent article considers the portal circulation the probable mode of infection.

Hewlett,[28] in discussing the question, sums up as follows: "Adami and Ford have claimed that there is a constant passage of bacteria through the mucosa of the healthy intestines; and bacteria in the blood may be excreted in the bile (Cushing). The bacteria causing a cholecystitis are often not those commonly found in the duodenum. The infection of the biliary passages above a ligature around the common duct could hardly come from an ascending infection. Finally, if an enteritis be caused by the administration of arsenic, etc., and if the animal be fed some easily recognized organism, such as the B. prodigiosus, this organism can often be demonstrated in the bile passages."

Considering these hypotheses as a whole, the following would be a picture of gallstone formation.

Since hypotheses and the experimental evidence agree upon the stagnation of bile as the most important predisposing factor to gallstone formation, the first step in the sequence will be a stagnation of bile caused by one of a number of possible causes. Thus, the patient would have suffered from gastroptosis, pregnancy or some

condition mechanically hindering the free flow of bile; or, on the other hand, be a person of sedentary habits and chronic indigestion. While the above are the reasons usually given as the etiological factors of stagnation of bile, the mechanical problem seems more intricate than would be indicated by the general terms above mentioned. Further careful anatomical investigations should show some hitherto undemonstrated etiological factors.

In a large number of cases no preceding condition can be found except typhoid fever or chronic indigestion. So frequent is a history of indigestion with occasional pain obtainable in definite gallstone cases that it is quite possible that this is an etiological factor.

Since the contraction of the gall bladder is governed by a reflex established in the duodenum by the acid chyme, it is easily conceivable that a chronic catarrh of the stomach and duodenum might produce a reflex congestion of the mucous membrane of the gall bladder. As in a majority of cases of gallstone disease confined to the gall bladder, a sharp line of demarcation of the inflammation is observed at the opening of the cystic duct, it is probable that it is at this point, and not in the duct, that the obstruction occurs, through congestion and subsequent swelling of the mucous membrane. Such a congestion would not be caused by bacteria, but would afford a fertile field for bacterial infection through the bile. Apparently, there have been no experimental or autopsy findings to prove or disprove this theory.

An examination of the gall bladder in the pre-gallstone stage would show a somewhat enlarged bladder with a congested mucous membrane. The muscular coat would be rather atonic and thin from the infrequent contraction and interference with perfect circulation.

Examination of the contained bile would show desquamated epithelium containing some globules of amorphous cholesterin, these globules having been precipitated from the bile (Bacmeister) and reabsorbed by the cells (Aschoff) or being the product of the degeneration of the epithelium of the mucous membrane (Naunyn).

The bile would be sterile, but upon analysis would show an increased percentage of cholesterin and calcium, the former due either to the increased desquamation of epithelial cells or to some metabolic change in the body or liver, the latter due to epithelial desquamation and increased action of the mucous glands.

Such a gall bladder would give no symptoms. The next stage is that of beginning stone formation. In this stage the walls of the gall bladder probably remain as in the pre-gallstone stage. The contents, however, show a most interesting change. Detritus is much more evident in the bile. This consists of broken-down epithelial cells, held together by mucous, amorphous cholesterin (Bacmeister, Adami, Aschoff, Naunyn, etc.).

The exact chemical reaction by which these crystals are precipitated is still under dispute; according to Naunyn, they precipitate from the amorphous form by concentration; according to Adami, by the reaction of cholesteryl-oleate with alkaline bile salts; according to Kramer *et al.*, by an acid reaction of the bile which precipitates it from its union with the bile salts. The crystals have a tendency to unite, and gradually a small cholesterin stone develops. According to Bacmeister and Aschoff, this stone gradually increases in size by radial formation. According to Naunyn, the amorphous cholesterin forms a nucleus for the precipitation of bilirubin calcium which surrounds it. The bilirubin calcium is added layer by layer, but, while this is going on, amorphous cholesterin is infiltrating the stone from without through channels, and gradually replacing the bilirubin calcium, crystallizing out as pure cholesterin. In this way Naunyn believes the common mixed cholesterin-bilirubin-calcium stone is formed. In cases of pure cholesterin stone he believes the nucleus is encysted in a pocket of the mucous membrane and that the amorphous cholesterin gradually crystallizes about it, a stone thus forming. Bacmeister, as previously stated, has contrary views. Whether bacteria are present at the early stage of stone formation is another point upon which there is dispute; thus the upholders of the chemical hypothesis claim bacteria need not necessarily be present, but do undoubtedly accelerate the rapidity with which the stones form. The upholders of the mucous membrane hypothesis, on the other hand, claim that bacteria are absolutely necessary, and in experimental work no gallstones have been produced except in the presence of bacteria. It is necessary to conceive, therefore, that bacteria absorbed from the intestine are excreted in the bile, and that they lodge in the congested mucous membrane of the gall bladder. Here they establish a catarrh with an enormous increase in the mucous glands (Adolf Muller); with this there is an increase of mucus tending to cause a precipitation of calcium and a change of reaction of the bile, and increased necrosis and desquamation of epithelial cells, resulting in cholesterin formation.

The next stage is the stage of development of gallstones.

All the classical conditions for cholelithiasis are now present. The gall bladder, enlarged and relaxed, presents a chronic catarrhal inflammation of the mucous membrane, with atony and thinning of the muscular coat. It is filled with stagnant bile supersaturated with cholesterin and calcium. One or more stones in varying stages of formation may be seen. These stones are soft and readily take impressions from their neighbors and from the contractions of the gall bladder. The contraction occurs from time to time normally, as an effect of the inflammatory condition, or in an effort to expel the foreign bodies. A gradual increase in size and number of the stones takes place during this stage, and their presence accentuates the catarrhal condition of the mucous membrane. At any time the inflammation may become acute, due to a blocking of the already partially obliterated opening into the cystic duct, or to an increase in virulence of the bacteria.

Such exacerbations are more frequently the cause of pain than the passage of a stone into the cystic duct (Moynihan). In fact, most recent authors believe the pain of cholecystic gallstones is due to acute infection rather than mechanical passage of stones. An obstruction, interfering completely with the outflow of bile and consequent drainage of the gall bladder, however, may be due to a stone which acts like a ball-valve in the neck. In this condition there results a typical attack of colic lasting until the stone drops back into the bladder and drainage is again established. Thus at any time, the simple catarrh may change into an acute infectious cholecystitis with the resulting pathological changes. The consideration of the further increase in size and number of stones with the remarkable changes they may effect upon the gall bladder and other organs belongs to the realm of pathology and not to the pathogenesis of cholecystic gallstones.

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[10] Dunham: Quoted by Herter, Med. News, vol. lxxxiii, p. 591.
[11] Baldwin: Jour. Biol. Chem., 1908, p. 213.
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[27] Mayo: Keen's Surgery, Cholelithiasis.
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A FALLACY IN PSYCHOTHERAPY.

"Fighting it Out" in Functional Nervous Disorders.

BY JOHN E. DONLEY, M.D.,

Physician for Nervous Diseases, St. Joseph's Hospital, Providence, R. I.

It is interesting to observe the gradual evolution of knowledge through which exact science comes to elucidate the facts of empirical observation. For centuries accomplished diners were convinced and acted upon their conviction that good appetite is a condition of good digestion; lately Professor Pawlow has proved that they were right. In another way, those who had much clinical experience of smallpox believed that red light was in some manner beneficial; within recent years we have learned that this is, in fact, the truth. And so it is in a large number of instances — the practical man is doing things aright long before the scientific man tells him the precise reasons for his action.

In the sphere of the mental life, saint and sinner have long since realized, and some of them have written it down in books, that spiritual conflicts within themselves are fraught with most disagreeable and, not seldom, disabling consequences. It has remained for abnormal psychology to show us somewhat of the mechanism of these conflicts and in some instances to assist us in preventing or removing their baneful effects. As determining our attitude toward functional nervous conditions, this more recent knowledge has contributed much, not perhaps as much as its more ardent disciples proclaim, but nevertheless sufficient to make our orientation within this nervous labyrinth a little more secure. We have learned, as the result of contemporary research, that possibly some of our common advice to patients has been based upon this or that psychological fallacy. Of one of these I desire to speak, namely, the fallacy of "fighting it out" in functional nervous disorders.

There is no occasion for surprise that where interest is so universal and the object of it so obscure, a multitude of opinions should be entertained concerning the true or best methods for treating various nervous affections. But if fallacies have crept in, they ought to be recognized, for fallacies are dangerous things; theoretically they may do no harm, but practically they are elements of discord which may disturb the otherwise harmonious course of our endeavors.

If we should happen to ask any one of our patients who at the time is troubled with what commonly goes by the name of nervous exhaustion, or hypochondria, or obsessions, or some form of depression, what he is doing about his many fears, anxieties and perplexities, he will inform us quite naturally that he is doing the best he can to "fight it out." That surely ought to be a brave thing to do, and so it is. But if we further inquire how he is succeeding in his fight, he will almost certainly tell us that things are not well with him, for otherwise he would not be consulting us at all. Despite his most determined efforts to bring the contest to some definite conclusion, nevertheless it seems well-nigh interminable. You will agree with me that there is no more pathetic spectacle than that presented by the man who has employed his time and his energy for months, perhaps for years, in this fruitless struggle, and has reaped as his reward nothing save discouragement and, in some cases, what looks suspiciously like despair. And yet I believe such a man may travel a road that leads to some measure, at least, of success.

By way of illustration let me ask you to indulge a quotation from Mr. Arthur Christopher Benson's suggestive volume, "The Altar Fire." Herein one may read:

"There is a story of a Cornish farmer who, returning home one dark and misty night, struck across the moorland, every yard of which he knew, in order to avoid a long tramp by road. In one place there were a number of disused mine-shafts, — the railing which had once protected them had rotted away, and it had been no one's business to see that it was renewed, some few had been filled up, but many of them were hundreds

of feet deep and entirely unguarded. The farmer first missed the track and after long wandering found himself at last among the shafts. He sat down, knowing the extreme danger of his situation, and resolved to wait till the morning, but it became so cold that he dared stay no longer for fear of being frozen alive, and with infinite precautions he tried to make his way out of the dangerous region, following the downward slope of the ground. In spite, however, of all his care, he found suddenly, on putting his foot down, that he was on the edge of a shaft and that his foot was dangling in vacancy. He threw himself backwards, but too late, and he slid down several feet, grasping at the grass and heather; his foot fortunately struck against a large stone, which, though precariously poised, arrested his fall, and he hung there for some hours in mortal anguish, not daring to move, clinging to a tuft of heather, shouting at intervals, in the hope that, when he did not return home, a search party might be sent out to look for him. At last he heard, to his intense relief, the sound of voices calling him, and presently the glare of lanterns shot through the mist. He uttered agonizing cries and the rescuers were soon at his side, when he found that he had been lying in a shaft which had been filled up and that the firm ground was about a foot below him, and that, in fact, if the stone that supported him had given way, he would have been spared a long period of almost intolerable horror."

Now in this Cornish farmer we have a striking example of what I shall call the pugnacious attitude, the attitude, namely, which impels to an active campaign, inasmuch as it leads its adherents to "hold on," and, in the case of nervous people, constantly to try conclusions with their abnormal mental states. Let us approach this attitude somewhat critically and endeavor to determine its practical value. It will not be denied that the first step in the direction of nervous instability is introspective analysis, and Ribot is right when he remarks: "The healthy, normal man suffers himself to live physically and morally without studying himself and without watching himself live, at least any more than is necessary. But the moment the demon of analysis has entered into us, we do not know where it may lead us; an absolute tyrant, it will one day remain sole master of the place. Even under its feeble form it is the first stage in morbid evolution. The inevitable outcome of this tendency to analysis, so soon as it has passed a certain point, is mental disaggregation. The majority of people, either by strength or by feebleness of intellect, by luck or ill-luck, by a simple and limited life or by incapacity of attention to maintain it, escape this tendency. But if there are many who escape the ill-effects of mental analysis, there are also many who suffer seriously from the wounds this tendency inflicts." Among those who suffer most intensely are nervous people, the evil genius of whose existence is a morbid subjectivism. Every typical neurotic is so constantly and, I was going to say, so exclusively interested in the manner of his living that he suffers a corresponding contraction of interest in life itself. Such a man does not — it is too much to say that he cannot — read without considering whether it is going to fatigue his brain; he eats nothing without watching the process of digestion; if he takes a walk he fears he will overfatigue himself; bathing fills him with the apprehension of catching cold; in bed he is forever listening for his heart-beat, and when about during the day his finger is frequently feeling for his pulse; in a word, he does nothing without a magnified self-consciousness. Here, if there be such a thing, is a truly exaggerated ego. So contracted has his mental horizon become, so atrophied his interest in everything except his own sensations, and so pessimistic his outlook upon life, that he actually ceases to be a useful member of society, and becomes a burden to himself if not to his friends as well. He has replaced the extra-spection of normal living by the intro-spection of neuroticism.

Now to advise, or even to permit, a man of this temperament to "fight" his condition, which is simply another way of inviting him to continue his morbid intro-spection, seems very much like requesting the moth to get into the flame. For if we are to have a genuine fight, assuredly we must have some place to fight and some one to do the fighting. In this particular instance the battle-ground must, of necessity, be within the mind of the patient, and the contestants, his will on one side and his emotions on the other, with his intellect wavering in its allegiance, inclining now to one side and now to the other. And remember, this can be no half-hearted contest, — there is too much at stake; it must theoretically be a fight to the finish, only practically the weary patient finds that for him, at any rate, there is no finish, and that after weeks, months, years, perhaps, of struggle, he is but going round and round like a squirrel in a cage, while his strength and, more especially, his courage have suffered undesirable depletion. I have known a young man, holding a position of trust in a banking house, who left his employment and his very young family on account of a moderate nerve exhaustion, which was accompanied by the usual depression and morbid fears, and who went into the woods of Maine for the purpose of "fighting it out," because he had several times been strongly advised that such, no doubt, was the proper method to pursue. In four months he returned worse than before, and virtually a slave to his magnified fears and abnormal sensations. It cannot turn out otherwise on the pugnacious principle, for is not the primary psychological difficulty a morbid subjectivism? And what is "fighting it out" but a continuous, systematic, deliberate perpetuation of this same subjectivism? since, obviously, one cannot fight something unless one is conscious of it, sets it before the mind and keeps the attention more or less fixed upon it. To fight is to hold on; it is to cling in desperation, as the Cornish farmer did, to the mental grass and heather, with the solid earth only a foot beneath.

The plausibility of the pugnacious attitude receives a certain confirmation from the rugged

reasoning of the man in the street, but it is not difficult to show that this reasoning is vitiated by a fallacy, namely, the inveterate fallacy of picture-thinking, by which I mean the universal habit of describing things of the mind in terms of physical objects of sense, and then mistaking such descriptions for mental realities. We all do it, but that is precisely why we should be on our guard against it. The fighting attitude has arisen in some such way as this: If my neighbor Jones annoys me by trespassing upon my private grounds and shooting my game, it is entirely possible for me to terminate this annoying situation by the primitive method of a fight with Jones, during which fight I may put an end to his physical ability to trespass again upon my land. The matter is settled once and for all by the physical elimination of Jones. But observe now what happens when the attempt is unconsciously made to apply this reasoning to processes within the mind of a neurotic person. The analogy, like many another analogy, cannot be made to fit. The morbid ideas and fears which annoy my patient by their intrusion upon the course of his thoughts are not physical things, to be dealt with by the summary method of annihilation, for it is impossible *directly* to strangle or shoot or punch an idea out of existence. So impalpable are they, so elusive and so tenacious of life, that, even when apparently banished for good, they have a disagreeable habit of turning up again at the most inopportune times and in the most trying situations. And accordingly, even though the patient may have fought and have been awarded a prize upon numerous occasions, the contest is by no means ended; the same fruitless, dreary fight must be continued as often as a rebel thought gives him challenge. But it may be objected, while this is all very well and even, in its way, quite plausible, still it is more or less reasoning *a priori* and may have no foundation in actual fact. Well, then, let us observe what experimental psychology has to say in the matter. Through a number of valuable and, in some sense, epoch-making researches, carried on within recent years, we have come into possession of a vastly more comprehensive knowledge of the factors at work in the production and maintenance of different states of psychological instability. It is perfectly true that there are large and serious lacunæ in our knowledge, but sufficient headway has already been made to enable us more intelligently to steer our course in the treatment of many nervous disorders.

Some of the most valuable and quite the most illuminating of this work we owe to Dr. C. G. Jung, of Zürich, whose researches into the problems of association have opened an entirely new and, let us hope, fertile field to students of mental life. Experimenting with a considerable number of persons, Jung discovered that there are certain associations of ideas which liberate a marked emotional wave, and certain others which produce little or none. The experiment is carried out in this fashion: I announce to you, one by one, a series of words, forty-five or fifty, for example, and request you to speak out immediately the first word, which stands, of course, for the associated idea, that arises in your mind. This is your association for the particular word given you. By means of a stop-watch I measure the time that elapses between the moment of my announcing the test word and your speaking the associated word, this time being termed your reaction-time. Now it has been found that for ordinary words, not specially significant, each individual has an average reaction-time, which varies within moderate limits. The following is the abridged record of an experiment to determine average reaction-time:

Stimulus word.	Reaction word.	Reaction-time. Seconds.
Book.	Poems.	1.5
Bridge.	Water.	1.3
Man.	Father.	1.4
Winter.	Snow.	2.0
Food.	Bread.	1.2
To walk.	Country.	2.1
City.	Providence.	1.0
Hat.	Derby.	1.4
Rubbers.	Rain.	1.5
Flowers.	Roses.	2.0

The average reaction-time for fifty words was 1.4 seconds.

Having determined the average reaction-time for this particular individual, let us now study another series of associations with the same individual.

Stimulus word.	Reaction word.	Reaction-time. Seconds.
Bird.	Poe's Raven	1.4
Woman.	Mother.	1.7
Sleep.	Dream.	5.2
College.	Yale.	1.2
Star.	Comet.	7.0
Country.	Cows.	1.8
Paper.	News.	6.5
Philosophy.	Zeno.	1.3
To swim.	River.	1.5
Astronomy.	Telescope.	1.6

Here, it will be observed, were three lengthened reaction-times: Sleep, dream, 5.2; star, comet, 7.0; paper, news, 6.5. What do these signify? According to Dr. Jung and his followers, they mean that the association of ideas aroused by the stimulus word was of such personal and significant interest to that individual as to give rise to an accompanying emotional state which interfered with the rapidity of association, which blocked it, as it were, and caused a lengthening of the reaction-time. Lengthened reaction-time means, therefore, the presence of some disturbing emotion.

Upon inquiry I was interested to learn that the cause of the above lengthened reaction-times was this: The young man, having read an account of comets in a popular magazine, became obsessed by the idea that a *comet* was likely to strike the earth and to cause enormous damage. He had experienced a very vivid *dream* about it, and was continually apprehensive that at almost any time he might read in the *newspaper* an account of the comet's having actually fallen. Accordingly, when the ideas, "sleep," "star," "paper," were presented to him, they aroused emotional states which obstructed the customary and equable

flow of his mental processes and gave rise to a certain degree of psychological instability. During a course of psychotherapy the disturbing emotional complexes were removed, and when this had been accomplished the obsessions disappeared completely. Three years have passed and they have not returned. Doubtless these subconscious emotions will in the future prove to be most important elements in the composition of various nervous disorders. And incidentally it may be of interest to remark that by means of the lengthened reaction-times for certain of their associations, some criminals have been detected and have confessed to crimes which previously they had denied before being confronted with the evidence obtained through the methods of experimental psychology.

More interesting, perhaps, than even the associations themselves are the changes in the electrical resistance of the body during the formation of an association carrying with it a distinct emotional load. This phenomenon is known to psychologists as the psycho-physical galvanic reflex. A constant current from one or two cells is allowed to pass through the body by way of the hands or feet, which rest upon large copper plates, and in the circuit of this current is arranged a mirror galvanometer of Deprez-D'Arsonval for the purpose of measuring the quantity of current flow. By means of an ingenious device the variations of the current-flow are registered by a recording pen upon a revolving drum, and hence it is possible to keep a record of the variations of electrical body resistance for a considerable period of time, the record appearing as a tracing marked by the pen upon the paper surrounding the drum.

Let us assume that, with everything arranged for the experiment, we throw on the current and observe what occurs. While the subject of the experiment sits quietly and breathes easily we notice that the quantity of current passing through his body oscillates slightly about a certain mean. Suppose, now, that we announce to him a word which will arouse an association with a personal interest; what will happen? Immediately, or very shortly, the galvanometer will indicate that more current is passing through his body, while the recording pen will trace on the drum a deep oscillation to accord with the altered current flow. In this manner we may demonstrate to the satisfaction of any one that a mere word which sets off an emotion produces a perfectly measurable electrical change; and, however remarkable it may seem, it is none the less a scientific fact that a simple word is so potent as to lower the electrical resistance of our bodies.

My purpose in thus briefly describing these interesting experiments is to show the profound influence of certain associations of ideas upon our emotional stability. If, then, it is demonstrably true that simply to inaugurate a disagreeable emotional complex is sufficient to produce some degree of nervous instability, it would seem but a logical extension of the argument to maintain that the constant stimulation of such complexes in the process of "fighting it out" is a psychological blunder. I know of no experiments of the sort, but were it possible to test the galvanic reflex while a nervous person was actually in the process of "fighting" his condition, it is not unreasonable to suppose that positive changes in the organism would be brought to light. And such changes would scarcely be conducive to mental and physical stability.

Against the militant attitude a further objection may be raised. Utilizing the method originated by Pierre Janet, and further elaborated by Breuer and Freud, we have learned that the effort to crowd out of mind, to suppress, the memory of a disagreeable experience or set of experiences, in a word, to "forget it," is oftentimes the source of troublesome nervous disorders. A young girl, for example, because of her attempts to smother the memory of a disagreeable experience, may find herself later on the victim of a severe attack of hysteria with all its mental and physical disabilities. And not until this smothered experience has been brought out into the light, not until it has been somehow assimilated, will such a girl return to her former health of mind and body. A greater or lesser degree of nervous instability is the price we pay for trying to smother and to forget our unacceptable experiences.

That this is not extraordinary any one may prove out of his own personal experience. There is scarcely one of us, I suppose, who has not at different times endeavored by main force of will to crowd out of mind some disagreeable experience of the past, some anxiety or sorrow or fear, and in so doing has been conscious mainly of two things: first, the absolute futility of the effort; and, second, its disturbing influence upon tranquility of mind. We have not only not succeeded in our struggle, but we have made a bad matter worse. And if this is true of normal individuals, how much more true must it be of those who are nervously unstable, who have not the toughness of moral fiber to withstand this constant struggle with its interminable failures, and whose physical and mental salvation is imperiled through no fault of their own, but because of the fundamental inadequacy of their method. To maintain a state of conflict within one's own mind is to prevent that unselfconsciousness so essential to mental health.

Most strikingly is this illustrated in the case of the religious consciousness. For those who have passed through personal religious crises, which represent some of the most intense intellectual and especially emotional experiences, the fierce struggle within their souls has been a most fruitful source of discontent, unhappiness and even, at times, of misery. A correspondent of the late Prof. William James writes the following statement: "Life seemed difficult to me at one time. I was always breaking down, and had several attacks of what is called nervous prostration, with terrible insomnia, being on the verge of insanity, besides having many other troubles, especially of the digestive organs. I had been sent away from home in charge of doctors, had taken all the

narcotics, stopped all work, been fed up, and, in fact, knew all the doctors within reach. But I never recovered permanently until this New Thought took possession of me. I think that the one thing which impressed me most was learning the fact that we must be in absolutely constant relation or mental touch (this word is to me very expressive) with that essence of life which permeates all and which we call God."

Here, then, was a woman who, having tried the pugnacious method without avail, finally surrendered, and, by giving up, came into possession not of spiritual riches merely, but of nervous health as well. I have no intention, of course, to convey the idea that in every case an appeal should be made to the religious consciousness; I wish merely to elucidate a principle. When, however, religion is a living force in the life of an individual, I see good reasons why it should become a means of emancipation from the slavery of many fallacious thoughts and morbid emotions.

The power of the religious idea as a psychological aid toward terminating the fighting attitude may be illustrated by a further example. A young woman, following a severe railroad accident, had become practically a prisoner in her own home because of an ever-present fear of going upon the street. Every sort of effort and appeal had been made without success until one day the pastor of her church called to see her and produced a somewhat unexpected result. During his visit the clergyman conversed with her about her unhappy condition, and, during the conversation, he asked her whether or not she professed to be a Christian, to which she gave an affirmative answer. "My dear young woman," replied her friend, "you aren't a Christian at all; you are a pagan. You ask me why. Well, I will tell you plainly. Look out of the window and behold the sun, and the trees, and the flowers, and the birds — all of these things were made by God for the comfort and happiness of his creatures. He made them for me and for you, and yet you who so ardently profess to be a Christian, who pray, and pretend to believe in the protecting Providence of God, are afraid, literally afraid, to trust your God; you are afraid to go out of this house which God gave you, into the street which God made, too. I say that whatever you may profess on your lips, in your heart you are a pagan!" So powerful was the leaven of these words, in this instance, that in not more than two weeks from the time they were spoken the young woman had given up "fighting it out," and, by letting go, had won a complete victory over her fears. I do not know whether they ever returned.

But aside from religion, this same attitude of surrender may be attained through an appeal to a commonsense philosophy, such philosophy, for example, as sustained Epictetus, and Marcus Aurelius, and Seneca in his letters to Lucilius. It is not so much drugs that many nervous people need; it is a practicable philosophy of life, — one that will enable them to enter more courageously the dusty arena where men and women are fighting the perplexing problems of life. Many nervous people have been nurtured, unconsciously, no doubt, to a certain effeminacy of emotion. They require to be always comfortable and to have their feelings swathed, as it were, in cotton. A certain amount of worry is inseparable from any active life; to accept such worry philosophically is worth more than all the efforts in the world to banish it by trying to "fight it out." Practical psychotherapy, whether it employ suggestion, persuasion, psycho-analysis, hypnoidization or other procedure to compass its purposes, has always in view the removal of inner conflicts which harass the harmony of normal existence.

"This attitude of surrender is all very ideal and very utopian; it belongs to the class of things that are important, if true," some one may say. "But the plain, stubborn, everyday fact is that these unhappy neurotics would all surrender, they would all let go, if they could, but, as it happens, they cannot." Here, then, we come upon the very root of the whole matter. The nervous person says, "I cannot let go," which, more accurately stated, would be, "I do not let go because I have never been taught how to do it."

In order that we may put this idea of surrender to what the late Professor James would call "a pragmatic test," let us return to our Cornish farmer and inquire how the hypothesis actually "works." You will remember that this unfortunate man kept clinging in absolute horror to the grass and the heather until a certain point of time, — that moment, namely, when the rescuers arrived to lend their assistance. You recall also that the occasion of his clinging at all was the fact that because of the intense darkness he could not *see*, and, therefore, did not *know*, that the firm ground was but one foot beneath. When the light of his rescuers' lanterns disclosed it to him, like a sensible man he let go and went home, although, left to himself, he would have continued to hold on as long as his strength endured.

Now the predicament of this poor farmer is precisely analogous to that of the average nervous man or woman. The farmer was in darkness, which meant ignorance; so, likewise, is the neurotic, because of his lack of knowledge of the true meaning and value of his myriad morbid ideas, sensations and emotions. Like the farmer who, without knowing, assumed an empty shaft, he assumes a catastrophe in every symptom, and in his efforts to crowd his fear out of mind, to "fight it down" and to keep the lid upon it, he succeeds merely in setting up within himself a constant turmoil of anxiety and depression. Left to himself, he can do little or nothing to solve the recurring riddle.

It is here, I believe, that the trained and sympathetic physician finds the opportunity of his greatest usefulness and becomes a practical necessity. He should be a man who brings the light, who can mediate between science and life; and as the farmer put his foot upon solid ground when the lanterns of his rescuers allowed him to see that it was really there, just so many a nervous sufferer will relax his hold upon his fears when his

physician reveals to him the truth which here as elsewhere shall set him free. When his errors of fact and especially of inference have been pointed out to him, the neurotic, so far as I have seen him, assumes the "will to believe." The problem, then, takes the complexion of educating him out of the habit of fight into one of surrender; a surrender, be it carefully noted, based not upon a mere dogged effort of will, but upon *knowledge* which is power, and which discloses the complete futility of the contest. Not always, indeed seldom, is it an easy task, this metamorphosis of a man's personality, but when it is pursued with intelligence and persistence, it is certain to attain to some degree of success. It is assumed that the Cornish farmer felt stiffness and perhaps some pain in his arms for days as the result of his clinging to the grass and the heather; and in neurotic people it is expecting too much of them to suppose that they will feel no trace of the fight, even if they have surrendered. Not all patients respond to treatment of this or of any sort; nor can we physicians altogether prevent the onset of future fears and anxieties which will take the place of those we have helped to banish, for it is much as Francis Thompson says,

> "Nothing begins, and nothing ends,
> That is not paid with moan;
> For we are born in other's pain,
> And perish in our own."

SPONTANEOUS DISLOCATION OF THE HIP-JOINT FOLLOWING ACUTE INFECTIOUS DISEASES.*

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SPONTANEOUS dislocation is an infrequent sequel of various infectious processes, but of all the joints in which this can take place, that of the hip is certainly most common.

This complication has been known for a long time, but it has only been examined scientifically within the last twenty-five years. In 1722 the famous J. L. Petit published his important work on dislocations, in which he endeavored to prove the theory of hydrops as the causative factor for the dislocation. In 1835, Parise upheld the conclusions arrived at by Petit, over a hundred years before, by means of experimental work on the cadaver. A number of other writings were published, so that Helwig, in 1856, was able to collect twelve cases of post-typhoidal dislocations. One year later, Roser published an exhaustive study, and since then much attention has been given to the question, and many cases have been put on record. Keen collected thirty instances of post-typhoidal dislocation in 1877, while in 1883, Verneuil drew attention to the part played by the muscles in the production of dislocation from a study of several cases of post-rheumatic luxation. The most extensive articles which have appeared on the subject are due to Kummer, who collected fifty-one instances, and Degez, who compiled seventy-four cases of spontaneous dislocation of the hip-joint. Very little attention has been given to the subject in the recent treatises on surgery, so little, in fact, that even in Keen's Surgery, in five volumes, only about a page is devoted to spontaneous dislocations in general and nothing to that of the hip in particular.

The following is the history of a case recently under my observation.

J. H. W., nine years of age, female, had a rather severe scarlet fever in March, 1910. She had always been a healthy child, her locomotor system being perfectly developed. She had never been ill since birth until the scarlet fever. She was in bed for six weeks and finally convalesced, there being no visceral complications. When she began to walk, in the latter part of May, it was noticed that she had a decided limp and that the right leg was considerably shorter than its fellow.

We saw the patient on May 27, at which time the following notes were made: The patient was a well-developed girl, with excellent muscular development. Careful examination of the thorax and abdomen, likewise the urine, was absolutely negative. By measurement, the right leg was found 4 cm. shorter than the left; it was in marked adduction, with internal rotation, which caused the patient to walk with marked limping. The motions of the right hip-joint were considerably interfered with, rotation and flexion being almost entirely absent. The trochanter major was found 4 cm. above the Roser-Nélaton line. There was no pain on pressure, nor were there any other objective symptoms, so that a diagnosis of iliac dislocation of the femur following scarlet fever was made.

Extension, in order to reduce the shortening and to improve the position of the limb, was first resorted to and carried out for five weeks, but as little or no improvement resulted, it was decided to attempt reduction of the dislocation under narcosis, which was done on July 3. After considerable manipulation the head of the femur was made to enter the acetabulum and the reduction was found to be complete. A plaster cast was applied, the limb being placed in abduction, with extension. The extension was kept up until Aug. 17, at which time the cast was removed, when, other than the muscular atrophy, the joint was found in good condition. Electricity and massage completed the cure, so that at present (Sept. 2) the patient is quite well, the functions of the limb being perfectly restored.

In discussing the etiology it is striking how frequently the hip-joint is the seat of spontaneous dislocation, and out of eighty cases collected by Degez, the hip-joint was involved seventy-four times, the shoulder three times, the knee twice and the elbow only once. Perhaps this frequency may be in some way due to the youth of the patients, because it is well known that the hip-joint has a great tendency to the development of pathologic processes in early life, and of ninety cases which I have been able to gather, in only eleven was the patient over twenty years of age. The type of dislocation was iliac eighty times, obturator dislocation six times and perineal dislocation once.

By far the most important causal factors for the development of spontaneous dislocation are typhoid fever and acute articular rheumatism. Then, in order of frequency, come scarlet fever, influenza, smallpox, gonorrhea, erysipelas and

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puerperal fever. In a few instances the causal factor could not be ascertained with certainty. In the cases I have collected the causal factor was as follows: Typhoid fever 34, acute articular rheumatism 28, scarlet fever 15, influenza 4, smallpox 3, gonorrhea 2, erysipelas and puerperal fever, of each 1, while in three others the cause was not determined.

The dislocation usually takes place during convalescence and is particularly apparent in typhoid fever, while in acute articular rheumatism and scarlet fever the complication is prone to occur during the progress of the disease.

Although there is no doubt as to the relationship between spontaneous dislocation of the hip and acute infectious diseases, the mechanism of its development is as yet insufficiently explained. The pathogenesis of spontaneous dislocation has always been rather a puzzle, and for this reason there are several theories which are more or less logical. Petit's theory, advanced in his work already referred to at the commencement of this paper, is that all spontaneous dislocations arise from an effusion of fluid into the cavity of the joint. He believed that the capsule became distended on account of the intra-articular fluid, that the ligaments became softened and lax, and that the head of the bone was pushed from the joint cavity on account of the hydrops and thus resulted in dislocation. This theory was supported by the experimental work of Parise, who injected liquid into the hip-joint of cadavers, and the same result was invariably attained, namely, that great distention of the capsule, with a posterior dislocation, took place. Parise, therefore, came to the conclusion that the structures of union of the joint became lax to such an extent from stretching of the ligaments that the head could be forced out of the acetabulum.

Roser agrees with this theory, which he tries to prove by pointing out that there is no evidence of either acute or chronic inflammatory processes in the cavity of the joint, and also because, in the reported cases, there is no history of trauma or blood extravasation. He, therefore, concludes that the only explanation for spontaneous dislocation is an intra-articular fluid collection causing marked distention of the capsule. Now, in point of fact, in quite a number of cases a hydrarthrosis has been found at operation, and from this there had resulted a distention and softening of the capsule, with separation of the head of the femur from the acetabulum.

It is easy to conceive that the effusion is important for the occurrence of the dislocation, and it is hard to understand why some writers have attributed the ability of preventing dislocation to this effusion. Whether or not hydrops of the joint is alone sufficient to explain the production of a dislocation is rather doubtful. Kummer is of the opinion that the fluid can at most force the head of the femur to the rim of the acetabulum, and in order to force it over the rim he believes that there must be some other external influence, slight as it may be. He also points out that the amount of fluid contained in the joint is so small that it can hardly be the only causal factor in the production of the lesion.

Verneuil and Reclus endeavored to explain the occurrence of spontaneous dislocation by abnormal muscular contraction with paralysis and atrophy of the antagonists. In iliac dislocation particularly, they attributed the following mechanism: Before the dislocation takes place the leg is in a position of flexion and adduction, so that the resistance of the acetabulum is very greatly diminished. The structures which especially tend to prevent the exit of the femoral head from the acetabulum are the capsule and the muscles. If the former becomes stretched and relaxed, and if the pelvi-trochanteric muscles lose their tone by atrophy, the contraction of the antagonistic adductors can raise the head over the rim. Therefore, three factors must be combined in order to produce a spontaneous dislocation, namely, (1) a bad position of the limb, particularly favoring the functions of a group of muscles; (2) atrophy and paralysis of the antagonist; and (3) relaxation of the capsule and ligaments. This theory, however, is not satisfactory because there usually must also be some external cause in order to produce a dislocation. Then there are those cases which would be very hard to explain by the muscular theory, in which iliac dislocation does not occur and instead an obturator position is found.

Graff has called attention to the obliquity of the upper rim of the acetabulum as a possible explanation for the development of the spontaneous dislocation, and he also emits the opinion that there may, possibly, be a congenital tendency. Possibly the obliquity may be the result of a slight intra-articular inflammatory process, and Roser has mentioned the occurrence of pressure atrophy occurring on the posterior rim of the acetabulum as a result of incorrect positions of the limb, but he has only considered this as an etiological factor in a few cases. Graff, contrary to Roser, basing his assertion on a number of cases which he personally observed, considers the obliqueness of the roof of the acetabulum as characteristic in all cases of spontaneous dislocation, and believes that its mechanism may be explained from this anatomic change.

It has already been pointed out that, besides these predisposing factors, the nature of which has given rise to much difference of opinion, only a relatively slight trauma is necessary to produce dislocation, and there are numerous recorded cases to demonstrate this fact. In Capelle's case the dislocation occurred during the transportation of the patient from one bed to another, and this has been observed by several other competent observers. It would seem to me that Kummer has very appropriately summarized the pathogenesis of spontaneous dislocation of the hip in a few words, namely: "Secondary dislocation, although being prepared by internal causes, requires, just as in ordinary traumatic dislocation, the production of some violence as an effective cause, and the pathogenic difference principally resides in the degree of the latter."

The study of the pathologic changes has of

late made considerable progress, as they have been directly studied at autopsy. These changes refer to the ligaments, the joint and its contents, the surfaces of the joint and the muscular structures. In contrast to traumatic dislocation, in which there is always rupture of the capsule, in a spontaneous type there are only slight changes present in the joint ligaments. In most instances there is only softening and distention of the capsule, while it may also present some increase in thickness. In several recorded cases there was a marked thickening of the anterior wall of the capsule, while in another case the increase in thickness was found on the posterior wall, and the ligamentum teres was stretched. Besides these slight changes there are some recorded cases in which it would appear that rupture had taken place, likewise that of the ligamentum teres, and in one case where the lesion was due to gonorrhea almost the entire ligamentum teres was destroyed. No trace of either the capsule or the ligament could be found by Payr at operation for a post-rheumatic dislocation.

The nature of the contents of the joints has been the cause of much discussion. Hueter believes that all spontaneous dislocations of the hip-joint are due to the presence of a purulent infection, and his opinion has been upheld by Weil and Voelkel because they found pus in the joint of a post-typhoidal dislocation. I am only aware of one other similar case, this being published by Bonnet. In all other cases where a collection was found, it was either serous or serofibrinous. The question has also been much discussed as to whether or not an inflammatory process in the joint occurring during acute infectious diseases is or is not caused by the specific organism of the disease. The question is not settled, but a case recorded by Graff is interesting in this respect. It was that of a patient with a post-typhoidal hip-joint dislocation in which an abscess burrowed to the surface in the adductor region eighteen months after the typhoid, and in the pus the living typhoid bacillus was demonstrated beyond a doubt.

The joint surfaces are, on the whole, only slightly changed, and in many cases they have been found apparently normal. Other cases have been met with in which cartilaginous outgrowths on the head of the femur were found during arthrotomy, in a case of post-rheumatismal dislocation by Lücke; Eisendraht found the cartilaginous covering of the acetabulum eroded, while in Degez's case there were cartilaginous bodies on the head of the femur and in the posterior upper portion of the glenoid cavity. In all these instances the head of the femur had retained its normal shape and was of firm consistency. There are also a number of other cases in which a marked overgrowth of cartilage was found. In Payr's case the femoral head was atrophied and covered with hard excrescences and was connected with the ilium by a typical nearthrosis. The latter presented a comb-shaped ridge of bone from two to three centimeters in height.

If the dislocation is not soon reduced, connective tissue will soon fill up the glenoid cavity, and many such cases have been recorded. Then, again, sloping and flattening of the upper rim of the acetabulum may occur. Muscular atrophy and contraction have been found in a number of operations, and Kummer found the greater gluteal muscle as thin as paper. In these cases the contraction first affects the adductors. This may be either a reflex contraction, disappearing in narcosis, or it may be of organic nature, and can only be corrected by tenotomy. In one of Graff's cases the muscles were partially ossified.

We may thus briefly summarize the most important pathologic changes occurring in spontaneous dislocation of the hip as follows: (1) Comparatively slight changes in the joint, especially over the femoral head; slight cartilaginous outgrowths in the glenoid cavity; (2) connective tissue overgrowth in the glenoid cavity; (3) sloping or flattening of the roof of the acetabulum; (4) muscular atrophy with contraction of the antagonists.

The symptoms of spontaneous dislocation of the hip are quite the same as in the traumatic type, namely, disturbances of function, displacement of the trochanter major, a depression in the normal region of the femoral head, the latter being found in an abnormal place. Pain is particularly evident in the post-rheumatismal form, a fact that has been denied by certain observers. Kummer had one case of post-rheumatismal dislocation in which there was a sudden and great increase in pain when the dislocation took place, but, nevertheless, too much reliance must not be placed on this symptom, as it may be wanting. What is more characteristic of spontaneous dislocation is that the lesion is first discovered only when the patient resumes walking. Of course, in doubtful cases the x-ray is to be used.

The prognosis depends upon the length of time the dislocation has existed, because when discovered early it may frequently be reduced, otherwise this is with difficulty accomplished, or even not at all. The inability to reduce the dislocation is due to the pathologic changes which have taken place, especially nearthrosis and ankylosis of the head, filling up of the glenoid cavity with fibrous tissue, and atrophy and contraction of the muscles. It is probable that these various changes do not take place as rapidly in the spontaneous as in traumatic dislocation, because in the former the irritative process due to the trauma are lacking. Consequently, for this reason the prognosis of the spontaneous type may possibly be somewhat better than in the traumatic form. It should be pointed out, however, that in some cases of spontaneous dislocation reduction could not be accomplished two months later, whereas Dittel was able to successfully reduce the femur in his case five months after the dislocation had occurred. Schoemacker has published a case where, after thirteen years, he successfully reduced a spontaneous hip dislocation without being obliged to resort to operative measures.

The treatment should, of course, in the first

place be preventive, but on account of the great infrequency of this complication it would certainly be unnecessary to be on the watch for its occurrence in every case of acute infectious disease. On the other hand, particularly when there has been a faulty position of the limb for any length of time, particularly in typhoid, acute articular rheumatism and scarlet fever, one should always bear in mind the possibility of the occurrence of this complication, and, therefore, at the time the patient is about to leave his bed it should be searched for. If during the course or convalescence from a case of typhoid or scarlet fever a permanent flexion or adduction occurs, one should certainly ascertain if this complication has arisen, and if it has not, by placing the limb in a correct position a dislocation will undoubtedly be avoided. Extension, with slight abduction, will prove of value.

Regarding the treatment of the dislocation, the principal aims to be obtained are, first, to reduce the dislocation if possible, and, secondly, if this is an impossibility, to transform the bad position of the limb into a functionally useful one. Two methods are at our disposal, namely, the bloodless and the operative. As has already been pointed out, the pathologic changes which prevent reduction occur relatively late in spontaneous dislocation and, for this reason, the femur may be reduced in many cases quite a long time after the dislocation has taken place. The attempt at reduction should be preceded by first mobilizing the femoral head by movements of rotation and putting the soft structures on a stretch. Reduction must be done slowly and without too much force because otherwise extravasation of blood may result. The various methods for bloodless reduction are so numerous that it is quite impossible to discuss them here, but, in a general way, they are the same as those employed in the traumatic type. It has been generally found that the sudden, snapping sound which is heard when the head enters the glenoid cavity in reducing a traumatic dislocation does not occur in the spontaneous type. In the latter, it is a soft sound as if the head had sunk into soft wax or butter.

If the reduction has been successful, it is of the greatest importance to prevent a recurrence, because in fourteen of the recorded cases this has taken place, and in four of them it could not be reduced the second time. The best measure to be employed for avoiding a recurrence is a plaster cast with the limb in abduction and extension, and it is very important that the plaster be not removed too soon. If the bloodless reduction is not successful, or if it is impossible to hold the head in the acetabulum, one may then resort to extension, which in some cases has brought about a marked functional improvement. Nevertheless, the extension should not be continued too long because it might result in a lax nearthrosis. By extension the shortening will be temporarily diminished, but when the patient starts to walk again it may be greater than before treatment. It should also be mentioned that the so-called forward transposition was recommended by Ollier, and more recently by Goldmann. This consists in changing a posterior dislocation into an anterior one in order to obtain a nearthrosis on the anterior border of the ilium. This procedure has as yet not been resorted to in spontaneous dislocation, so far as I know, but in the traumatic type good functional results have been reported.

If the bloodless treatment remains unsuccessful, operative treatment must be resorted to. It is of highest importance never to undertake operative treatment immediately after attempts at bloodless reduction have been tried. From the crushing of the soft structures as the result of attempts at forcible reduction, the prognosis of operative interference is rendered rather bad and, therefore, it is better to postpone the operation for about a month.

We have three operative interferences at our disposal for the reduction of spontaneous dislocation of the hip, namely, (1) operative reduction; (2) resection; and (3) subtrochanteric osteotomy.

Theoretically the operative reduction is certainly to be looked upon as the most logical procedure of the three methods, for the simple reason that it restores the parts to a normal condition. However, there are some points to be considered in this operation which places a somewhat limited value on it. In the first place, operative reduction is, without any doubt, a difficult operation and should only be resorted to in strong and healthy subjects. Then again, the ultimate functional results are by no means brilliant and a more or less marked ankylosis has resulted. This is not surprising when it is recalled that the pathologic changes in the cavity of the acetabulum necessitate attention, and molding of the femoral head may also be required. Lesions of the cartilage easily result which later on will cause ankylosis, and in order to avoid this it is better to clean out the joint cavity with the knife rather than with the curette, for in this way the cartilaginous covering can be better protected. Attention has also been called to the fact that after operative reduction the shortening of the limb still remains to a certain extent which may probably be attributed to some disturbance in the development of the bone.

If operative reduction is not considered proper, or if it is found impossible, resection of the femoral head may be considered. As far as I am aware, this has been done five times, and it would appear that the functional results were fairly satisfactory. It goes without saying that more or less shortening was still present after this interference and, furthermore, the shortening will increase after the patient walks. The mobility of the joint is, however, only slightly involved.

If the limb has become fixed in a functionally useless position, and particularly when it is a case of long standing, I believe that subtrochanteric osteotomy is to be strongly recommended. In cases of long standing, and in weak subjects, this operation is to be decidedly preferred to operative reduction because it is more effective than the latter and, at the same time, it is far less serious.

I am of the opinion that osteotomy is preferable to resection because it corrects the position of the limb without causing operative shortening of the femur, and it would seem particularly indicated in those cases which are seen early but where there is still an inflammatory process going on in the joint; also in all instances where the x-ray shows fixation of the femoral head resulting from exuberant overgrowth of bone; and, lastly, in elderly and weak subjects. It may also be resorted to in those unfortunate cases where, during attempts at reduction, the femur is accidently fractured, and several such instances have occurred. The few cases in which this operation has been done all show a considerable functional improvement. A slight limitation of motion and a little shortening are the only symptoms which remain.

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THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Continued from No. 17, p. 650.]

EXCISION.

(Female Cases.)

CASE 70. M. M., female, twenty-five. Operation, Dec. 13, 1901.

Operation not performed with tourniquet; considerable amount of blood lost during and after operation.

Cast removed on second day and large blood clot found. Stimulating measures resorted to during these two days. New cast applied. Stitches removed on sixth day. New cast applied on twelfth day. Discharged on the fifteenth day.

Aug. 22, 1902. Result perfect. No motion in joint. General condition much improved.

CASE 71. D. F., female, twenty-seven, single. Operation, Nov. 13, 1902.

Capsule found to be thoroughly infiltrated with tubercular granulations. Surfaces of both tibia and femur practically denuded. Pus evacuated from pocket in capsule above patella and a large quantity of bile-colored fluid expressed from abscess in calf of leg. Crucial ligament almost entirely destroyed. Small focus in shaft of tibia curetted out, and of necessity a thicker slice than usual removed from the apposing ends of both bones. Posterior wire and side splint used to hold leg in position.

Aug. 29, 1903. Result of excision perfect as to fixation and position. Discharge from ulcer on posterior surface of calf.

CASE 72. J. P., female, seventeen, single. Partial excision. Operation, December, 1901.

When joint was opened, capsule was found very much thickened and covered with tubercular granulations. Under surface of patella eroded. External condyle of femur except for two small bony prominences practically destroyed. Latter represented sequestra and were not the seat of active disease. Both exostoses were removed with all the surrounding synovial membrane possible. Tubercular focus curetted out of external condylar head of tibia. An abscess was opened over anterior aspect of thigh and considerable tubercular pus evacuated.

Discharged Dec. 11, 1901.

Oct. 24, 1902. Since operation, genu valgum deformity has developed. Patella is freely movable. No permanent flexion and 20° active motion present. Wearing leather leg splint.

Dec. 2, 1903. Splint worn continuously and same physical conditions present as at last visit. Instructed to omit splint one hour daily and gradually increase this period.

Oct. 22, 1906. Patient has been a nurse girl three years. No joint symptoms until recent slight injury. Condition at present does not represent an exacerbation of former condition, but a simple joint strain due to genu valgum deformity. Osteotomy advised.

Jan. 31, 1907. Deformity corrected by osteotomy eleven weeks ago. Union firm. Less motion in knee-joint. To omit plaster cast and wear flannel bandage.

CASE 73. B. M., female. Operation, Jan. 22, 1902.

Mass of broken-down caseous material found in the condyle of the femur, and capsule infiltrated throughout with tubercular granulations. Excision performed. Convalescence uneventful.

Discharged March 9, 1902, wearing plaster cast.

CASE 74. M. M., female, twenty six, single. Operation, April 14, 1902.

No evidence of active disease found. Small cavity in internal condyle of femur containing 1 oz. of fluid (cyst), probably the result of osteoporosis. About two inches of tibia and femur removed and silver wire used to approximate bony surfaces.

April 23, 1902. Cast and suture removed; under anesthetic, cast reapplied. Convalescence uneventful.

Discharged June 2, 1902. Excellent operative result.

CASE 75. E. H., female, single. Operation, July 20, 1903.

Adipose tissue found infiltrated with fibrous tissue and joint capsule much thickened. On the condylar surface of the femur the articular area was almost completely covered by a pannus. This same condition only less developed was found scattered about over all the articulating surfaces of the joint. A small cavity found near inner border of internal condyle. Ends of bones excised and patella removed.

Aug. 10. Plaster cast applied.

Sept. 1. Discharged.

CASE 76. F. P., female, twenty-three, single. Operation, Oct. 28, 1903.

Patient operated upon in Providence, R. I., six months ago and diseased bone removed from head of tibia. Incision along old scar, right knee. Bone found soft and necrotic. A large piece was lifted off with chisel and cavity beneath containing sequestrum and flocculent material. Sequestrum removed. Cavity curetted and wiped out with tincture of iodine. Connection with joint was not found. Plaster cast.

Nov. 30. Condition similar to last note. Right knee-joint opened as for excision. Synovial membrane disintegrated. Moderate excess of turbid fluid. Cartilage over condyles intact, but showed loss of luster. Cartilage over tibia presented same appearance. As a result of disease and the previous operation the internal articular cartilage was lacking, except for a narrow rim, entirely absent behind, while the internal tuberosity was the site of a large cavity nearly filled with a sub-

stance resembling large and small sago granules of glassy white luster in a scant matrix of delicate cancellated bone. This was evacuated to a depth of two inches, and head of external tuberosity being found undermined by the process, attempt to save the joint was abandoned. Articular end of femur, 2 cm., was removed, not including upper end of condyles in front or behind. Entire synovial sac removed. The patella with 0.5 cm. of extensor attached was dissected out from flap, and 1 cm. removed from head of tibia. No attempt made to remove all the new-formed substance underneath, but cavity curetted as thoroughly as possible. No hard bleeding bone was reached. Tincture iodine applied. Two wicks inserted. Posterior wire splint.

Dec. 8. Patient complained of pain in knee, and four stitches removed owing to purulent discharge.

Dec. 11. Old sinus closed with granulations.

Dec. 21. Considerable necrotic discharge. Skin not united in several places and granulations present. $AgNO_3$.

Dec. 28. Wound nearly healed. Plaster cast to leg and window cut over wound.

Jan. 10, 1904. Discharged wearing cast. Union took place between the bones, but the tumor, which proved to be a chondroma, extended further and she had a thigh amputation later on.

Case 77. G. L., female, twenty-eight, single. Operation, Sept. 15, 1905.

When joint was opened considerable tuberculous pus evacuated. A fibrous pannus was found attached to lower border of patella completely closing off lower border of patella, completely closing off lower part of joint cavity from the upper. Femoral cartilage eroded and shredded off to where infiltration of soft parts began. Cartilage over surface of tibia eroded and completely lifted off the surface of the bone. Flocculent pus found underneath and two foci in external head of tibia. Under surface of patella denuded. Excision performed.

Oct. 12, 1905. Wound completely healed. Discharged home.

Feb. 4, 1907. Some pain and swelling over outer aspect of knee ever since operation. Small discharging sinus surrounded by area of redness. Under ether a few degrees of motion are possible. Linear incision made and all possible diseased tissue removed. Tincture of iodine then applied.

Discharged two weeks later improved. No further history obtainable.

Case 78. M. E. B., female, twenty-two, single. Operation, Oct. 5, 1905.

Patient had an excision at the Massachusetts General Hospital about two years ago which has failed to unite properly. Motion in all directions can be obtained. Incision made in line of old scar. A dense fibrous pannus firmly adherent and interposed between both bony surfaces. No evidence of active disease found. Pannus removed and upper surface of tibia concaved to more advantageously hold lower end of femur when dovetailed into it. One silver wire suture used to hold external bony surfaces in apposition. Several silk sutures used on inside for same purpose.

Oct. 31. Discharged wearing plaster.

Dec. 27, 1905. Less mobility of joint than before operation.

Feb. 5, 1906. Pathological report from tissue removed — active tuberculosis. Joint fairly rigid. Continue plaster.

April 28. No lateral mobility. Slight flexion. Five centimeters shortening.

Sept. 6. Plaster removed. Flannel bandage with felt reinforcements.

Sept. 18, 1907. Able to walk any distance without pain. Bones solidly united. In good position. Requires no apparatus.

Case 79. A. B., female, twenty-eight. Operation, Feb. 23, 1906.

When joint was opened, patella was found bound down with adhesions. Many erosions and fibrous adhesions were found throughout entire joint. As the condition represents an old infectious arthritis, less of the trochlear surfaces were removed than in the excision of tubercular joint disease.

Convalescence uneventful as to knee. Transferred to Surgical Service for appendectomy in April, and finally discharged June 15, 1908.

No further history obtainable.

Case 80. L. T., female, twenty, single. Operation, Jan. 30, 1907. This was a case of infectious polyarthritis. Sepsis came from within, the operation having fanned an old infectious process into existence.

Patella adherent, cartilage everywhere eroded. Bone very soft and friable. Small wedge-shaped piece removed from mid-anterior lower end of femur to allow cavity for patella. Excision otherwise not of special interest.

Two days later wound found septic. This intervention terminated fatally March 16, 1907.

Autopsy: Knee-joint found bathed with semifluid, brown, purulent exudate. Section of soft tissues closely adjacent show several small foci (abscess) containing creamy-yellow pus. Both femoral artery and vein normal.

Anatomical diagnosis: Operative wound with extensive localized suppuration. Decubitus over base of sacrum and heels. Pressure ulcer on right leg, and question of toxemia. Blood culture negative. Culture from knee-joint, streptococcus pyogenes and bacillus coli communis.

Case 81. C. B., female, sixteen, single. Operation, March 29, 1907.

Operation performed and ½ inch of tibia and femur removed to correct or improve old infantile knee. Arthrodesis of ankle.

Discharged April 25, wearing plaster cast to groin.

Aug. 16, 1907. New plaster cast applied. Position good.

Sept. 16, 1907. Cast removed at home without instructions. Motion in all directions at knee. Flexion and extension at ankle-joint. Operation was refused and patient continued wearing plaster cast to Sept. 28, 1909, when she re-entered the hospital and an excision of the knee was performed on the following day.

Bone typical of infantile paralytic disease. Fibrous pannus over both bony surfaces, which was removed, together with thin slice of bone.

Convalescence uneventful.

Dec. 18, 1909. Excellent result. Firm bony union at knee-joint. Plaster cast removed and reapplied.

Case 82. E. R. D., female, fifty-four, married. Operation, May 3, 1907.

Linear incision over outer side of right knee, but joint not opened. Tissue, infiltrated with and containing area of cheesy, degenerated material, size of pigeon's egg, removed. Joint opened on inner side and large part of articular cartilage found destroyed. Small portion of semilunar cartilage which was free in the joint cavity and portion of the articular cartilage removed for pathological examination. Patient discharged. May 16, 1907, wearing plaster cast.

Re-entered hospital Jan. 23, 1909. Several discharging sinuses have developed during interim. Knee is held in 15° flexion. Complains of pain, swelling and limitation of motion.

Excision performed. Throughout knee-joint destruction had taken place. Few remaining portions of

cartilage were found and much eroded bone containing small foci representing an active process. Some areas of healed tubercular granulation tissue found. Considerable blood lost during the operation. Leg put up on posterior wire splint and plaster cast was applied three days later with windows over both lateral aspects of knee-joint.

Discharged March 11, 1909. Wound healed except for two discharging sinuses.

Jan. 1, 1910. Patient has a fair functional result and is able to get about the house. No pain or tenderness for past few months. Sinuses still discharge. Should have had an amputation, but refuses it now.

CASE 83. N. B., female, twenty, single. Operation, Oct. 13, 1909.

Patient has had several discharging sinuses about right knee for a long period of time. When joint was opened some free tuberculous pus and marked destruction of the joint was found. Many small foci (bone) were present, necessitating the removal of a thick slice of bone from both tibia and femur. Patella and entire quadriceps pouch removed.

Convalescence uneventful.

Plaster changed Oct. 27, 1909, and patient was discharged to Out-Patient Department.

Dec. 13, 1909. No symptoms. Plaster removed and new one applied.

Among the series of 30 excisions was one case of chondroma; three of infantile paralysis and two of infectious arthritis; one of these was a polyarthritis.

There was one death attributable directly to the operation, that being in the case of infectious polyarthritis.

There were three infected joints, but no serious consequences resulted. Convalescence was not even retarded by it in any case. There was one other case that had a stitch abscess. Twenty-four of the excisions were for tuberculosis. Two of these died some months after the operation, one from miliary tuberculosis and one from phthisis. One of the cases had a partial excision, one femoral and the corresponding tibial condyle. She secured a good degree of motion in the joint, and after having an osteotomy to correct her knock-knee, she had a very serviceable articulation. Two cases already referred to had secondary excisions. Only one was lost sight of before union was complete. Only one did not have satisfactory position. Three only of these cases had metal sutures used. Two of these had them removed, and in one there was slight necrosis about the stitch. One still has the wire in place. Twelve were females and 18 were males.

The important technical matters to observe in performing excisions of the knee are to remove the osseous disease wholly along the cut surfaces and to be sure of an accurate approximation of the cut surfaces. If these two rules are observed the necessity for metal sutures or plates of any kind will rarely if ever occur.

A small series of erasions follow. Most of these were performed for tuberculous disease. The technic of getting at the interior of the joint is not in any way dissimilar from the technic used in the excision operations. The operation is not, in our opinion, to be compared in its beneficial effects with the operation of excision. Whether it be accomplished by sawing through the patella and flexing the knee, or by dividing the patellar tendon and reflecting back the patella, thus exposing the quadriceps pouch, the convalescence is protracted to such an extent by the union of the bone or the tendon (whichever method is employed) that there is very little likelihood of obtaining enough motion to justify the operation in such an articulation as the knee. In other joints it might be used in selected cases, but seldom in the knee. The difficulty is not in securing a pathological cure, but in procuring enough function to justify the operation. One of the things that has been brought out from a study of these cases and the excisions is that tuberculosis in the knee at any rate starts very much more frequently than has generally been supposed from the synovial membrane, and is likely to invade the cartilage and bones if a tuberculous synovial pannus be allowed to lie too long in contact with such structures. In certain selected cases an erasion and the procurement of a pathological cure, even though very little motion should be secured, might be subjected later to an arthroplasty to secure motion. Several of these cases have had 20° of motion for a year or so after the operation, but have gradually lost it and have been a great deal better off when ankylosis had taken place. The recent observations of Ely upon the pathology of tuberculous joints are interesting and offer further support to the contention here made that erasion is not as good an operation as excision in a majority of tuberculous involvements of the knee-joint. Some surgeons are employing arthroplasty after the method of Murphy in these tuberculous cases, but the results are, in our opinion, not sufficiently satisfactory to justify its employment. The transplantation of an entire joint may in the future yield better results.

ERASION.

CASE 84. J. J., male, seventeen, single. Operation, Aug. 23, 1901.

Right knee opened as for excision of the joint. After the thickened synovial membrane was throughly dissected away, a necrotic area, apparently the original focus of disease, was found in the external condyle of the femur. This was thoroughly curetted; also a few eroded areas of cartilage found over articular surfaces of both bones, and the joint was irrigated with sterile water. Patellar tendon restored with silk sutures and wound closed. Plaster cast applied.

Sept. 19. Discharged. No symptoms to note.

Jan. 15, 1902. Few degrees of motion in joint. No symptoms.

March 31. Few degrees of motion persist. Patient wearing leather cast. Patient moved to Canada and he reports by letter that he has a useful limb but no motion.

CASE 85. P. L., male. Operation, Aug. 4, 1902.

Right knee opened on inner side. Capsule thick and hypervascular. Incision continued as for excision of the joint. Synovial membrane .5 to .8 cm. in thickness, and glossy, resembling a tubercular condition. Both condyles of femur covered over outer side by a pannus closely adherent to cartilage which rendered it striated and almost eroded. A communicating bursa in the popliteal space contained tubercular pus, fibrin flakes

and caseous fragments. The synovial membrane was completely removed and no bony invasion could be found. A counter-opening made to drain popliteal space. Tincture of iodine applied and joint irrigated with corrosive solution. Wound closed leaving wick. Posterior wire splint.

Aug. 18. Plaster cast applied. Slight discharge from posterior drain.

Aug. 25. Wound dressed through window in cast. Slight discharge persists. General condition improved. Discharged.

Sept. 30, 1902. Sinus has nearly healed. Patient to continue use of cast. No further history can be obtained.

Case 86. B. McQ., male, twenty, single. Operation, Aug. 18, 1905.

Right knee-joint opened as if excision were to be performed. Considerable tubercular granulation tissue about internal condyle and a fibrous pannus covered most of the external condyle. Cartilage over internal condyle was elevated from the surface of the bone, but disease underneath was very superficial and apparently represented the ingrowth of granulation tissue rather than any active disease. The whole general appearance of the upper surface of the joint indicated that the disease was well spent. Synovial membrane where it showed disease was removed. Pannus and eroded cartilage also excised. Tincture of iodine applied and joint irrigated with sterile water. Deformity left undisturbed, preferring to do a Macewen osteotomy later if disease is entirely extirpated, as an excision would have shortened the leg too much and there seemed a fair chance that the active process could be completely removed. Wound closed and cast applied.

Sept. 5, 1905. Discharged wearing new cast.

Case 87. J. F. M., male, twenty-six, married. Operation, Oct. 24 (?), 1905.

Right knee-joint opened as for excision. The small amount of the synovial membrane found diseased was removed. Necrotic bone was found over the surface of the tibia and femur and was removed with curette as far as possible. Joint capsule united and plaster cast applied.

Nov. 2. New cast applied.

Nov. 7. Discharged. No pain or tenderness.

February, 1906. X-ray shows process extending downward from tibial head. An excision was attempted, but both bones were found badly diseased and an amputation seemed advisable. This was accordingly done, the patient having been previously prepared for this outcome.

March 25, 1906. Wound entirely healed. No symptoms.

Case 88. C. L. R., male, forty-three. Operation, Aug. 10, 1906.

Incision as for excision of left knee. A pannus of dark fibrous tissue removed from internal condyle. Synovia throughout joint thickened. X-ray showed focus in internal condyle, but trephining did not verify this interpretation. A small focus of diseased bone found over external condyle removed. Ninety-five per cent carbolic applied and immediately followed by alcohol. All diseased tissue removed and tincture of iodine applied. Wound closed and leg put up in posterior wire splint.

Convalescence was delayed owing to collection of serum and ooze from wound.

Aug. 24. Plaster cast applied.

Sept. 11. Discharged home.

Case 89. W. R. M., male. Operation, March 14, 1908.

When left knee was opened a large fibrinous clot was removed. Cartilage was thick and eroded under pannus, which covered both femoral condyles and dipped down between to some extent. Pannus and diseased capsule removed as far as possible. Patella normal. A portion of one semilunar cartilage was found partially detached and was removed. Adhesions in the quadriceps pouch broken up and considerable fibrinous material removed. Tincture of iodine applied and joint closed, leaving drain in either inferior angle of wound. Long posterior wire splint applied.

March 29. Plaster cast including foot.

April 2. Patient has apparently an incipient tubercular meningitis.

April 4. Discharged against advice. Died four days later.

Case 90. L. N., male, nineteen, single. Erasion of left knee. Operation, Dec. 29, 1908.

Left knee opened as for excision. Leg flexed after joint was opened. No erosion of joint surface, but large pannus, purple in color, over trochlear surface of femoral condyle, covering outer ¼ inch of cartilaginous margin. No adhesions present in quadriceps, but entire surface covered with pannus of same nature as that found over condyle, somewhat thicker, however. Over outer border and attached at margin of external condyle was a fungus-like mass, size of English walnut, connected to bone by a fibrous pedicle below border of cartilage, which, however, did not seem to lead down to any osseous focus. Capsule not thickened below quadratus bursa. Patella normal. Pannus removed as far as possible and fungus mass excised. Tincture of iodine applied. Joint surface restored. Two iodized wicks left in infra-patellar space. Plaster cast applied.

Jan. 11. New cast applied.

Jan. 19. Discharged home.

Case 91. D. L., male, thirty-three, single. Operation, March 21, 1909.

Left knee-joint opened over inner side. Many floccular masses found in the joint. Few fringes of a similar nature found, especially over inner condyle of femur, and removed. Tincture of iodine applied. Wound closed and light plaster cast applied.

May 28. About 10° motion in knee.

July 16. Patient's knee in good condition. Has no pain or discomfort. Apparently progressing favorably. To be allowed more motion. To wear split cast a half day only.

July 23. To leave off cast entirely.

Aug. 6. No surface heat. Patella movable. Some thickening in quadriceps pouch. Knee brace allowing only 10° motion.

Case 92. J. G. D., male, twenty-three, single. Operation May 5, 1909.

Left knee-joint opened through linear incision over inner aspect. Numerous soft brown villi, in size and appearance like earth-worm, and a small quantity of brownish fluid, found and removed. Small fatty mass excised from under surface of patella. A hard, smooth body attached by pedicle was found in the quadriceps pouch and removed with some difficulty. Joint irrigated with salt solution and wound closed.

May 26. Motion to a right angle. Pathological report: Tuberculosis of soft parts. Knee swollen. Plaster cast applied.

June 15. Discharged, wearing split cast.

Case 93. M. D., female, twenty-eight, single. Operation, Nov. 11, 1904.

Incision 4 cm. long made over and parallel with the middle metacarpophalangeal joint of the right hand. Blunt dissection and retraction of the tendons exposed the joint. Capsule not well-defined, but was thickened by granulation tissue adherent to the bone.

In the joint was found necrotic granulation tissue. Base of phalanx removed owing to its necrotic condition.

A small specimen of bone was removed from the metacarpal bone for pathological purposes. Tincture of iodine applied and wound closed.

Nov. 16, 1904. Discharged. Small granulating area at center of wound.

(To be continued.)

Clinical Department.

STOMACH DISEASES FROM A MEDICAL STANDPOINT.

BY GEORGE ALBERT McEVOY, M.D., BOSTON.

MEDICALLY these diseases cover too large a field to be lightly passed over, and in conversation with recent graduates I have learned that sufficient attention has not been paid to this subject, and because of this it is quite easy to understand why the surgeons are claiming, and rightfully, the cure of digestive disturbances by surgical procedure.

After some experience in the treatment of these diseases, and with all fairness to the profession, many things have been impressed upon me, the most noticeable being the apparent lack of knowledge or total disregard of the use of the stomach tube, which, when used, is mostly for the purpose of lavage instead of for its real value, i. e., as a means of diagnosis.

The following cases stated briefly will demonstrate quite conclusively the absolute need of the tube.

No. 1. Thomas S., forty-six, mill-man, pain over epigastrium for one year, considerable gas, loss in weight 25 lb. Test by tube showed normal secretions and the physical examination was negative. Diagnosis: Nervous dyspepsia, and under treatment complete recovery. A previous diagnosis of cancer had been made.

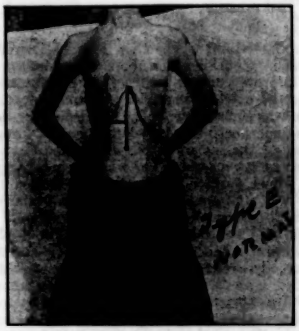
No. 2. Ellen M., twenty-six, single, maid, sudden pain over whole of abdomen with considerable vomiting. Test by tube showed an excessive free HCl acid and the physical examination showed tenderness over abdomen, most marked over epigastrium. Hyperchlorhydria the diagnosis. Under treatment rapid recovery. A previous diagnosis of appendicitis had been made and operation advised.

No. 3. M. F., thirty-three, student, pain in epigastrium for fourteen months, increasing in severity until it caused vomiting; consulted many physicians, some of whom advised operation for gallstones. Test by tube showed an excessive free HCl, and under treatment made a rapid recovery. Diagnosis, ulcer.

It is quite evident that these few cases demonstrate the real value of the tube, and it has seemed strange to me that physicians should cast aside this means of obtaining proofs which are just as positive and easily obtained as are those in lung, kidney and throat cases. Is it that the methods for obtaining such proofs are considered by the profession too difficult and disagreeable, or is it because the necessity for such proofs is inadequately taught?

Having shown the value of the tube in determining the first proof in the treatment, the next step of importance to consider is the position of the stomach with reference to its size and motility. The simplest and probably the most convenient method for general use is the CO_2 for demonstrating the position and size, and a test dinner or supper to determine its motility.

In reference to the position, size and motility, we can learn a great deal that will help us in our treatment by considering the construction of the body with reference to the stomach. In relation to this consideration we have two different types of body; i. e., habitus enteropticus, and habitus



Type E, normal.



Type A, normal.

apoplecticus. The habitus enteropticus type is represented by a line drawn from the end of the xiphoid to the umbilicus, one half of which is much greater than that of a line drawn from the center of this line to meet one drawn vertically from the middle of the clavicle. The habitus apoplecticus type is represented by a line drawn from the end of the xiphoid to the umbilicus, one half of which is equal to or shorter than that of a line drawn from the center of this line to one drawn vertically from the middle of the clavicle.

We are taught in physics that the gravity of a

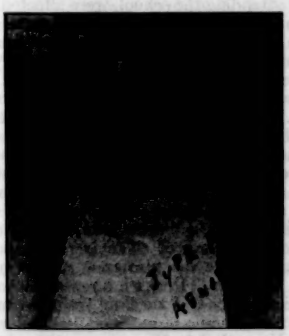
body moves in the plane of least resistance, and, applying this fact in our demonstration, it is easy to understand why in habitus enteropticus type the course of the stomach is downward, while in habitus apoplecticus it is toward the right.

The importance of considering these types as an aid in our treatment is shown by considering the results which are produced pathologically. In habitus enteropticus invariably the end result



Type E, abnormal.

is a gastroptosis with dilatation due to the prolapse and motor insufficiency, while in habitus apoplecticus the result is quite different, because



Type A, abnormal.

any change in position and size is usually at the expense of the lower border, which is generally forced downward and to the right, while invariably the upper border remains normal.

A brief explanation of how the changes are produced will further simplify our understanding in the treatment of these types of body. We know that in the habitus enteropticus type the tendency of the stomach is downward, and, because of its attachment to the duodenum, which is never more than slightly movable, we shall sooner or later, if the prolapse continues, have a kinking or constriction at or about the pylorus which shall, if too much work is thrown upon the stomach, cause a motor insufficiency producing a dilatation, while in the habitus apoplecticus type most all of the conditions begin with an increase of the acid secretions and, as a result of this increase, we can have dilatation produced in different ways, as by spasm of the pylorus or by a narrowing of the pyloric orifice by healing of an ulcer.

It can be seen from these few facts that the end result in both types, if the cause is continued long enough, is a dilatation, and as its production is different, so also must be the treatment, and as the subject of treatment is too important and extensive to be discussed in this paper, I shall only mention the principle of the treatment in relation to the conditions found. For instance: In a case of gastroptosis with motor insufficiency producing a dilatation, the principle of the treatment is to consider how much the stomach has prolapsed and how extensive is the dilatation because of the motor insufficiency, and then arises the question as to quality, quantity and the intervals of administering the treatment, and from this instance, as in many others, the problem of treatment is to treat the cause. But if the cause has left its results, we must treat the results, for in many cases, while we cannot remove the cause, we are able to correct the results.

Conclusion: It is quite evident after what I have shown that if we pay special attention to the proper use of the tube as a diagnostic measure, and treat the diseases according to the mechanical changes produced pathologically, better results will be obtained medically and fewer cases be referred to the surgeons.

Medical Progress.

REPORT ON NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D.

POLIOMYELITIS.

Wickman [1] has recently reported the results of a pathological study of seven cases of poliomyelitis occurring in the great Swedish epidemic of 1905 of over one thousand cases, described in his well-known work. These cases all died in the acute stage of the disease, in from two and a half to eight days after the onset, and most of them showed an ascending paralysis, as in Landry's disease. In all cases there was infiltration of the spinal pia, especially in the lumbar region, with occasional patches of infiltration in the cerebral pia. One of the most striking changes was the accumulation of round cells about the blood vessels and elsewhere, especially in the anterior horns, but also in the posterior horns. There were occasional small hemorrhages in the gray matter of the cord, and sometimes in the white matter. Edema in portions of the cord was very common. In no case was there any indication of thrombosis or embolism. The accumulation of round cells in

the neighborhood of the ganglion cells is the cause of the rapid destruction and disappearance of the ganglion cells by neuronophagy. Vascular and interstitial changes are also constant in the medulla and brain stem, most pronounced in the reticular substance, but occurring elsewhere without showing a special predilection for the motor nuclei. Similar changes were found in various parts of the brain, the cortex, the basal ganglia and the cerebellum. He regards poliomyelitis as an acute, infiltrative, non-purulent inflammation of the lymphocytic type. In the very earliest period there is a migration of the polynuclear leucocytes. Polyblasts also develop and play the chief part in the process of infiltration. The greater extent of the process in the anterior horns is due to the fact that they are more vascular than any other part of the cord.

Hoffmann [3] has reported the case of a young man of twenty, who had previously been deaf and partly blind, and who developed pain in the wrist and a heavy feeling in the back. A few days later he had a sudden tremor in the arms, and during the night the right arm became completely paralyzed (upper arm type), and the left leg partly paralyzed. The paralysis was flaccid and atrophic with reaction of degeneration. He had Hutchinson's triad of signs of hereditary syphilis, and the cerebrospinal fluid showed increased lymphocytosis, albumen, inhibition of hemolysis and agglutination of erythrocytes. The clinical picture, except for the examination of the cerebrospinal fluid, was typical of acute poliomyelitis. Under syphilitic treatment the leg recovered and the arm improved. Preobraschenski [3] has reported a somewhat similar case in a man of forty-six, who had had syphilis fifteen years before. For two days the limb had felt weak, the weakness increasing rapidly until both arms and one leg were paralyzed. On the fourth day there was complete paralysis of all four limbs. In about two months he died, with signs of respiratory paralysis. There was an extensive poliomyelitis of both anterior horns from the mid-cervical region down, the blood vessels were increased, their walls thickened, the membranes were thickened and adherent, and there was a pronounced cellular infiltration — a true syphilitic poliomyelitis. These syphilitic cases are extremely rare, but it is most important to recognize that they do occur, and to investigate the possibility of a syphilitic origin in dealing with any case of poliomyelitis.

Batten [4] reports two cases which raise an interesting question. A child of two years had had weakness of the left arm from birth, but weakness of the legs was not noticed until between the age of one and two years. The left upper arm was much wasted, the legs were also wasted, the right more than the left, and they were blue and cold. The legs were very weak, but the child could bear his weight on the left. There were diminished reflexes and reaction of degeneration. The legs improved so that he could walk, but the arm was helpless. Six years later he died of diphtheria. There was a marked diminution of cells in the left anterior horn in the fifth cervical segment, and in both anterior horns in the lowest dorsal, third lumbar and second sacral segments (which were selected for microscopical examination), with diminution in the size of the cord and areas where medullated fibers were absent, the changes being similar to those found in late cases of poliomyelitis. A second case, said to be congenital, showed a typical atrophic paralysis of the right leg, and poliomyelitic changes in the cord. After a careful consideration of various theories, Batten believes that the first case was very probably, and the second possibly, intrauterine poliomyelitis.

Experience in this country in the last three years has been such as to make previous records of epidemics, even in Sweden, almost insignificant, yet there have been a good many epidemics reported which, in the past, would have been regarded as severe. Lindner and Mally [5] report an epidemic in September, 1908, in the vicinity of Grossraming, in upper Austria. Between September, 1908, and February, 1909, 94 cases occurred, 16 of which were fatal; 37 occurred in children under three, 4 in adults over twenty; 37 were females, 57 males. The origin of the epidemic could not be traced to any other epidemics, and the theory was advanced that it might have arisen from some sporadic case. The clinical picture showed many variations from the classical type, and abortive cases occurred. The disease affected persons dwelling in the same house, and there was proof of direct contact or indirect contact through a third person. Children living far apart, but attending the same school or having others in the family attending the school, were affected. There was no evidence of transmission by water or food. All the ascertainable facts favored the transmission from one person to another. Hoffmann [6] reports 36 cases occurring near Heidelberg from June to October, 1908, 20 below the age of two, and 2 adults. There was no increase in acute encephalitis with spastic hemiplegia or in polyneuritis in that time. Zappert [7] reports 266 cases occurring in lower Austria in the summer and autumn of 1908. Krause [8] studied over 100 cases in an epidemic at Hagen in the summer of 1909. Ninety per cent of these began with gastro-intestinal symptoms. Many of them were nurslings. In one region there was also great mortality among young chickens. Recksch [9] reports 93 cases in the neighborhood of Bochum from the middle of July to the middle of October, 1909, of whom 17 died. Neurath,[10] in Vienna, saw 3 cases in 1902, 45 in 1908 and 28 in the first half of 1909. Other data not yet fully formulated indicate that the epidemic in 1908 and 1909 has been pretty extensive throughout Germany and Austria. The French and Italian journals, however, do not show any special epidemics in those countries. Treves [11] has collected the record of thirty-two epidemics, thirteen of which occurred in Sweden, and only two small ones, seven cases in all, in England, although many cases which were never collected occurred in London within the last few years. He reports an epidemic of eight cases in the village of Upminster, with a population of 1,477, between

July and September, 1908. The origin could not be traced. Stephens [13] reports 135 cases occurring in Victoria, Australia, in the first half of 1908, chiefly in the autumn months, April to June, with a death-rate of 4.5%. Most of the cases occurred in Melbourne and seemed mildly contagious. There was a considerable epidemic in Queensland in 1905. Although the occasional epidemic occurrence of poliomyelitis has been recognized since 1881, the remarkable increase in the last five years is as yet unexplained. The disease has been recognized for so long a time, and is ordinarily so easy of recognition, that the increase cannot be imputed to an increase in our diagnostic skill. Whether the great Swedish epidemic of 1905 and the epidemic in Queensland in the same year can be regarded as in any way the sources of the subsequent epidemics in America, Germany and Australia, is a problem.

SYPHILIS OF THE NERVOUS SYSTEM.

Mott [13] classifies syphilitic diseases of the nervous system as follows: (1) *a*. Syphilitic diseases of the brain, comprising basilar meningitis, meningitis of the convexity, cerebrospinal meningitis, arteritis and gummatous tumors. All these conditions may be more or less combined in the severe and early forms of the disease. *b*. Syphilitic diseases of the spinal cord. (2) Parasyphilitic affections: tabes dorsalis, tabes optica, paralytic dementia. The whole cerebrospinal axis is usually, if not always, affected, although the chief symptoms may be cerebral or spinal. He contends that a slight meningitis may often be associated with the early stages of syphilis, as is shown not only by such clinical symptoms as ocular troubles and paralysis of cranial nerves, but by the frequent existence of lymphocytosis during this period. In parasyphilitic and syphilitic meningitic affections the lymphocytes in the cerebrospinal fluid are greatly increased in numbers. In syphilitic cases the lymphocytes diminish under antisyphilitic treatment, and as the symptoms diminish, but in parasyphilitic disease they do not. Lymphocytosis, however, may occur with other diseases. In general paralysis, and, to a less degree, in tabes, there is an increase in proteid in the cerebrospinal fluid. The Wassermann test of the cerebrospinal fluid proved positive in 59 out of 64 cases of paresis (92.1%), but in 63 cases not suffering from paresis it was not once found to be positive. In cases of atypical tabes and paresis where the Wassermann reaction is not obtained when the cerebrospinal fluid is examined, and the lymphocyte reaction is marked, antisyphilitic treatment should be instituted. Clinical indications of pseudo-tabes are sudden onset and rapid progress of symptoms, early appearance after primary infection, variability of the reflexes, central scotoma in one eye, and marked improvement under treatment. Why only about 3½ per cent of those infected with syphilis subsequently suffer from the parasyphilitic affections is still an unsolved problem. Parasyphilitic affections are more apt to follow mild or even unrecognized syphilis. The virus may be modified, acquiring a special neurotoxic action, as is shown by the fact that sometimes a large percentage of parasyphilitic affections follow infection from a single source, of which Mott cites many interesting examples. This speculation is somewhat contra-indicated by experiments on animals, so that it seems more probable that the variation of effects is due, not to a variation of the virus, but to the reaction of the individual. All conditions which tend to active metabolism of systems of neurones will, in conjunction with the stimulating effect of the syphilitic poison, cause the nerve cells to exercise an abnormal metabolic activity in the production of the side-chain molecules necessary for immunization, thus leading to decay.

Nonne and Holzmann [14] report investigations on 49 cases of tabes, 20 cases of paresis, 22 cases of cerebral and spinal syphilis, 12 cases of multiple sclerosis, 33 cases of epilepsy, 6 cases of neurasthenia, 3 of which had had syphilis, 10 cases of alcoholic pseudotabes, and 17 cases of cerebral tumor. In tabes and paresis, lymphocytosis and the globuline reaction (Phase I) are almost always present. Both reactions are very rarely absent in cerebrospinal syphilis. In multiple sclerosis they occur in a minority of the cases and are weak. In epilepsy, neurasthenia, pseudotabes and tumor they are absent, unless there be syphilis, when there may be a feeble lymphocytosis, but Phase I almost always is absent. The Wassermann reaction occurs in the blood serum in 60 to 70% of the cases of tabes, but is almost always negative in the cerebrospinal fluid. In paresis, on the contrary, it is almost always positive both in the serum and in the cerebrospinal fluid, and seems an important factor in the differential diagnosis. It may be negative in the cerebrospinal fluid in hereditary paresis. In epilepsy and brain tumor the Wassermann reaction is negative unless there be syphilis, when it may be positive in the blood serum. All four reactions are independent of the stage and the special variety in the course of syphilis. In a further study [15] of 93 cases of tabes they confirm the statement that the Wassermann reaction, conducted by the original method, is negative in the cerebrospinal fluid in simple tabes, which is a help in the differential diagnosis from incipient paresis with involvement of the posterior columns and from tabes with beginning paresis. In a later study Nonne [16] presents the data derived from 40 cases of paresis, 104 cases of tabes, 29 cases of cerebrospinal syphilis, 17 cases of multiple sclerosis, 14 cases of brain tumor and 37 cases of epilepsy, 394 in all. These investigations practically confirm his previous conclusions; lymphocytosis, however, is not always alike in different examinations of the same patient, and that and Phase I may exceptionally be absent in tabes, paresis and cerebrospinal syphilis. The Wassermann reaction is sometimes positive in the serum in scarlet fever. It is important to distinguish between the reaction in the serum and in the cerebrospinal fluid. In rare cases it is negative in the serum in paresis, but it may be positive on subsequent examination; if, on repeated examinations, it be negative in the serum, we must

look with suspicion on the diagnosis of paresis. The same is true of the reaction in the cerebrospinal fluid. In paresis all four reactions (lymphocytosis, Phase I, Wassermann serum and Wassermann fluid) are positive. In tabes, lymphocytosis and Phase I positive; Wassermann serum positive in 60%; Wassermann fluid negative. In cerebrospinal syphilis, lymphocytosis and Phase I positive, Wassermann serum more often positive than in tabes, Wassermann fluid negative. In multiple sclerosis, lymphocytosis and Phase I may occur, but are weak; Wassermann serum may exceptionally be positive; Wassermann fluid negative. In tumor, lymphocytosis and Phase I may occur, but are weak; both Wassermann tests are negative. In epilepsy, all four are negative.

On the clinical side Nonne [17] cites various cases to prove what is now well recognized, that syphilis may attack the nervous system in the early period of the disease, two to four months after the initial lesion. After the tenth year cerebral syphilis is rare, but cases have been known thirty and even forty years after infection. When syphilis is acquired late in life it seems more liable to affect the nervous system and to run a more severe course. He is more disposed than Mott to explain the occurrence of parasyphilitic affections by assuming that there is a special neurotoxine in the infecting virus. Mott and Nonne both agree that syphilis is more apt to attack the nervous system if mercurial treatment has been insufficient or has been wholly omitted. Mott believes that if the spirochete has once gained access to the subarachnoid space it is very difficult to dislodge, so that, if this takes place early, the most thorough mercurial treatment may be of little avail.

A word must be added in regard to Ehrlich and Hata's new treatment of syphilis by dioxid-amido-arseno-benzol, or "606," concerning which Simonelli [18] has just published an excellent critical digest of the various articles. Ehrlich's aim has been to find some substance which would have a special chemical affinity for the spirochete, without harming the general organism. This he has used in one single dose — *therapia magna sterilisans*. After trial of many substances he has found "606" the most efficacious. The best method at present of administering the drug seems to be that endovenous injection as practised by Hoppe and Schreiber,[19] which causes less pain than the intramuscular injection, and is not followed by the local reaction. The injection is sometimes followed by a considerable rise of temperature, some cardiac irregularity and skin eruptions. In the few cases where serious consequences have followed, they have been due to some co-existing disorder. In the great majority of reported cases the new remedy seems to have given remarkably good results, both in the primary, secondary and tertiary stages of syphilis, and in a very considerable percentage of cases the Wassermann reaction has changed from positive to negative. Wechselmann,[20] Neisser,[21] Treupel [22] and Glück [23] report cures or marked amelioration in a number of cases of severe cerebral syphilis, but Glück had found no benefit in the treatment of three cases of parasyphilitic affection, two of paresis and one of optic atrophy. Up to the present time it seems doubtful whether there have been any true relapses after the treatment, but it is too early to decide whether it does actually cut short the disease.

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(*To be continued.*)

Reports of Societies.

THE AMERICAN CLIMATOLOGICAL ASSOCIATION.

WASHINGTON, D. C., MAY 3, 4 AND 5, 1910.

THE twenty-seventh annual meeting of the American Climatological Association was called to order by the President, DR. EDWARD R. BALDWIN, of Saranac Lake, N. Y., at the Willard Hotel, Washington, D. C., May 3, 1910, at 10 A.M. The secretary called the roll and seventy-five members were found to be present or attended the later sessions.

Dr. Baldwin then gave the President's Address on

THE ORGANIZATION OF HEALTH RESORTS.

He stated that, owing to the rapid change in the attitude of the public in reference to fear of contagion in tuberculosis, there is a new problem presented in health resorts.

Sanatoria and hospital care are increasing, but the patient's sojourn in them is temporary. Colonization of the tuberculous in the vicinity of sanatoria, as well as in western and southwestern resorts, continues, but the patients are increasingly from the chronic or arrested class who have tried home or institutional treatment.

Result: Sooner or later more dependents and representing a class who have obtained a legal residence in the community. They should be better cared for than in the average county hospital. There should be some system of co-operation with local and other charitable agencies by means of a central bureau of information, whose secretaries shall seek out the patients requiring aid, refer them to proper authorities, or secure aid from their former homes. Reception hospitals needed from which they may be sent to sanatoria or back to former homes.

DR. ALBERT C. GETCHELL read a paper on the

SUMMER CLIMATE OF MAINE,

in which he took up the following points:

Has the Maine summer climate power to restore the sick as it evidently has to refresh the tired?

Geographical considerations: Latitude, mountain, lake, forest, seacoast. Climate: Varieties of weather, temperature, sunshine, soil. Facilities of transportation. Living accommodations in hotels, boarding

houses and camps. Personal experiences with persons who have been benefited by a summer sojourn in Maine for respiratory troubles.

Dr. Getchell said the chief charm of Maine is its water, seashore, lakes and ponds. He described Sebago Lake, the Rangeleys and Moosehead Lake, the Belgrade Ponds and the opportunities for sport of all kinds. The climate is changeable and these changes are of greater intensity in winter than in summer. The periods of heat are short, and even then the heat is tempered by the large extent of forests, lakes, rivers and ocean. The trend of the coast is such that the hot winds of summer from the south and southwest come over the ocean so that hot days are rare compared with other parts of the New England coast. Owing to the deep bays and inlets of nearly the entire length of the coast, one has an opportunity to select his ocean climate from that of the outlying islands and headlands, where one is practically out at sea and the weather is cool, even cold, to the inland and sheltered nooks, where one gets the heat of the land with the diurnal, tempered and refreshing sea breeze. Dr. Getchell referred to the fogs and the sunshine and made some comparisons between the clear, partly cloudy and cloudy days in Maine and Colorado during June, July, August and September. The comparison was quite favorable. The influx of summer visitors was referred to. Large numbers go in the autumn for deer and moose hunting. Dr. Getchell cited cases of tuberculosis which improved greatly in Maine during the summer near Belfast and Rockland. Another patient recovered health in the Aroostook country. Dr. Getchell spoke very favorably of the neighborhood of the Katahdin Iron Works, about thirty miles east of the southern end of Moosehead Lake. There are areas in Maine, near the Rangeley Lakes, in which relief has been found for hay fever in Dr. Getchell's experience. The ocean climate of Isle au Haut is suitable for the hay fever sufferer. So, also, in places on Mount Desert Island. The coast is a restorer of tired and worn-out bodies, but the summer of the Maine coast is cool and a certain type of delicate person, not to say invalid, finds it difficult to keep sufficiently warm to be comfortable. Dr. Getchell referred to the Maine Sanatorium for Tubercular Patients at Hebron, and also to the famous Poland Springs.

DISCUSSION.

Dr. E. O. Otis, of Boston, Mass.: In this connection it may be well to mention the adjacent coast region of New Hampshire. This short coast line, thirteen miles in extent from the Piscataqua to the Merrimac, for the larger part is composed of sandy beaches, in contrast with the rocky character of the Maine shores. From personal experience of several years with the summer climate of both the Maine and the New Hampshire coasts, it has appeared to me that on the latter coast there is a little drier atmosphere. In other respects, so far as the temperature and the climate are concerned, the conditions of the southern Maine and New Hampshire coasts seem very similar.

Dr. C. L. Minor, Asheville, N. C.: I have had a personal opportunity of noting the value of the Maine summer climate in pulmonary trouble. I have not tried the up country of which Dr. Getchell speaks, but have tried the coast, and, despite the fogs, have found the latter admirable. There is not only a very cool summer, which is important, but there is a combination of the brace of mountain air with the tang of the sea air which has a wonderfully stimulating and appetizing effect, and I believe, in properly selected cases, with slight trouble and moderate symptoms, that the Maine coast in the summer is to be thoroughly recommended, and that you would have to go into Upper Canada to get as good.

Dr. Guy Hinsdale, of Hot Springs, Va.: I would like to say a word about the climate of the coast of Maine. I have had some experience with it for the last twelve or thirteen years, and I read a paper before this Association on the climate of Maine in 1901. The soil of the coast is more sandy than that of the interior, and the air of the coast is not so damp as most people think. I agree with Dr. Bowditch in his views regarding the dryness of fogs of Maine. It seems paradoxical to speak of dry fogs, and yet there is a certain amount of truth in it. We may have vapor in the atmosphere, and while that vapor is visible, still the atmosphere itself is not as damp as the fogs which we get in our cities or on the top of the mountains. A fog on the top of a mountain may seem more penetrating than the fogs of the seashore, whether it is Maine or Massachusetts. The Maine climate is a changeable one. It is true generally that on nine days out of ten there is rain in some part of New England, and that it is subject to cloudy weather, owing to the frequent passage of cyclones down the valley of the St. Lawrence. But this comparison which Dr. Getchell made shows that we are not so very far behind the state of Colorado as to the total number of cloudy and partly cloudy days.

As far as game is concerned in Maine, it is surprising to me to find out how many deer are transported by the railroads. Over three thousand deer every year have been shipped by the railroads in Maine for a number of years past. These deer are only a part of the total number that are killed, and if we add the meat that is eaten in camp, there are about four or five thousand deer killed in the state of Maine every year. About one hundred and seventy-five moose are shipped by railroads in Maine. So the game supply of Maine is on the increase rather than on the decrease. There are very stringent laws, too, regarding the shooting of deer and moose out of season, there being a $1,000 fine for shooting moose in the close season. There is a $1,000 fine for a gunner killing more than one moose in a season. The state of Maine has done a great deal to preserve its natural resources; it does a great deal more than many other states in this direction. The income to the state of Maine from the visitors is considerably upwards of fifteen million dollars every year. The state of Maine is wise enough to see the necessity of doing many things for the protection and the interest of the summer visitor. They are also improving the roads of Maine, I am glad to say, through state appropriations, and this is a very valuable point.

Dr. Charles E. Nammack, of New York City, presented a paper on

NORWAY FOR NEURASTHENIA.

He described the Norway trip in summer and the geographic and climatic features of Norway. This country consists of one huge mountain mass cut through in all directions by valleys, gorges and passes, intersected again by lakes and rivers forming torrents and cataracts innumerable. The western coast, particularly at its northern part, enjoys a mild climate, like that of Christiania, twelve degrees of latitude to the south. In the interior, distant from the sea, the cold in winter is intense, and the heat in summer is equally oppressive. At Valle, latitude 59° N., altitude 1,000 feet, the range is from —31° F. to +107° F.

Norway enjoys the mildest climate of any region so remote from the Equator. Owing to the continuous daylight in the north, vegetable growth goes on with incredible rapidity. The annual rainfall on the western coast is heavy, but diminishes inland. At Bergen it

exceeds 75 inches; at the entrance of the fjord it may register 80 inches, but at the head of the fjord only 16 inches. The habits and character of the people were described, and the death-rate, aside from drowning accidents, is very low. Acute bronchial catarrhs are common, and tuberculosis holds the prominent place in mortality. Leprosy is more prevalent than in other European countries and is controlled by the state. Lepers are not allowed to marry.

In spite of a steady stream of emigration to the United States, the population of Norway has doubled in the last fifty years. The people are industrious, phlegmatic, sober, religious and contented, and a few weeks spent among them and their everlasting hills would be the best tonic for a restless, skeptical, neurotic invalid.

DR. GUY HINSDALE, of Hot Springs, Va., read a paper on

THE METEOROLOGIC AND HYGIENIC ASPECTS OF THE FLOODS IN FRANCE, IN 1910.[1]

DISCUSSION.

PROF. WILLIS L. MOORE, Chief of the United States Weather Bureau, Washington, D. C.: The paper just read was of interest to me, and I will confine my remarks to the portion that treats of the cause of the floods of the Seine. The paper states that there was a great flood in 1658. In 1658 the Seine was practically a wooded area; the economic conditions were quite different from what they are now; the valley has been divided up since and forests have been cleared away and in place of the covering of trees, there has been substituted, not a denuded region (a term so often misapplied), but another form of vegetation, — growing grass, grains, fruits and flowers. And instead of the forest area with its deep roots penetrating into the substratum, and in a way cultivating the soil, we have substituted a broken, permeable soil which is plowed and cultivated many times. Now it is significant that when the valley was entirely wooded, the flood of 1658 was higher than the recent flood. It is the history of the Danube, of which we have very good records for eight hundred years, that as the forests have disappeared and as the valley largely has been changed by the work of the husbandman from a forest area into a broken, permeable, cultivated area, the floods have consistently, persistently decreased.

The records of the government engineers of France for two hundred and fifty years, dividing that two hundred and fifty years into five fifty-year periods, show a steady decline in flood intensity in the valley of the Seine with each fifty-year period. We have records of no such length of time in this country, but for the periods for which we have records, measurements of flood heights show that there is no increase in the average height of floods or the extreme height of floods; neither is the low water lowered during the summer as the result of the cutting away of the forests. Now, this seems almost like heresy, like sacrilege of a dearly beloved theory, to express any such opinion. If you will look in the Encyclopedia Americana you will find an article of some nine or ten pages on climatology of which I am the author, in which I state that it is my opinion that there has been no change on any broad scale in the climate of the United States as a result of deforestation; that there is a better economic employment of the rain-fall by the forests; and that the cutting away of the forests augmented the floods; that they maintained better the low-water stages during dry periods, by restraining the precipitation and allowing it to slowly percolate into the soil, holding it back, decreasing evaporation. Why did I write that opinion? Simply because what I said seemed to be so truthful that it did not require demonstration.

For the last few years I have come against the most stubborn thing for a man with a theory to encounter. I have faced some bold facts that compel me to revise the old theories. Within the past several years I have discussed carefully the precipitation on many of the watersheds of great rivers of the United States. I have studied the gauge readings on these streams, and I find that there is no increase in flood intensity.

So I have been forced to the conclusion that the hand of the husbandman has transformed these valleys, these lovely plains, into as good a conserver of the moisture as the forests themselves. Here is where we have made most of our fundamental errors regarding the effects of the forests upon floods. You say, we should reforest the steep slopes of the mountain regions up at the headwaters of the mountain streams to restrain the flood. But the rain that falls on a square foot of the bank of the main stream is just as potent as same amount falling upon an equal area fifty miles away at the head waters of a tributary. It is the precipitation that falls on the total area of the basin, and if you will examine any considerable river system, — any important tributary to any considerable river system, — you will find that the area of the steep slopes in the mountains does well if it equals 5% of the total area of the catchment basin. It is the precipitation that falls on the lower reaches considerably away from the mountains that mainly causes floods, and if forests do restrain the floods, then it will be necessary for us not to reforest the area of the steep slopes of the mountains, but to reforest the great plains, and turn this region back into a condition where it will be the haunts of wild animals.

Now, then, I take the position, and have voluminous data in my possession to sustain it, that the forests really do not restrain the floods. Why? you say. Do you mean to tell us that the run-off from an open plain is as great as the run-off from a thickly wooded area? Now I answer, it depends on what you mean; it depends on which run-off you mean. Is it the run-off from a moderate rain or a shower, or the run-off from a protracted rain. The run-off from the open may exceed that from the forest in the case of showers because the forest may restrain and contain the entire rainfall when it is moderate and there be no run-off, and none of it may get over into the channels of streams, and the function of the forest is to make the low-water lower. Take two areas, one smooth as glass and the other covered by a forest; just so soon as both surfaces are saturated, the run-off is equal. Now no floods occur, barring the little, tearing, rushing creeks down steep declivities, until after all surfaces are saturated. Therefore the run-off is equal from the two surfaces at a time when floods are produced and the forest interposes no obstruction.

I have taken the average height of the Ohio River at Cincinnati for thirty-eight years. I have taken the exact gauge reading each day, and have taken the average of it for the thirty-eight years, and I will say to you that the figures stand there in my report; they are from the original records of the Weather Bureau; they show that the average for the last nineteen years is practically the same as for the first nineteen. I have taken the average high water for the four wet months of the principal rivers of the Ohio valley, including the Ohio, Tennessee and the Cumberland, and I find that the average high water for the four wet months is no greater for the last half of this period than for the first half. I have taken the average low water for the four dry months on these several rivers, and I find that the average low water shows a slightly higher flow for the

[1] See issue of this JOURNAL for Aug. 18, 1910.

last period than for the first. I have then taken two stations on the Tennessee, three on the Cumberland and five on the Ohio, and I have counted the number of days that the water was at flood stage for twenty-eight years; so for a period of twenty-eight years I counted the exact number of days at these five stations that the river was in flood. I did not assume some imaginary stage as a flood, as three different investigators who have discussed our data have done. I counted only actual floods, and I found that for the last fourteen of these twenty-eight years there was an average of forty-three days less each year when the rivers were at a flood stage than in the first fourteen years. Now I do not cite that fact to you as an evidence that there has been any such marked decrease in flood intensity as a result of the cutting away of the forests, as this statement would seem to indicate. I quote it to contravert statements of many of those interested in forestry that there has been a marked increase in flood intensity, and I quote it as a warning against making general conclusions from inconsistent or too limited data. The heavy rainfall that occurred at the time of the Johnstown flood came in the first fourteen years of this period. That enormous precipitation gave such a greater number of flood days in the first of this fourteen-year period that while the result sustains my position, I say it is hardly fair to the other side, for it is improbable that for a long time to come we shall receive such an enormous precipitation in either one of two periods that may be under discussion. Therefore, while there has been a marked decrease in flood intensity in the Ohio Valley, without a shadow of doubt, in the past fourteen years in comparison with the previous fourteen years, I do not believe that such decrease will show in the next fourteen years as compared with the present fourteen years; and I am satisfied that a proper grouping of the data will not show any such increase in flood as three different investigators think they have found. These men have taken 20 feet as a flood stage for all of the gauge readings that they have discussed, when it is a fact that at no station in the Ohio River basin is the river at flood until it passes many feet above the 20-foot stage. Now, then, if an investigator is investigating for the purpose of finding whether our floods have increased, and assumes a perfectly arbitrary stage of the river to indicate a flood, which every person living on the banks of the river knows is not a flood, what shall we say of the conclusions that are reached by such a line of reasoning?

Now there are great national problems that involve large expenditures and that seriously affect the economic policy of this nation, and will affect it for a long time to come, that are to be settled by a discussion of this problem of the floods of the rivers, and the effect of the forests upon the flood of the river. Shall it be settled by resolution of well-meaning people in open convention, or shall it be settled by the cold reasoning of men who have the statistics before them? So far, we have been educated to much that we will need to unlearn in regard to the forests and their effect upon the economic questions of the United States. I am of the opinion that long before the forests of the United States are exhausted, wood will only be used for ornamental purposes; cement, steel, iron, broken stone, all these things, are coming more generally into use. Cement houses will be of general construction. Think of the better sanitary conditions, — cooler in summer, warmer in winter, no fire loss, no heavy burden of insurance; indestructible, imperishable, — structures that practically will stand forever. Certain it is that non-combustible material is coming into use very rapidly. Long before the coal supply is exhausted, — and geologists will tell you that they can see ten thousand years' supply visible now, and they know not how much more is hidden, — but long before the coal supply is exhausted, I predict that by a wise policy of conservation, such a policy as is undoubtedly being strongly put forward by the man in the White House to-day, every natural water right will be protected and none have been sacrified under his administration, — not one. Kindly deal in facts, not mis-statements. Long before our coal supply is exhausted, by a rational conservation that shall be formulated by the engineers of the nation, by the men who are working and controlling the streams, building reservoirs, building water works, building railroads, such men will formulate a policy that will be carried out by actual working scientific men who are competent to handle these problems, and in time the rivers of the United States will heat and light your places of habitation; they will do the work of the nation; these streams, as they run down from their sources to the sea, will be utilized to heat and cook and do all the labor practically of the nation. By that time you will need no coal; by that time you will need no lumber. Any way, whether we need the lumber or not, we should not attempt to solve an economic policy by fallacious reasoning or endeavor to sustain a truth by a falsehood. The government records do not sustain the position of the enthusiasts of forestry — and there are many noble men and women concerned in forestry, and I bid them Godspeed in everything they can do to protect the great national resources, and to protect forests and grow them where they ought to be grown, and that is not where grains and fruits and flowers should grow. It is a crime to devote any acre of land in the United States to forestry that can and should grow food for the American people. I love the trees, but I love man more; I love the fruits and the flowers better, and the cereal crops better. Now we want these problems settled by such men as are gathered here, thinking men who have no personal motives, who are simply struggling as you are for the welfare of America. We want the truth, and we want a policy that shall be founded upon the truth, not simply upon undemonstrated theory.

Dr. W. F. R. Phillips, of Washington, D. C.: I think Professor Moore in his remarks has hit the nail very much on the head, and certainly his confessions as to what he said ten years ago or more is the same confession that I have to make. In a short article that I prepared for the Reference Handbook of the Medical Sciences, I stated the effects of forestation on rainfall. I did then just exactly what so many of us do — worked on the preconceived idea, and did not work with the facts. Now we medical men know what it has meant to us, every now and then, to take something for granted, but never go into the facts. We know how many of our textbooks are filled with things that are studied by us and that we have found later were not so. Some one has said that we are beginning to learn that the most dangerous knowledge that we have is not the knowledge of those things that we know are not so, and that which we accept as so and later turn out to be not so. It is a credit, I think, to the genius of that great scientist, the man who probably did more than any one else to give us a clear idea of the power of science — Darwin, in his voyage in the *Beagle*, going to parts of South America — that he saw there evidence of vegetation and trees that had disappeared; and instead of saying that the arid regions had come there because the trees had disappeared, he said that the rain had ceased falling and that is why the trees disappeared. Wise observation from the past, unnoticed, and I doubt if very many of you recall it here to-day, and yet we find that that great observer took a pretty good grasp of the situation then when he was floating around the world as a young surgeon on the *Beagle*.

Now there is another thing that, I suppose, if we had stopped and thought about it, would have put us on the right track of the relation of forestation to rain-fall, and especially to the run-off. Every person working in arid regions where irrigation has to be practiced knows that he gets the best results and keeps the water longest near the surface and, therefore, around the roots of his trees when he works that soil. I remember in Southern California, when the Climatological Society took its trip there, that, in going through the orange groves and vineyards and orchards, we were told that when they turned the water on it was necessary, in order to keep the soil moist, to keep the surface broken up, plowing it, hoeing it all the time. They had found out there that working the soil kept the soil moist, kept the water more on the surface of the earth and gave better results, and we might have thought why it was if we had just stopped for a moment to consider what it means, this breaking up of the soil. Every one of us who has had to work on a farm, and many of us probably have, has noticed in digging post-holes that as we dug down into the ground we saw little openings, veins running all around through the soil, and in watching these post-holes or walls, as many of us have, we saw that during wet weather water was pouring out of these veins. Now the result of breaking up six inches of soil on top was simply to break up the beginnings of these veins and, therefore, to delay the percolation and drainage of the water down into the subsoil, and we know to-day very well that if we want to keep the surface soil wet and want to stop evaporation from the surface, we must constantly break it up, otherwise capillary tubes are formed in the soil. So the very fact of cultivating the soil keeps more water in the soil and prevents a rapid run-off. Now, going back a little, we can demonstrate the facts; we can see that, instead of deforestation increasing floods, it really decreases them and that forestation really should increase them, because it means soil that is not broken up and, therefore, has these larger veins which carry the water down more rapidly to the subsoil and to the impermeable substrata and thence off into the river.

The effect of floods upon health, of course, is one that we are most interested in, and is one that we cannot very well discuss, that is, we cannot say very well how floods *per se* are going to affect our health at present because we have learned that a good many of the diseases, certainly the most injurious to us, come from things that the flood has directly nothing at all to do with. The fact is that we clean up after a flood. It probably will be shown in this Paris flood that the flood has, hygienically, been of not as much significance as a drought.

DR. J. H. ELLIOTT, of Toronto, Canada: This discussion has cleared up many things which were very indistinct in my mind, but there is one question I would like to ask Dr. Phillips in the absence of Professor Moore; they have explained why deforestation does not increase floods with a heavy precipitation of rain; nothing has been said of the floods due to the melting of snow. During the winter in Northern Ontario and the Northern States average precipitation of snow is about one hundred inches in the open and cultivated areas. This runs off very rapidly in the spring, as we all know, and give us spring floods. Is the flood not less in the forested area where the snow melts much more gradually?

DR. W. F. R. PHILLIPS, of Washington, D. C.: In answering the question, I would say that in case of snow it would be apparently a fact that the forests, by the shade that exists there, not very much shade, not very dense, but that such as does exist there, would interfere to a certain extent with the rapid melting of the snow. Consequently it would have the same effect as that of a gradual rain-fall producing a state such as accompanies a light rain extending over many days as contrasted with that of a rain that came up and lasted only a day or two days. We could conceive that under these conditions the per cent of forest, or anything that would shade the snow, would act in the same manner. But I think that the point made by Professor Moore was that the greatest part of the effective rain-fall was that which fell near the stream and not that which fell at a long distance. I think every one of us who has had opportunities to watch the run-off in small streams, to watch it after a thunder storm, has observed that the highest water is reached a few hours after the thunder storm and not many hours after. In other words, it shows that the run-off has come from a practically short distance, it was the near run-off. The other run-off would have come from the distant mountain, and it takes days for that water to reach the streams and produce floods; that the run-off that makes high water in a stream is really from that near it, and, therefore, the effect, so far as the practical question is concerned, of the forests in retarding the melting of the snow that existed in them is negligible.

DR. C. L. MINOR, of Asheville, N. C.: I rather fear to rise and speak after the scientific remarks of Professor Moore and Dr. Phillips, but there is one thing which I should like to ask the doctor. In our mountain region of Western Carolina the hills are covered with many beautiful forests, although these are less with the advance of the lumberman. All through these forests there is a dense, thick, undergrowth with laurel and rhododendron and moss and dead leaves still, probably, as primitive as it was in the days of Moses. At any time of the year if you go in these forests and examine the soil under these trees you will find it damp and moist, and when the rains fall they do not rush out from the woodland fastnesses (although the mountain streams, it is true, swell), but to an ignorant layman seem to be taken up and held back by the undergrowth, which in turn is protected by the forest in which it grows. But where our lumbermen have been active and have bared our hillsides, as they have also in parts of Central Pennsylvania, the soil is not moist save immediately after a rain, the streams do not run even in the driest weather as they do in the forests, but we find only dry beds, and when the rains come you see the water tearing down the hillsides, gullying them, washing them out, not sinking into the soil, which will be bone dry the day after such a rain, but going down to swell our rivers and raise them to flood height, destroying the property along their banks.

Such are the results of my ignorant observations, but after I hear Professor Moore and Dr. Phillips, who tell us that the forests can have no possible effect of this sort, I wonder if it would not be wiser for us to bare all our hills of trees, to get rid of all our forests and to trust to the professor's theories to protect our lowlands and to give a steady supply of water to our mills.

DR. W. F. R. PHILLIPS, of Washington, D. C.: I would suggest that if the forests are in the same condition that they were at Moses' time at the present time, and have been so during the interval, if he could only give us the records and actual measurements throughout that long period we might change our views again. I know I have changed mine, and the Chief of the Weather Bureau has changed his; we have both changed our views. I think the explanation, however, of Dr. Minor's difficulties could be found. First, before I would attempt to explain things, I would ask him to bring the records, the actual measurements, because sometimes local floods occur simply because a very heavy thunderstorm occurred just over the region in

question, and it may be a coincidence that two or three storms occurred over a particular region, and they got a flood there; also when trees have been cut away you observe these floods more than when the trees are thick. If they are just as Moses left them, who has been there to see whether the storms are high or low? If the doctor will have the measurements given to us, we will try to explain it. I know — we all know — that, just working on your impression, taking some man's impression for a fact, is not satisfactory, and every now and then we have to go over and change our impressions.

Dr. C. L. Minor, of Asheville, N. C.: Then you will admit that the water runs off faster from these forest-clad hilltops than it runs off the open?

Dr. W. F. R. Phillips, of Washington, D. C.: In about half an hour after a heavy rain the surface soil is all permeated and for all intents and purposes it is the same whether it is forested or deforested. A half an hour of rainfall and the run-off will depend entirely upon the slope rather than anything else.

Dr. Minor: It seems to me we should pray for rain and take the trees up at the foot of the hills as they are washed out.

Dr. Hinsdale: I only wish to thank Professor Moore and say that I appreciate his coming here to add so much to the interest of this subject which I introduced.

(To be continued.)

Book Reviews.

Bier's Textbook of Hyperemia, as Applied in Medicine and Surgery. By Prof. Dr. August Bier, of Berlin. Only authorized translation from the sixth German revised edition by Dr. Gustavus M. Blech, Professor of Clinical Surgery, Illinois Medical College; Dean and Professor of Surgery, Practitioners' School of Medicine; Surgeon-in-Chief, Practitioners' Hospital, Chicago; Member American Medical Association, Association of Military Surgeons of the United States, etc. With 39 illustrations. New York: Rebman Company.

Bier's "Hyperemia" was popularized in America by Meyer and Schmieden, the authorized exponents of Bier's work. We doubt if Bier's own book in its English dress will add greatly to interest in his methods. Whether so or not, this book sheds light on the man, on his personality, his convictions, his enthusiasm and his egotism. The translation is fair, but the book itself is prolix and the style labored. The best part of it is the introduction, — a readable, philosophic treatise on biologic science and the application of hyperemia to morbid conditions. The next most interesting section of the book is an informing appendix of ten pages, thrust into the middle of the volume, and dealing with the "influence of the total blood for curative purposes." In this little appendix the author reviews luminously the status of cellular pathology and the new humoral pathology.

The book is an octavo of four hundred and thirty-nine pages. Half of it deals with the general principle of active and passive hyperemia; half of it with the practical application of hyperemia to special lesions. As a whole, the book is extremely informing and will be read with pleasure by earnest students of surgical literature.

Lectures on Surgical Nursing. By E. Stanmore Bishop, F.R.C.S. Eng., Honorary Surgeon, Ancoats Hospital, and Gynecological Surgeon, Jewish Memorial Hospital, Manchester; Member of Council, Obstetrical Section, Royal Society of Medicine. Illustrated. William Wood & Co. 1910.

This is a delightful little pocket manual full of information for the surgeon as well as for the nurse. It is a collection of the author's addresses to nurses, and tells nearly all that the nurse can wish to know on the subject through the medium of reading. Moreover, the book itself is most readable; it is short, pithy, luminous and pleasant.

Practical Suggestions in Borderland Surgery. For the Use of Students and Practitioners. By Gustavus M. Blech, M.D., Professor of Clinical Surgery, Medical Department, Loyola University; Director-in-Chief, Illinois Legion American Red Cross; Surgeon-in-Chief, Abraham Lincoln Hospital, Chicago, etc. Philadelphia: Professional Publishing Company. 1910.

This is an interesting little brochure for students and general practitioners. It is rendered somewhat irritating by a needlessly laudatory publishers' introduction. It is extremely well conceived, however, and is carried out in an excellent, liberal spirit. Blech protests that the noble art of surgery is being debased by hosts of hasty and incompetent operators. "This is a surgical age," he tells us; "the recent graduate hangs out his shingle, and from now on has but one aim, — to operate; the exceptions only prove the rule. Men like the late Senn have tried in vain to stem the tide of this gigantic wave, which he has aptly called *furor operativus*." The author continues through eleven admirable chapters to discuss types of medical and surgical ailments; to point out those which are suited to various therapeutic measures, and to describe operations suitable to the various lesions. He debates especially the dangers incident to operations in general, and their reduction to the minimum; contra-indications to operations in general, and the surgeon as a factor in successful surgery. The book is cheaply constructed, but is sold for $1.50, and is well worth the reading.

The Practitioner's Case Book. Prepared and arranged by the editorial staff of the *Interstate Medical Journal*. St. Louis: Interstate Medical Journal Company. 1910.

This book provides the busy general practitioner with a convenient and systematic form for recording and preserving clinical histories. The appended charts should be particularly useful for graphic indication of the data of physical examination.

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101 TREMONT STREET, BOSTON, MASS.

THE CAPTAIN OF THE HOSTS OF DEATH.

THE bulletin of the United States Census Bureau on mortality statistics for the year 1909, recently published, makes rather interesting and in some respects discouraging reading. In spite of all that has been said and done in the conflict against tuberculosis, that disease still stands first as a cause of death in this country. The registration area, from which the figures are taken, represents over 55% of the estimated total population. In this area, among "gainfully employed or occupied males," pulmonary tuberculosis caused 14.8% of all deaths, heart disease 11.9%, accidental violence 10.5%, Bright's disease 8.5%, pneumonia 8%, apoplexy and paralysis 7.3%, cancer 5.5%, suicide 2.6% and typhoid fever 2.2%. Among occupied females the percentages of causation were, pulmonary tuberculosis 21%, heart disease 10.3%, cancer 8.1%, Bright's disease 7.3%, pneumonia 7%, apoplexy and paralysis 5.9%, accidental violence 3.2%, typhoid fever 2.8%, suicide 1.6%. Deaths from cardiac and renal disease, then, from pneumonia and cerebral hemorrhage, are slightly commoner among men than among women; deaths from tuberculosis and cancer are nearly 50% commoner among women than among men; and among men deaths from suicide are 50% more frequent and deaths from accident over 200% more frequent than among women. These figures for tuberculosis make it seem as though the efforts of the past ten years to suppress this disease had been almost of inappreciable effect. With reference to occupation, it appears that printers, lithographers and pressmen have the highest mortality from tuberculosis, amounting to 51.5% for the age-period from twenty-five to thirty-four; farmers for the same period have a mortality from tuberculosis of 26.2%, and machinists (the lowest) of 25%. With reference to age, it is found that for all occupations the highest mortality from tuberculosis occurs in the decade from twenty-five to thirty-four; after which there is a rapid and accelerating decline. The much greater prevalence of tuberculosis among women than among men is noteworthy. There seems no obvious or satisfactory reason for the relatively high immunity to tuberculosis of machinists, whereas that of farmers is easily self-explanatory on account of their outdoor mode of life. All these facts must give us pause, and should make us realize that perhaps we are still far from understanding the real nature of susceptibility to tuberculosis, and that the progress of the natural history of some diseases may be far less influenced than we are wont to imagine by our hygienic, prophylactic and sanitary measures.

INCREASE IN DEATHS FROM HEART DISEASE.

DR. GUILFOY has just issued a statement in which he calls attention to the fact that twice as many persons, in proportion to the population, are now dying from diseases of the heart in New York as thirty-three years ago. In 1876 there were 1,131 deaths from this cause in the city, a death-rate of 82 per 100,000 of the population, and last year, 6,639 deaths, a ratio of 161 to the 100,000. The figures thus far in 1910 indicate a further increase when the vital statistics of the year are complete. Every year the death-rate from cardiac disease is increasing, and unless something is done to check this it will become more of a menace than tuberculosis or acute respiratory diseases, which now lead as the principal causes of death. At the present time it ranks as third in importance, and what is true for New York is for the most part true of the country at large. As Bright's disease is so frequently associated with heart disease, it is essential to consider this in connection with the latter. Here also the death-rate has doubled in New York. In 1863 there were only 640 deaths from this cause, a death-rate of 53 per 100,000, while in 1909 these were 4,655 deaths, a rate of 113 per 100,000. As with heart disease, the increase has been the most marked in the last twenty years. As to the causes of this increased mortality, Dr. Guilfoy assigns

an important part to the grippe bacillus, to which he attributes many deaths from cardiac disease. Of far more importance, however, are the present conditions of living. In a large proportion of the population it is the more luxurious mode of life; eating too much nitrogenous food, drinking too much and taking too little exercise. In other instances life is more intense and the struggle for existence more difficult. In a word, people are living "faster" than they did twenty years ago. He is of the opinion that if they would eat less, drink less and exercise more in the open air, the death-rate from heart disease would take a decided drop.

SUCCESS IN ATHLETIC SPORTS.

In a recent paper before the American Academy of Physical Education Dr. Dudley A. Sargent, of Cambridge, undertook to explain the usual superiority of women over men in swimming on the basis of their better conservation of heat, owing to their usually greater proportion of adipose in proportion to body weight and bulk. On the same basis he would explain the physical superiority of girls to boys during a certain period of adolescence, and the familiar ability of women to endure cold in evening dress better than men. So far as the latter point goes, it must be remembered that habit probably plays a large part. The converse of Dr. Sargent's first proposition, however, seems the truer form of statement. The professional male swimmer may be inferior because he trains down too lean, like a land athlete who "gets fine" or "goes stale" before an event. Probably overtraining, with its loss of weight and associated nervous strain, is more often responsible for the failures of male athletes than any other one thing.

The athlete, in any case, is an artefact, a man unnaturally developed to make an abnormal physical exertion. The reason the English succeed better in sports than any other nation is because they train for them the least and take them merely as pleasurable incidentals in an active outdoor life. It has been said recently that a good athlete may make a poor soldier, but that a good soldier will generally make a good athlete. Discipline of temperament is worth more than specific physical training. In the long run, the person to succeed in any test of endurance, be it man or woman, will be the one who in addition to an organically sound and normally exercised body, whether stout or lean, has an orderly and persistent mind to govern it.

DANGERS OF EPIZOOTIC ANTHRAX.

The occurrence last week of a case of anthrax in Boston recalls the serious possibilities of even the sporadic presence in a community of this fatal disease. An example of these dangers was shown in the outbreak of anthrax at Chicago during July and August of the past summer. The infection appeared among the cattle of about twenty farms in three nearby towns from which a large part of the milk supply of the city was derived. Eighty-seven cows died of the disease. Immediate measures were taken by the Chicago Board of Health to prevent spread of the infection by the milk, with the result that a general epidemic was averted. One of the farm owners did become infected and died. The measures adopted are described in a recent bulletin of the Board of Health. All sick animals were isolated, all exposed animals quarantined, and all others treated with standard anthrax vaccine. All dead animals were burned or were buried eight feet deep, the grave and ground about strewn with quicklime and sprinkled with strong corrosive sublimate, and the site fenced to prevent other animals from grazing there. The milk from every infected herd was withheld from market until a suitable period after the last death from the disease. That these measures were effective is shown by the prompt and complete suppression of the epizoötic. Their adoption might at any time become necessary in our own community in the event of the appearance of anthrax among cattle of the vicinity.

CONTINUANCE OF THE DROUGHT IN MASSACHUSETTS.

In recent issues of the Journal we have given some account of the water famine in Palmer, Mass., and of the measures taken to meet it. Meantime the drought in Massachusetts has continued and several other towns are now threatened with serious scarcity in their water-supply. This deficiency extends also to other New England states. Not only has the shrinkage of streams diminished the amount of drinking-water, but in some cases has caused the shutdown of large mills from failure of power, with consequent non-employment and hardship for hundreds of mill-hands.

In many places artesian wells have been sunk to supplement the drinking supply and guarantee against absolute famine. At Spencer, Mass., a special meeting has been called to discuss the situation, which is considered one of real gravity.

At Peabody, Mass., the inhabitants for a time drew on Suntaug Lake, or Humphrey's Pond, which supplies the neighboring town of South Lynnfield, but the rapid decline of water in this lake to 100 feet below high-level mark led them to desist, and they have now established an auxiliary pump at Spring Lake.

The total rainfall in Boston this year thus far is only 22.2 inches, an amount far below the average; and although this city is of course in no immediate danger, the situation outside the metropolitan district may become serious unless there is considerable precipitation before the onset of winter.

SUBSTITUTES FOR THE PUBLIC DRINKING CUP.

THE mere passage and literal enforcement of a good law may avail little unless the spirit of its provisions be also carried into effect. It is now a month since the regulation went into force in Massachusetts forbidding the use of public drinking-cups. Such cups seem uniformly to have disappeared, but adequate substitute for them has often not been provided. In some places bubbling fountains have been established; in a few, individual paper cups are obtainable; others have cut the Gordian knot by removing the water-cooler altogether. In many instances, however, the public cup has merely been taken away and the water left, with the natural and inevitable result that those who wish to drink apply their mouths to the faucet and ingest the fluid by suction, a practise even more disgusting and dangerous than the use of the common drinking-cup.

No doubt in many of these places other provision will soon be made. Others may be waiting to see which way public opinion will turn. Meantime the hygienic, or non-hygienic, result is the same. On the whole, the slot-machine method of furnishing individual paper cups at public drinking places seems the best, but some method there should be. Statutory abolition of the common cup should be accompanied by provision of a suitable substitute therefor.

DR. GRENFELL AND HIS WORK.

FEW modern stories read more romantically than that of Dr. Grenfell's labors among the natives of Labrador and the north. His life among them includes not only all the varied excitements of a doctor's experience, but those of a hunter, of a seaman and of an explorer as well. Among the primitive people with whom he deals emotions are simple, but genuine and poignant; and he has opportunity, as we of more civilized environment do not to the same extent, to see man and nature in elemental relations. That such experience should have not only increased his faith and deepened his ardor of service is a tribute both to him and to humanity. The picture which he draws, in a recent newspaper article, of hardship and disease among the "desolate ice-isles of northern seas" is thrilling in its suggestions of adventure and heroism. Dr. Grenfell is one of those figures who have appeared at every stage of our racial progress exemplifying the indomitable roving adventurous instinct of our people associated with the highest ideals of devotion to duty and to the romance of righting wrong and relieving human distress.

MEDICAL NOTES.

PLAGUE IN VENEZUELA. — Report from Venezuela states that four new cases of bubonic plague have occurred during the past week at Caracas, but that there is no spread of the infection elsewhere in the state. In Caracas the theaters and other places of assembly have been closed and all public meetings forbidden for the present.

OPIUM SANDWICHES IN CHICAGO. — A new method of evading the law relative to the sale of opium is reported from Chicago, where the proprietor of a Chinese restaurant has recently been discovered purveying sandwiches containing the drug to habitués who had difficulty in obtaining it in the more usual form.

REPEATED MULTIPLE PREGNANCIES. — It is reported from Cleveland, Ohio, that, on Oct. 21, Mrs. William G. Clark of that city gave birth to her third set of triplets. She has been twice married. By her first husband she is said to have had two pairs of twins and one set of triplets, and by her second she has had two other pairs of twins and two sets of triplets, making in all seventeen children in seven pregnancies. The sexes are not stated. Mrs. Clark was herself the only girl in a family of twenty-one children.

HEALTH CARAVANS IN ENGLAND. — During the past season a so-called health caravan has been sent from town to town through certain parts of England by the Women's Imperial Health Association of Great Britain, giving lectures and practical demonstrations, illustrated by the cine-

matograph, on various topics of hygiene. The work of this caravan, the *Amora*, has been so satisfactory that two others are to be sent out, one in London and one in the eastern counties.

Communicability of Fish Cancer. — On Oct. 27, seven dogs, habituated to a fish diet, were sent by the bureau of fisheries at Washington, D. C., to the hatcheries in the state of Maine for use there in experimental study of cancer. The dogs will be fed on cancerous fish in the effort to determine whether fish cancer be communicable to other animals through the medium of food.

Organization against Tuberculosis. — The rapid spread and elaboration of the campaign against tuberculosis is illustrated by comparison of the numbers of institutions established for its prosecution. In 1904 there were in the United States 133 sanatoria and hospitals for tuberculosis, 32 special dispensaries for its treatment, and 39 anti-tuberculous organizations. There are now over 400 such sanatoria and hospitals, over 300 tuberculous dispensaries, and 450 anti-tuberculosis associations.

Some Living Centenarians. — Four of the inmates of the Home of the Daughters of Jacob, in New York City, are alleged to be over one hundred years old. At a recent fire in the institution these reputed centenarians, three women and one man, were all safely rescued.

Mrs. Lydia Shepard, of Millville, N. J., is said to have been born on Oct. 22, 1809. She is reported to be in excellent health and does active work about the house.

Mrs. Caroline Jones Hudson, of Templeton, Mass., is said to have been born on Oct. 30, 1808. Genealogic records indicate that several members of her mother's family were also centenarians. It is stated that she had sixty-eight cousins, of whom only one still survives.

Relative Percentages of Suicide. — Statistics recently published in Kobe, Japan, compare the frequency of suicide in that country with that among some of the occidental nations. During the twenty-two years from 1887 to 1908 inclusive, the average annual suicide-rate per million inhabitants was, in Denmark 253, in France 218, in Switzerland 216, in Prussia 197, in Japan 184, in Austria Hungary 159, in Belgium 122, in Sweden 119, in Bavaria 118, in Great Britain 80, in Norway 80, in Holland 58, and in Italy 52. Undoubtedly suicide is increasing in every country where civilization is progressing. Interesting as these figures are, they however afford no explanation of the reason for the very high percentage in Denmark or for the relatively and gratifyingly low percentage in England, Norway, Holland and Italy. Probably the increase of suicide, like the decline of the birth-rate, depends on subtler facts of racial character than can be analyzed by statistics.

The Cholera Epidemics. — The Italian epidemic of cholera seems to be distinctly waning. During the week ending Oct. 29, 48 new cases and 28 deaths were reported. News from Victoria, B. C., however, states that a serious epidemic of the disease has broken out in central Japan. Several hundred cases have been reported at Kobe, and over 100 are said to be now under treatment at Osaku. In the United States no more cases have occurred, though several suspects have been held under observation. For the purpose of tracking possible cholera carriers, the immigration officials, acting on the counsel of Dr. William K. Rucker, of the United States Public Health and Marine-Hospital Service, have adopted the plan of registering on a special card the intended destination of every immigrant landing here from an infected port. These cards, forwarded to state and local boards of health, afford means of keeping track of every immigrant, in the event of a possible subsequent recrudescence of a latent infection.

Boston Charity in Ireland. — Over a year ago the Countess of Aberdeen, whose charitable zeal has done so much to relieve and educate the Irish people, visited Boston for the purpose of raising funds for a tuberculosis preventorium, projected by the Women's National Health Association of Ireland. This Sutton Holiday Home and Preventorium was completed and opened in August, 1909, and its first annual report shows that during the past year it has received 125 inmates,—75 adults and 50 children. It is situated on a hill near Howth, a suburb nine miles from Dublin at the northern angle of Dublin harbor, overlooking the rugged Irelandsey or Isle of Ireland, which faces Anglesey, across the Irish Sea. The site is attractive and the climate salubrious, and the institution gives opportunity for the poor and ill-fed from the overcrowded districts of Dublin to obtain for a time rest, good food, fresh air and training in the desirable hygiene of life. No patients are received except those who are free from tuberculosis but whose

environment and physical condition make them seem susceptible subjects for infection. It is pleasant thus to learn of the good work of an institution to which large subscriptions were made by Boston charity.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Nov. 1, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 36, scarlatina 46, typhoid fever 19, measles 7, smallpox 0, tuberculosis 52.

The death-rate of the reported deaths for the week ending Nov. 1, 1910, was 16.49.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 15, 1910, was 205, against 181 the corresponding week of last year, showing an increase of 24 deaths, and making the death-rate for the week, 15.94. Of this number 109 were males and 96 were females; 200 were white and 5 colored; 138 were born in the United States, 64 in foreign countries and 3 unknown; 51 were of American parentage, 126 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 9 cases and 0 deaths; typhoid fever, 30 cases and 2 deaths; measles, 4 cases and 0 deaths; tuberculosis, 42 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 2, heart disease 31, bronchitis 3. There were 16 deaths from violent causes. The number of children who died under one year was 50; the number under five years, 64. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 83. Anterior poliomyelitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 3 cases and 5 deaths. Scarlet fever, 1 case. Typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 174 and the death-rate is then 13.53.

FREE HOSPITAL FOR WOMEN. — Invitations have been sent by the Trustees of the Free Hospital for Women for the inspection of the hospital buildings this afternoon from two until six.

FINES FOR ILLEGAL SALE OF MILK. — In the Roxbury District Court last week six local dealers were fined a total of $225 for continuing to offer milk for sale after their licenses to do so had been revoked.

A WEEK WITHOUT DEATH FROM DIPHTHERIA OR SCARLET FEVER. — It is worthy of notice that, during the week ending Oct. 22, no death from diphtheria or scarlet fever was reported to the Boston Board of Health. It is several years since a week has elapsed without a death from either of these diseases in Boston.

PENALTY OF BREAKING QUARANTINE. — In Malden, Mass., last week a patient with diphtheria, who had been duly quarantined at her home, refused to stay indoors and attempted to travel on an electric car. She was promptly removed by the board of health to the local hospital for contagious diseases.

ADDITION TO MILFORD HOSPITAL. — It is announced that on account of the present overcrowding of the Milford (Mass.) Hospital, which was established some years ago by Mr. and Mrs. Eben S. Draper, of Hopedale, Mass., Mr. Draper has recently offered to provide for the erection of a new ward to accommodate twelve patients and five attendants.

CONTINUED CONDEMNATION OF OYSTER-BEDS. — In recent issues of the JOURNAL we have noted the condemnation by the Rhode Island Board of Shellfish Commissioners of various oyster beds in that state. During the past week nearly 200 more acres of beds have been condemned along the Kickomesit River, near Fall River, Mass. It is stated that the sewage from that city is the source of their pollution.

CALVES CONDEMNED AT BRIGHTON. — At the Brighton slaughter-yards last week, the agents of the Boston Board of Health condemned, as unfit for food, 82 out of a shipment of 84 calves. Many of these animals were said to be only two or three days old. This is said to be the first instance in Massachusetts of such condemnation of bob-veal.

A SECOND HOOKWORM CASE IN BOSTON. — A second case of uncinariasis was discovered in Boston last week in the person of a young Chinese immigrant, who had come from Hongkong to Vancouver and thence to Halifax and had arrived in Boston from the latter city a few days ago. The patient has been sent to the Carney Hospital. His infection with the hookworm must of course have occurred in China.

A Centenarian. — Mrs. Mary Turcotte, who died on Oct. 23, at Brockton, Mass., is said to have been born on Oct. 1, 1810, at Lavaltorie, P. Q., Canada. She was the mother of five children, of whom two survive her. It is alleged that for the past fifteen months she had hardly slept at all, notwithstanding which she had maintained good health and continued to discharge her domestic duties until partly paralyzed by a cerebral hemorrhage last spring.

Consumptives' Hospital Out-Patient Building. — In a recent letter to the mayor, Mr. Edward F. McSweeney, chairman of the board of trustees of the Boston Consumptives' Hospital Department, urges the erection of a new out-patient building for the hospital. During the past year about 3,000 cases have been referred to the present out-patient building on Burroughs Place, over 10,000 visits have been made there by patients, and 8,000 homes have been visited by the district nurses doing the work of the department.

Duties of the People to the Board of Health. — Under the auspices of the Boston Hygiene and Sanitation Society, there was held one evening last week at the North Bennet Street Industrial School a meeting of residents of the North End. An address was made by Mr. John Ritchie, Jr., on familiar subjects of hygiene, with special emphasis on the duties of the people to help themselves in such matters and to assist the efforts of the Board of Health in their behalf.

Growth of Free Hospital for Women. — The annual meeting of the Brookline Free Hospital for Women was held in Brookline, Mass., last week. The report of the visiting surgeon showed that during the past year the average number of occupied beds in the institution has been increased from 30 to 36, and that 123 more patients have been admitted and treated than during the preceding year. In view of the large waiting list of patients, whom even this increase could not accommodate, the trustees then voted still further to enlarge the number of beds to 40.

Inspection of Factories, Workshops and Public Health. — At hearings held last week at the State House before the special commission appointed "to investigate the efficiency of Massachusetts laws relative to the inspection of factories, workshops and public health," complaint was made by several medical inspectors that many of their duties required special mechanical knowledge which they could not be expected to possess, and that these duties take time from others more legitimately within their province. It seems likely that present methods of inspection may be radically changed in the near future.

Demonstration of Radio-active Preparations. — The annual meeting of the stockholders of the Institution for Physical Therapeutics will be held in Boston on Nov. 7. This meeting "will be followed by a demonstration of radio-active preparations, including the radiogen-schlamm for the local treatment of articular and muscular rheumatism." The preparations to be shown have been imported from the Radiogen Gesellschaft in Charlottenburg, Germany. The demonstration should be of particular interest in view of the recent special meeting of the Suffolk District Medical Society on the subject of radio-activity and its therapeutic applications.

The Horns of the Doctor's Dilemma. — At a meeting last week of the Channing Club in Boston, Dr. Richard C. Cabot gave an address on "The Doctor's Dilemma," in which he depicted the passing of the general practitioner, the family physician, crowded out on the one hand by specialists, on the other by the development of large public hospitals with their provisions for caring promptly and efficiently for the sick. Perhaps the public is pecuniarily, if not morally, the gainer by this process of hospitalization. The doctor to whom the dilemma is presented, however, might contemplate it with more equanimity if the extinction with which he is threatened really represented the achievement of the ideal of our profession,—to learn how men should live so that there might be no more sickness.

Massachusetts State Conference of Charities. — The eighth annual meeting of the Massachusetts State Conference of Charities was held on Oct. 26, 27 and 28 at Fitchburg, Mass. One of the principal topics under discussion was the care of the insane and the treatment of mental diseases. Dr. Owen Copp, of the Massachusetts State Board of Insanity, reviewed the history and prospects of the subject in a paper on "Mental Disease in Retrospect and Outlook in Massachusetts." Dr. Elmer E. Southard described "The Purposes of the New State Psychopathic Hospital at Boston," the project for whose establishment is still before the legislature. Mr. Edmund A. Whitman, of Cambridge, presented a paper on "Industrial Activities for the State's Dependents."

At the closing session of the conference Dr. H. Lincoln Chase, of the Brookline Board of Health, spoke on "Co-operation in the Community for the Public Health."

ABATEMENT OF POLIOMYELITIS. — At the quarterly meeting of the Massachusetts Boards of Health, held in Boston last week, a paper was read by Dr. Robert W. Lovett on poliomyelitis, and there was considerable discussion of the epidemics of the disease that have prevailed during the past summer. At present the spread of the infection seems to be abated by the advent of cooler weather. During the past week there has been one death from it at Malden, Mass., and in Rhode Island only one new case has been reported. There has now been reported a total of 205 cases in Rhode Island, with 23 deaths. Of these, 79 cases and 12 deaths have occurred in Providence; 19 cases and 3 deaths in Newport; 12 cases and and 1 death in Woonsocket; and in Pawtucket, 12 cases but no deaths. It is expected that the epidemics are practically at an end for the present season.

NEW YORK.

ADVISORY BOARD OF STATISTICIANS, CITY HEALTH DEPARTMENT. — The first formal conference of the Advisory Board of Statisticians of the City Health Department was held on Oct. 28, when plans for work to be carried out next year were discussed. This board was appointed by Commissioner Lederle in July last, and its members are to serve without compensation. On it are Dr. Roger S. Tracy, former registrar of the Health Department; Dr. William H. Guilfoy, the present registrar; Dr. Cressy L. Wilber, chief of the Statistical Bureau of Commerce and Labor, Washington; Prof. C.-E. A. Winslow, of the College of the City of New York, formerly of the Massachusetts Institute of Technology; and Prof. Walter F. Wilcox, of the Department of Economics, Cornell University, the consulting statistician of the New York State Department of Health.

THE DROUGHT AND WATER SUPPLY. — The President of the State Board of Water Supply, accompanied by the consulting engineer of the board, has been making a tour through Westchester County in connection with the water supply problem occasioned by the long-continued drought, and they found the condition at Yonkers serious, the reservoirs containing but little more water than previous to the recent rainfalls. On Oct. 27 a conference was held by the Public Safety Commissioner, the local health officer and the city chemist regarding the condition of the water in the reservoirs, and the residents were urged to continue to boil the water before using.

THE STRAUSS MILK DEPOTS. — As the result of a conference with the committee appointed at the meeting of philanthropic agencies on Sept. 7, Nathan Strauss has now consented to keep open his eight all-the-year-round milk depots. In the interview with Mr. Strauss which the committee had at the residence of Dr. A. Jacobi on Oct. 24 at which he announced his consent to carry on the work, Mr. Strauss expressed the hope that as a result of the activity of this committee and others many additional infants' milk depots would soon be established, and also that ultimately the city would undertake this work to as large an extent as might be required.

TYPHOID FEVER. — One of the first acts of the new Governor, Horace White, succeeding Governor Hughes, has been to request the Health Commissioner, in view of the prevalence of typhoid fever throughout the state, to keep in close touch with the situation and take every precaution to prevent the spread of the disease. While no epidemic of large proportions has been reported, so many cases have developed that the governor is convinced that the present situation warrants the utmost vigilance on the part of the State Health Department. At the same time in New York, Edward Hatch, Jr., chairman of the State Water Pollution Commission, has called the attention of the public to the danger of typhoid after a protracted drought, when the first heavy rains are apt to wash down the filth which has accumulated upon the watersheds. In this connection he suggests that boiled Croton water is preferable to a bottled water whose proprietors in this dry season may be obliged to fill their orders from a source other than the spring.

FEWER DEATHS FROM TYPHOID FEVER. — Dr. John S. Billings, Jr., of the Health Department, has made a special report to Commissioner Lederle in which he states that the figures show that in the first nine months of the present year there have been fewer cases of typhoid fever and deaths from the disease in Manhattan than during the corresponding period in any of the last five years. The death-rate from typhoid for the three quarters of 1910 is 13.6 per thousand, as compared with 15.1 for the years from 1905 to 1909 inclusive. The greatest prevalence of the disease was in the year 1907, when 2,387 cases were reported,

with 372 deaths. The present year there were 1,268 cases, with 172 deaths. "These figures," continues the report, "bear out the statement that there is no unusual increase in the prevalence of typhoid fever. The disease is more prevalent through New York state, Connecticut and Rhode Island, but not to any alarming extent." In New York City in the week ending Oct. 8 there were 17 deaths from typhoid, as against 24 in the corresponding week of 1909, and in the week ending Oct. 15, 20 deaths, as against 13 in the corresponding week of 1909.

Mortality from Typhoid Declining. — The State Commissioner of Health has submitted to Governor White a report on typhoid fever in the state during the past ten years, in which he gives the following figures:

Month.	Average number of deaths, 1900 to 1909 inclusive.	1910.
January,	126.6	87
February,	107.1	87
March,	108.2	92
April,	94.4	68
May,	92.0	63
June,	74.4	70
July,	106.2	94
August,	153.9	131
September,	192.6	183

"From these statistics," the commissioner says, "it is evident that the normal variation of typhoid fever during the year is quite marked. The mortality from typhoid fever for the state during 1910 is appreciably below the average for the last ten years, and for the past three months for which statistics are available, namely, July, August and September, is approximately 10% less than normal. In the cities of the state, typhoid fever has during the past three months been in excess of the average only in three districts, the Adirondack and Northern, the Eastern Central and the Southern Tier districts. It was found, further, that of these districts only in the case of the Eastern Central District was typhoid fever appreciably in excess." He adds that Yonkers and Niagara also have an unusual number of cases of the disease, and that the conditions at Yonkers have recently been investigated by the State Department of Health. He then goes on to say: "It is not generally understood that typhoid fever is considerably more prevalent in the late summer and fall months of the year; consequently, as the fall approaches, public anxiety is unnecessarily aroused, and often gross exaggerations are prevalent as to serious epidemics, which are attributed to remote if not entirely erroneous causes."

The City's Budget. — The tentative budget for the city's expenses, which is usually accepted as final, has been agreed upon by the budget committee of the Board of Estimate and Apportionment. The total is $171,505,787, or more than $8,000,000 more than the expenditures in 1910. In 1911 the Department of Public Charities is to receive $2,838,446, an increase of $155,834; charitable institutions to which the city gives more or less support, $4,598,575, a decrease of $135,077; the Tenement House Department, $811,412, an increase of $21,690; Bellevue and Allied Hospitals, $1,196,065, an increase of $54,005; the Board of Ambulance Service, $27,950; the Department of Health, $2,823,499, an increase of $75,776. The original estimate of the Health Department was $1,253,198 greater than the amount allowed.

The State Water Supply Commission has approved the deep-rock pressure tunnel for the distribution of the supply from the new Catskill Aqueduct, stating that the plans for its construction of the City Board of Water Supply, which is building the aqueduct, are justified by public necessity. The Board of Estimate and Apportionment had already approved the tunnel, which will pass under the Borough of the Bronx, the Harlem River, Manhattan Island and East River, with mains leading through Brooklyn to Queens and under the Narrows to Richmond (Staten Island). The estimated cost of the work is $25,000,000.

Current Literature.

Medical Record.

Oct. 22, 1910.

1. Fuller, E. *Post-Prostatic Cystotomy.*
2. Wagner, C. G. *Manic-Depressive Insanity and Dementia Precox.*
3. Northrup, W. P. *Postscarlatinal Anuria for Five Days in a Boy of Three and a Half Years; Recovery.*
4. Cumston, C. G. *Remarks on the History of Forensic Medicine from the Renaissance to the Nineteenth Century.*
5. Bailey, P. *The Hospital Treatment of Nervous Diseases.*
6. Sauer, J. G. *Constipation and Toxemia.*
7. Wiener, A. *Abscess in the Frontal Lobe of the Brain after Chronic Frontal Sinusitis; Erysipelas in Conjunction with Acute Mastoiditis.*
8. Clurman, M. J. *The Lodge Practice Evil of the Lower East Side.*
9. Greeley, H. *The King's Evil.*
10. *Fox, C. D. *A Case of Tetanus Successfully Treated with Magnesium Sulphate.*
11. Amberg, E. *Guide for the Lateral Sinus Line.*

10. Fox reports a case of tetanus in a boy of twelve. The period of incubation was eleven days, at the end of which time stiffness of the jaw appeared. The next day tetanic convulsions developed. The following day the wound was cauterized, — 3,000 units of antitetanic serum

were given subcutaneously and 1,200 into the spinal canal. After this, 3,000 units were given every six hours, first subcutaneously, later intravenously. Increasing doses of bromide and chloral were given every four hours and morphia, gr. ¼, by mouth every evening. Four days after symptoms first appeared it was decided, as the patient continued to grow worse, to use magnesium sulphate intraspinally. Two cubic centimeters of the cerebrospinal fluid were withdrawn by lumbar puncture and an equal amount of a 25% solution of this salt was injected. Four hours after this injection, all four extremities had become very much relaxed, and from this time on the patient steadily improved. In all, he received 60,000 units of tetanus antitoxin — 24,000 intravenously, 12,000 intraspinally and the rest subcutaneously. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

OCT. 15, 1910.

1. WRIGHT, J. *The Mechanicobiological Standpoint in Medical Problems.*
2. STEVENS, G. T. *A Series of Studies of Nervous Affections in Relation to the Adjustment of the Eyes.*
3. VAUGHAN, J. W. *The Comparative Value of Different Methods of Cancer Treatment.*
4. *KOPETZKY, S. J. *Results of Autogenous Vaccine Therapy in Acute and Chronic Middle-Ear Suppurations.*
5. BURKE, C. B. *Carbolic Acid Poisoning.*
6. BASS, C. C., AND GAGE, J. M. *Report of Fifteen Cases of Hymenolepis Nana.*
7. AUSTIN, H. W. *The Intimate Relation which Hospitals Bear to Public Health.*
8. CROSS, E. S. *Hypopituitarism.*
9. ASTLE, C. J. *A Case of Hyperchlorhydria Apparently Relieved by the Use of Prisms.*

4. Kopetzky reports fifteen cases of purulent otitis media treated with autogenous vaccines. He concludes that such vaccines are valuable in cases where subsidence of bacterial activity means the end of the lesion. In acute cases, after the period of violent onset with constitutional symptoms has passed, the added immunity acquired through vaccine therapy seems rapidly to cure the diseased ear. In cases with bone lesions the vaccines had no effect. [L. D. C.]

OCT. 22, 1910.

1. PARKER, G. M. *The Discard Heap — Neurasthenia.*
2. ROSENBERGER, R. C., AND STERN, S. *Bacteriological Studies in Cases of General Paresis.*
3. GLUECK, B. *Atypical General Paralysis of the Insane.*
4. PAUL, G. P. *Paratyphoid Fever.*
5. KNOTT, J. *Digitalis Fuchsii (Foxglove v. Foxes-Glew); "Opium of the Heart"; "Quinquina du Coeur."*
6. *BREM, W. *Hexamethylenamine in the Treatment of a Case of Meningococcus Meningitis.*
7. LYON, M. *What is a Rational Diet?*
8. ENGEL, H. *The Waters of Bad Nauheim and Their Therapeutic Effect.*
9. FRIED, H. *An Easy Method of Determining the Dose for Infants below One Year.*

6. Brem discusses the use of urotropin in meningeal inflammation, and reports a case of meningococcus meningitis in which he used it. The excretion of urotropin in the cerebrospinal fluid has been established experimentally by Crowe. This drug should, therefore, be used promptly in all cases in which meningitis is a possible complication. When meningitis is already present it is indicated as an adjunct to the treatment or as a substitute for Flexner's serum when the latter cannot be obtained. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

OCT. 22, 1910.

1. *HERRICK, J. B. *Certain Popular but Erroneous Notions concerning Angina Pectoris.*
2. *CONNER, L. A. *Visceral Anesthesias of Tabes Dorsalis in Relation to the Diagnosis of Acute Inflammatory Conditions of the Abdomen.*
3. *TINKER, M. B. *Teaching the Principles of Surgery.*
4. PRIMROSE, A. *Compression of the Spinal Cord Causing Paraplegia and Its Surgical Treatment.*
5. GRANT, W. W. *Traumatic Facial Paralysis. Anastomosis of Facial Nerve to Spinal Accessory.*
6. WHALEN, C. *Intestinal Obstruction Due to Ascaris Lumbricoides, with Necropsy.*
7. TRACY, S. E. *A Simple and Efficient Means of Applying Artificial Heat.*
8. HIRSCH, I. S. *A Case of Foreign Body Calculus.*
9. PURCELL, C. E. *Submucous Resection of the Nasal Septum.*
10. EMERSON, F. P. *Results of the Operation of Submucous Resection of the Septum in Private Practice.*
11. WITHERSPOON, T. C. *Surgery of Cystic Degeneration of the Kidney.*
12. CHAPIN, H. D. *The Nutrition of the Feeble Infant.*
13. OCHSNER, E. H. *The Prognosis in Congenital Dislocation of the Hip.*
14. SCHILLER, H., AND O'DONNELL, P. S. *Radio-Activity Induced by the X-Ray.*
15. DAVIS, G. R. *Bites from Copperhead Snakes.*

1. Herrick claims that with true organic cardiovascular angina pectoris there cannot always be made out peripheral arteriosclerosis, cardiac hypertrophy and high blood pressure. The finding of aneurysm or lesion of the aortic valve does not exclude angina, but rather argues in its favor. Attacks are not always few in number and brief in duration; they do not occur solely after exertion. While the prognosis is grave, life is not necessarily limited to a few months. The disease is not to be excluded because the symptoms occur in women, even in nervous hysterical women. The pain is not necessarily severe; it may be mild or even lacking. Digitalis is not necessarily contra-indicated; it is often of great value.

2. Conner emphasizes the very important facts that in locomotor ataxia a loss of the normal sensibility of the viscera sometimes occurs, and in such cases acute inflammatory diseases of the abdomen, such as appendicitis or peritonitis, may develop and run their course without at any time presenting any of the three symptoms of pain, tenderness and muscular rigidity. He illustrates this very forcibly by an excellent case report.

3. Tinker advances some excellent practical ideas in regard to surgery teaching. He advocates teaching antisepsis and arrest of hemorrhage practically in the laboratory and operating room, as well as didactically in the class room. Anesthesia also should be taught in this way. Practical and laboratory tests or examinations should be given when possible instead of written and oral examinations. Current literature can be used in some cases instead of exclusive textbook instruction. Surgical diagnosis should be given more attention than major operative surgery. [E. H. R.]

BULLETIN OF THE JOHNS HOPKINS HOSPITAL.

SEPTEMBER, 1910.

1. *MINOR, C. L. *The Use of the X-Ray in the Diagnosis of Pulmonary Tuberculosis.*
2. LONGCOPE, W. T., AND MCCLINTOCK, A. T. *The Effect of Diminished Blood Supply to the Intestines upon the General Circulation.*
3. MANWARING, W. H. *The Physiological Mechanism of Anaphylactic Shock. A Preliminary Communication. A Summary.*
4. MANWARING, W. H. *Concerning "Cobra-Lecithid." A Summary.*
5. HEWITT, J. H. *A Peculiar Degeneration Found in Heart Muscle Cells. A Preliminary Report.*
6. *MEADER, F. M. *The Bacterial Power of the Blood Serum of a Typhoid Carrier, Before and During a Course of Active Immunization with Typhoid Vaccines. Patient Ceases to be a Carrier.*
7. HIGGINS, W. H. *The Association of Psoriasis with Jaundice.*
8. HIGGINS, W. H. *Pemphigoid Eruptions in Typhoid Fever.*
9. GROVE, W. G. *Acromegaly and Goiter. Report of a Case.*

1. Minor presents an interesting and fair discussion of the use of the x-ray in the diagnosis of pulmonary tuberculosis. He does not advise any physician to provide himself with such an apparatus unless he is willing to study it, become absolutely familiar with it and use it in every

case. He advises fluoroscopy rather than radiography. In early diagnosis this method must always be subservient to older methods of percussion, auscultation, etc. It is of great value, however, in giving exact information as to the location and extent of any given lesion. He discusses what it shows in moderately advanced and advanced cases, as well as in bronchial glands.

6. Meader concludes from his study of the bactericidal power of the blood serum of a typhoid carrier before and during a course of vaccines that (1) the bactericidal power of the blood serum of a typhoid carrier may be that of a normal person. (2) A carrier may be actively immunized to B. typhosus by the use of autogenous vaccines, and in so doing the bactericidal substances in the blood may be markedly increased. (3) A carrier, if vaccinated so as to bring about an increase of bactericidal substances, may cease to harbor bacilli. (4) The best therapeutic dose seems to be 75 to 400 million. The carrier on which he based this study ceased to harbor bacilli after vaccination. [J. B. H.]

The Lancet.

Sept. 24, 1910.

1. *Latham, P. W. *The Etiology and Treatment of Rheumatoid Arthritis.*
2. Takaki, Y. *Clinical Surgery in Japan.*
3. Hellier, J. B. *On the Condition Called "Falling of the Womb," with Special Reference to the Operative Treatment of the More Severe Cases.*
4. Wood, C. G. R., and Wallis, G. F. C. *A Case of Bilateral Papilledema and Ring Scotoma due to Sphenoidal Sinusitis.*
5. Shaw, E. H. *The Immediate Microscopic Diagnosis of Tumors at the Time of Operation.*
6. McKechnie, W. E. *Pneumonia: An Inquiry into Some of the Mechanical Conditions which may occur in the Chest in Adults Suffering from an Infection with the Pneumococcus of Fraenkel, and Observations on Treatment, with Special Reference to the Use of Morphine; and on Some Surgical Conditions.*
7. O'Conor, J. *The Radical Cure of Hemorrhoids. Modified Whitehead's Operation.*
8. Rolleston, J. D. *Malignant Diphtheria with Multiple Lesions in an Infant.*
9. Garson, J. G. *A Visit to Professor Treupel's Clinic: The Use of "606."*
10. McKenzie, D. *The Wandering Womb and Fumigation; a Chapter in Primitive Gynecology.*
11. Hirsch, C. T. W. *Motoring Notes.*

1. Latham's treatment of rheumatoid arthritis is based on relieving irritation in the spine by means of blistering and cupping along the spine. [J. B. H.]

British Medical Journal.

Sept. 24, 1910.

1. Barr, J. *The Use and Abuse of the Lime Salts in Health and Disease.*
2. *Rogers, L. *A Simple Curative Treatment of Cholera.*
3. Basil, M. M. *Notes on Cholera.*

The British Medical Association.

Section on Dermatology.

4. Abraham, P. *Introductory Remarks.*
5. Feibes, E. J., *et al. Discussion on the Diagnosis and Treatment of Syphilis.*
6. Tomkinson, J. G. *A Case of Pityriasis Rubra Pilaris, with Remarks on the Etiology of this Condition.*
7. McDonagh, J. E. R. *Serum Diagnosis of Syphilis.*
8. Bulkley, L. D. *On the Value of a Rice Diet in Certain Acute Diseases of the Skin.*
9. Dally, J. F. H. *Recent Experiences in the Treatment of Favus.*
10. Abraham, P. S. *Note on Some Varieties of "Molluscum Contagiosum."*
11. Wild, R. B. *Some Cases of Actinomycosis, with Especial Reference to Treatment by Potassium Iodide.*
12. Evans, W. *Some Points in Connection with Electrolysis for Hirsutics.*
13. Pernet, G. *A Case of Pemphigus Vegetans.*
14. Walsh, D. *Investigation of a Dermatitis amongst Flower-Pickers in the Scilly Islands, the So-called "Lily Rash."*
15. Hutchinson, J. *Notes on Paleogenesis.*
16. Bunch, J. L. *The Treatment of Some Skin Diseases by Vaccine Therapy.*
17. *Dawson, G. W. *Cutaneous Diphtheria.*
18. Morton, E. R. *The Use of Solid Carbon Dioxide in Dermatology.*
19. Eddowes, A. *The Treatment of X-Ray Burns.*

Section of Tropical Medicine.

20. Sandwith, F. M. *Introductory Remarks.*
21. Bruce, D., *et al. Discussion on Human Trypanosomiasis.*
22. Roberts, J. R. *Some Features of Tuberculosis in India.*
23. Row, R. *Further Observation on Leishmania Tropica of Oriental Sore of Cambay, India.*
24. Castellani, A. *Observations on "Tropical Bronchoöidiosis."*
25. Charles, R. H., *et al. Discussion on Special Factors Influencing the Suitability of Europeans for Life in the Tropics.*
26. Connal, A. *A Report on the Serum Treatment of a Horse Suffering from Trypanosomiasis.*
27. Cantile, J. *Lacto-Bacilline (Metchnikoff) in the Treatment of Tropical Intestinal Ailments.*
28. Birt, C. *Phlebotomus or Sandfly Fever.*

2. Rogers describes a method of treating cholera by means of hypertonic saline injections given during the collapse stage, either subcutaneously or intravenously. Combined with this he gives various drugs to raise the blood pressure, usually digitalis, strophanthus, adrenalin, or pituitary extract. In addition to these methods of combating the toxemia he gives permanganates first in solution to drink in place of water, beginning with ½ to 1 gr. to the pint and increasing to 4 to 6 gr. to the pint. This he gives *ad libitum*. Calcium permanganate is the best for this purpose. Secondly, he gives potassium permanganate in a salol-coated 2-gr. pill every fifteen minutes for the first two hours, then every one-half hour for about twelve hours till the stools become green and less copious. By these methods the mortality was reduced from 59% to 34.7% by means of hypertonic salt solutions, and from 34.7% to 23.3% by means of permanganate during the last year.

17. Dawson reports some interesting cases of cutaneous diphtheria which occurs usually in children. It takes the form of an impetiginous eczema, nearly always on the head and face, and associated with a severe conjunctivitis after otorrhea and rhinitis. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 39.

Sept. 29, 1910.

1. Sippel, A. *Preliminary Communication on Dysmenorrhea.*
2. Treupel, G. *Further Experiences with Syphilitic and Parasyphilitic Disease with the Ehrlich-Hata Injections.*
3. *Herxheimer, G., and Reinke, F. *The Influence of the Ehrlich-Hata Preparation on the Spirochetes of Congenital Syphilis.*
4. *Werner, H. *The Ehrlich-Hata Preparation in Malaria.*
5. Loewy, A., and Hirschfeld, F. *Observations on the Minimum of Nourishment Needed.*
6. Loewy, A. *The Constancy of Needed Nourishment in Healthy Men.*
7. Curschmann, H. *A Few Indications and Contra-indications of Lumbar Puncture.*
8. Zweig, A. *Essay on the Clinical Aspects and Prophylaxis of Typhoid Fever.*
9. Schuster, G. *In How Far is the Microscopic Examination with More Recent Staining Methods for Tubercle Bacilli Satisfactory for Diagnosing Tuberculosis of the Urinary Tract?*
10. Takeda, K. *The Urinary Pepsin as a Differential Point in Diagnosis between Carcinoma Ventriculi and Achylia Gastrica.*

11. SELBACH. *A Case of Pancreatic Disease.*
12. FEY, J. *Pneumatosis of the Stomach Healed by Bloodless Stretching of the Cardia.*
13. RÖTHLER. *Rare Infections of the Newborn.*
14. CITRON, J., AND MUNK, F. *Cause of the Wassermann Reaction.* (*Reply to article in No. 38 on same subject.*)

3. These authors had the opportunity of studying two cases of congenital syphilis which had died two and four days after an injection of Ehrlich's new preparation. The tissue was stained by the Levaditi method, and a prolonged search was made throughout all the organs. In no organs were spirochete found except in the lungs, and here they showed marked signs of degeneration and agglutination. This was most marked in the case that received the smaller dose. The explanation of why they persisted in the lungs is not clear. They consider that these cases confirm the view that this compound is a specific poison for the spirochete.

4. From Werner's experiences with Ehrlich's new preparation it seems fair to conclude that it has a specific action upon the malarial parasite and that this is more marked against the tertian than the tropical form. He advises its use in all cases where the parasites resist quinine or the patient has an intolerance for quinine. [C. F., JR.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 40.

OCT. 3, 1910.

1. MEYER, E. *Disturbances in the Pupil in Dementia Precox.*
2. HOCHSINGER, K. *Nutrition Neuroses in Early Childhood and the Nervous Incapacity to Masticate in Childhood.*
3. *COHN, L. *The Importance of the Von Pirquet Skin Reaction in Childhood.*
4. HIRSCH. *Fatal Lead Poisoning of a Two-Year-Old Child Caused by Habitually Sucking the Painted Bedstead.*
5. STÜMPKE, G. *Is the Fever which appears after an Injection of Mercury in Syphilis to be Considered a Sign of Active Syphilis?*
6. FÜRBRINGER, P. *Injections of Metallic Mercury.*
7. SCHINDLER, C. *Concerning the Latest Methods in the Treatment of Gonorrhea and Active Immunization with Gonococcus Vaccine.*
8. AUFRECHT. *The Path of Infection in Tuberculosis of the Lungs; Its Clinical and Therapeutic Importance.* (Conclusion.)
9. SELLIE, J. *The Sensitiveness of an Organism to the Albuminous Substance Peculiar to Itself* (*Homastheria*).
10. STEINDORFF, K. *The Action of Atoxyl on the Eye.*

3. Cohn reaches the following conclusions in regard to the value of the Von Pirquet skin reaction. Its greatest worth is in the diagnosis and prognosis of tuberculosis in infants. A positive reaction in older children or grown persons he considers of no practical value, neither can a negative reaction absolutely rule out tuberculosis in the case of exhausted or emaciated patients. Positive diagnosis of infection with tuberculosis early in infancy demands a grave prognosis. Of 18 cases under one year of age, 16 died. [J. L. H.]

DEUTSCHES ARCHIV FÜR KLINISCHE MEDIZIN. BAND 100.

HEFT. 1–2. SEPT. 19, 1910.

1. *EDENS, E. *A Study of Pulse Tracings.*
2. *HANNES, B. *The Relation of Chromaffin Cells of the Suprarenals under the Influence of Experimental and Natural Diphtheria Infections.*
3. *HEDINGER, M. *The Value of Renal and Cardiac Medicines on Diseased Kidneys.*
4. SANDILOWSKY, I. *The Influence of Increased Temperature on Blood Concentration.*
5. FISCHLER, F. *The Occurrence of Acute Severe Liver Degeneration on Animals with Eck's Fistula with Complicating Pancreas Fat Necrosis, and also Some Remarks about the Relation between Liver and Pancreas.*
6. ROBINSON, G. C., AND DRAPER, G. *The Presphygmic Period of the Heart.*
7. *SCHMIDT, W. *The Functional Test of the Liver by Means of Levulose in Infectious Diseases, with Regard also to Urobilin Excretion.*
8. KANERT, J. *The Use of Synthetic Suprarenalin in Internal Medicine.*
9. BINGEL, A., AND CLAUS, R. *Further Investigation in the Blood-Pressure-Raising Substance of the Kidneys.*
10. JOLLES, A. *Method of Determining Iron in the Blood.*

1. Edens has reviewed the literature very carefully on the question of pulse tracings and gives a very good description of what points may be used in regard to diagnosing the pathologic condition of the heart from the tracings, and also what points may be brought out in regard to the heart function. A long list of references is included.

2. Hannes, from experimental work on guinea pigs with diphtheria toxin and the study of human cases of diphtheria, concludes that there is no relation between death in these cases and the chromaffin cells of the adrenals.

3. From experimental work Hedinger has learned that certain diuretics, such as digitalis, theophyllin, etc., act more effectively in the early stages of experimental nephritis caused by poisons which attack the tubules. In the later stages of these experimental nephritides they do not show an increased action. In any stage of the nephritis caused by drugs which affect the circulatory apparatus of the kidney they do not show an increased activity.

7. In infectious diseases and in the presence of toxins, the liver loses its tolerance for levulose and its content in glycogen. Simple increase of temperature, however, does not cause any diminution of the tolerance for levulose. Therefore these tests for disease of the liver are of no value in cases of acute infection with fever. These results are from a combined study of human cases and animal experiments. [C. F., JR.]

DIE THERAPIE DER GEGENWART.

JULY, 1910.

1. LAURITZEN, M. *The Treatment of Diabetes Mellitus in Children.*
2. JACOBSOHN, L. *Unconsciousness of Crisis-like Onset with Apnea in Tabes.*
3. STERNBERG, W. *Taste and Palatability in Hygiene and in Cooking.*
4. BRADT, G. *The Treatment of Whooping Cough.*
5. FRAENKEL, M. *The Importance of Roentgen Rays in Gynecology.*
6. **Berlin Medical Society, Session of June 22, 1910. Paul Ehrlich's Remedy for Syphilis.*

6. In April, 1910, Hata (Ehrlich's co-worker) made the first announcement of No. 606, dioxy-diamido-diarsenobenzol, a new preparation which had positively cured certain protozoan diseases in animals. Experimental syphilis in rabbits had been annihilated by it. Encouraged by these results, Ehrlich had given the remedy to Alt to try on paralytics and later to Schreiber to use on syphilitics. These clinical tests gave remarkably favorable results. In March, 1910, Ehrlich turned the remedy over to Wechselmann for tests on cases of lues in the Rudolph Virchow Hospital. Wechselmann now reports his first series of forty-eight cases. From the observations of these clinicians, which embrace some hundred cases, it is evident that in the doses used, "606" has no essential toxicity. In its curative effect it is far superior to anything hitherto used in fighting syphilis. All stages are affected. Whether the disease be hereditary or acquired, whether its manifestation be a chancre, a secondary roseola or a late visceral lesion, the effect of "606" is magical. The most wonderful thing about it is its action in cases which have obstinately resisted mercurials and other treatment. [L. D. C.]

AUGUST, 1910.

1. FRAENKEL, A. *Walled-off, Especially Interlobar, Pleural Exudate, with Remarks on Putrid Empyema.*
2. *TACHAU, H. *The Intravenous Injection of Antitoxin in Diphtheria.*
3. IMPENS, E. *Pharmacological Note on the Ester of p-*

Amino-Benzoic Acid, with Special Reference to Cycloform.

4. MÜLLER, G. *The Prophylaxis of Habitual Faulty Postures.*
5. GLASERFELD, B. *Remarks on the Treatment of Acute Gonorrheal Urethritis in the Male.*
6. KÖHLER, F. *Tuberculin Therapy.*

2. Tachau reports his experience and that of others with the intravenous use of antitoxin in diphtheria. This treatment has been tried out during the past ten years in Italy, France, England and more recently in Germany, where clinical observation has been corroborated by animal experimentation. The results have been the same everywhere. In ordinary cases there is more rapid disappearance of toxemia and less antitoxin is necessary than when given by the subcutaneous route. In very toxic cases and in cases with circulatory and renal complications it has no greater effect than when given subcutaneously. Untoward effects are more common. Chill, fever and collapse occur in many cases almost immediately after injection and pass off within a few hours. Collapse is alarming and demands vigorous stimulation; it is sometimes accompanied by a general erythema. Tachau sees in the intravenous use of antitoxin no essential therapeutic advantage over the subcutaneous method, and in consideration of its complex technic and its alarming untoward symptoms, he has discarded it. [L. D. C.]

SEPTEMBER, 1910.

1. DUBOIS, P. *The Foundations of Psychotherapy.*
2. GESELSCHAP, J. H. *The Treatment of Pleurisy with Effusion by Air Insufflation.*
3. FOCKE. *The Genesis of Spontaneous Epistaxis and Its Treatment with Digitalis.*
4. *MEIDNER. *Ehrlich's Remedy for Syphilis in Several Cases of Visceral Lues.*
5. FISCHER, W. *The Ehrlich Treatment of Syphilis.*

4. Meidner has used Ehrlich's "606" on all cases of syphilis entering the Moabit State Hospital, Berlin, since May 1, 1910. The luetic manifestations have been varied — syphiloderms, perforating ulcers, rectal stricture, gummata, ocular palsies, cerebral and spinal lues, post-syphilitic headache, tabes and dementia paralytica. He concludes from this clinical experience that amido-arsenobenzol is a remarkable remedy for syphilis of the skin and mucous membranes. In visceral lues it has cured in single dose more often than mercury and iodide over a long period. Of especial importance is its prompt action in desperate cases. Cicatricial changes are not attacked and damage to nerve tissue is not made good. Tabetics and paretics are not susceptible to this drug, although some relief of ataxia and ocular palsies has been noted. "606" is superior to mercury and iodide in that the treatment is very short and the effect very prompt. Whether because of this advantage dioxy-diamido-diarsenobenzol will ever supplant these older specifics depends on whether it kills the spirochete for all time. This point can be determined only after years of observation. [L. D. C.]

BULLETTINO DELLE SCIENZE MEDICHE.

MARCH, 1910.

1. ALBERTONI, P. *Traumatic Neurosis of Cardiovascular Type.*
2. GURRIERI, R. *Bilateral Oblique Inguinal Hernia and Hemoptysis following Trauma.*
3. PUNTONI, V. *The Biologic Diagnosis of Echinococcus Cysts.* (To be continued.)
4. BRUNO, A. *The Sphygmodynamometer of Prof. S. Salaghi.*
5. NARDI, A. *Strangulated Right Crural Hernia with Homologous Inguinal Hernia of Littré.*

APRIL, 1910.

1. ROSSI, F. *The Internal Respiration of the Tissues in Relation to Starvation and Acid Intoxication.*
2. BUCCELLI, G. C. *The Technic of X-Ray Applications.*
3. *CANTELLI, O. *A Group of Substances Found in Certain Urines.*
4. *CALCATERRA, W., AND DINA, E. *Considerations on 508 Cases of Cutaneous Reactions to Tuberculin.*
5. MASSI, W. *A Modification in the Sero-Precipitation of Vincent and Bellot.* (Preliminary note.)

3. Cantelli describes the chemical characteristics of a group of substances that he has succeeded in isolating from the urine of certain patients not showing the customary symptoms or signs of nephritis, and states his belief that there may be in the human organism chronic latent alterations, recognizable chemically in the urine alone by the presence of these oxyglycoproteid substances, which may, therefore, afford indication of a prenephritic stage.

4. From a statistical study of 508 cases reacting cutaneously to tuberculin, the authors consider the frequency of tuberculosis according to age and its relations with certain infections, notably diphtheria and typhoid. [R. M. G.]

MEMOIRS OF THE OSWALDO CRUZ INSTITUTE. VOL. II.

PART I. APRIL, 1910.

1. HARTMANN, M. *A New Intestinal Ameba, Entameba Testudinis.*
2. GODOY, A. *A New Vaccine against Symptomatic Anthrax.*
3. DE FARIA, G. *Contribution towards the Classification of Brazilian Entozoa. II. Dicrocoelium Infidum, a Parasite of the Gall Bladder of Eunectes Murina.*
4. MOSES, A. *Cases of Infection with Bacilli of Paratyphoid and Enteritis.*
5. ARAGAO, H. DE B. *Investigations on Polytomella Agilis.*
6. LUTZ, A. *Dipterologic Notes.*
7. HARTMANN, M., AND CHAGAS, C. *Studies on the Flagellata.*
8. GODOY, A. *Quantitative Study of the Germination of Spores.*
9. NEIVA, A. *The Development of a Chinin-Resisting Race of Malarial Parasites.*
10. FOUTES, A. *Some Observations on Tuberculous Infection and Its Virus.*

This first section of the second volume of memoirs, published every little while by the Oswaldo Cruz Institute at Rio de Janeiro, Brazil, presents the results of work, largely biologic research, done in the laboratories of the institute. It is printed in parallel columns of Portuguese and German, French or English. The illustrations are excellent. [R. M. G.]

Obituary.

GUSTAVUS LINCOLN SIMMONS, M.D.

DR. GUSTAVUS LINCOLN SIMMONS died at Sacramento, Cal., Oct. 4, 1910, aged seventy-eight years six months. He was born in Hingham, Mass., in 1832, and was one of the pioneers in California, rounding the "Horn" in 1849. He returned to Boston and took up the study of medicine at Harvard, where he graduated in 1856, since which time he has been in active practice in Sacramento until within two months of his death.

At various times he has held the following positions: President California State Medical Society; county physician; surgeon National Guard of California; and for over twenty years was commissioner in lunacy. He was the first in California to successfully perform ovariotomy and the wiring of tendons.

Dr. Simmons exhibited in an enviable way in his life and work a happy combination of the virtues and merits generally regarded as characteristic of the Atlantic and Pacific coasts of our country.

He is survived by a widow and three children, a daughter and two sons: Dr. Gustavus C. Simmons, Harvard 1885, and Dr. Samuel Ewer Simmons, Harvard 1899.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 22, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,191	366	Waltham	9	0
Chicago	365	158	Pittsfield	1	—
Philadelphia	—	—	Brookline	9	1
St. Louis	—	—	Gloucester	10	4
Baltimore	—	—	North Adams	5	1
Cleveland	—	—	Northampton	8	1
Buffalo	—	—	Chicopee	5	2
Pittsburg	—	—	Medford	4	—
Cincinnati	—	—	Beverly	5	1
Milwaukee	—	—	Leominster	4	—
Washington	—	—	Hyde Park	3	1
Providence	—	—	Melrose	3	1
Boston	197	66	Newburyport	4	2
Worcester	37	15	Revere	2	—
Fall River	28	14	Westfield	6	2
Cambridge	21	7	Woburn	7	1
Lowell	37	15	Peabody	—	—
New Bedford	31	11	Marlboro	3	0
Lynn	19	6	Attleboro	3	0
Springfield	20	2	Adams	2	1
Lawrence	23	5	Clinton	3	—
Somerville	21	4	Gardner	2	1
Brockton	20	7	Milford	—	—
Holyoke	19	9	Watertown	3	1
Malden	9	2	Plymouth	—	—
Chelsea	13	4	Southbridge	2	1
Newton	5	2	Weymouth	—	—
Salem	11	2	Framingham	6	0
Haverhill	10	4	Wakefield	—	—
Fitchburg	—	—	Webster	—	—
Everett	7	1	Arlington	—	—
Quincy	—	—	Greenfield	1	1
Taunton	11	4			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED OCT. 19, 1910.

GASSAWAY, JAMES M., surgeon. Granted one month's leave of absence from Oct. 7, 1910, on account of sickness.

SPRAGUE, E. K., surgeon. Granted fifteen days' leave of absence from Oct. 28, 1910.

MATHEWSON, H. S., passed assistant surgeon. Granted one day's leave of absence, Oct. 12, 1910, under paragraph 189, Service Regulations.

GOLDBERGER, JOSEPH, passed assistant surgeon. Granted four days' leave of absence from Oct. 26, 1910.

MCLAUGHLIN, A. J., passed assistant surgeon. Directed to report at the Bureau upon special temporary duty. Oct. 17, 1910.

BOGGESS, J. S., passed assistant surgeon. Granted one month's leave of absence from Nov. 14, 1910.

RUCKER, W. C., passed assistant surgeon. Directed to proceed to New York, N. Y., upon special temporary duty. Oct. 12, 1910.

DE VALIN, HUGH, passed assistant surgeon. Granted thirty days' leave of absence from Nov. 2, 1910.

DUFFY, B. J., assistant surgeon. Relieved from duty at Buffalo, N. Y., and directed to proceed to Tompkinsville, N. Y., and report to the commanding officer of the Revenue Cutter "Seneca" for duty. Oct. 12, 1910.

JACKSON, JAMES M., Jr., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 1, 1910.

TAPPAN, J. W., acting assistant surgeon. Leave of absence for twenty days from Oct. 1, 1910, amended to read twenty days from Oct. 5, 1910.

TERRY, M. C., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 1, 1910.

BECK, J. E., pharmacist. Granted seven months' leave of absence without pay from Oct. 20, 1910.

BOARD CONVENED.

Board of medical officers convened to meet at the Bureau Oct. 20, 1910, for the purpose of conducting a physical examination of an officer of the Revenue-Cutter Service. Detail for the board: Assistant Surgeon-General J. D. Long, chairman; Assistant Surgeon Paul Preble, recorder. Oct. 19, 1910.

CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING OCT. 29, 1910.

BROWNELL, C. D., surgeon. Detached from the "North Dakota" and ordered home to wait orders. Oct. 21.

PLEADWELL, F. L., surgeon. Detached from the bureau of medicine and surgery, Navy Department, and ordered to the "North Dakota." Oct. 21.

SHOOK, F. M., passed assistant surgeon. Granted sick leave for one month when discharged from treatment at the Naval Medical School Hospital, Washington, D. C. Oct. 24.

MCDOWELL, R. W., assistant surgeon. Granted sick leave for two months when discharged from treatment at the Naval Medical School Hospital, Washington, D. C. Oct. 24.

CATHER, D. C., passed assistant surgeon. Detached from the "Iowa" and ordered to the "Delaware." Oct. 25.

WHITMORE, G. B., assistant surgeon. Detached from the "Delaware" and ordered to the "Connecticut." Oct. 25.

MCDOWELL, R. W., assistant surgeon. Detached from the "Connecticut." Oct. 25.

BROWNELL, C. D., surgeon. Ordered to duty at the Naval Hospital, Las Animas, Colo. Oct. 26.

KELLEY, H. L., passed assistant surgeon. Commissioned passed assistant surgeon from June 6, 1910. Oct. 26.

LAWRENCE, H. F., passed assistant surgeon. Commissioned passed assistant surgeon from Sept. 21, 1910. Oct. 26.

SOCIETY NOTICE.

NEW YORK STATE DEPARTMENT OF HEALTH. — The tenth annual conference of the sanitary officers of the state of New York will be be held in the Y. M. C. A. Auditorium, Buffalo, Wednesday, Thursday and Friday, Nov. 16, 17, 18, 1910.

RECENT DEATHS.

DR. JOHN E. ALLEN, of New York, died from Bright's disease on Oct. 25. He was graduated from Bellevue Hospital Medical College in 1875, and for twenty-five years was connected with the New York City Department of Health.

DR. LENOX GRESHAM WALLING, who died of nephritis on Oct. 24, at Harrisville, R. I., was born there on June 19, 1881. He graduated from Brown University in 1902, and subsequently studied at Columbia Medical College. From 1906 to 1908 he served as house-officer at the Rhode Island General Hospital and at the Providence Lying-in Hospital. For the past two years he had been in practise at Providence.

DR. FREDERICK HOLME WIGGIN, of New York, died at Atlantic City, N. J., on Oct. 28. He was born at Kingston-on-Thames, England, in 1853. After being graduated from the Rensselaer Polytechnic Institute, Troy, and the University of the City of New York, he received the degree of M.D. from Bellevue Hospital Medical College in 1877. He served as interne at Bellevue Hospital and then practised at Litchfield, Conn., until 1890, when he removed to New York. Last year he retired from practise on account of ill-health. Among the honorary positions held by Dr. Wiggin are those of president of the New York County and State Medical Associations and president of the Alumni Society of Bellevue Hospital. During 1897 and 1898 he was adjunct visiting surgeon to Bellevue Hospital, and at the time of his retirement was gynecologist to St. Elizabeth's Hospital and consulting surgeon to the City, the Metropolitan Throat, and the Litchfield County hospitals.

BOOKS AND PAMPHLETS RECEIVED.

The Occurrence of Infantile Paralysis in Massachusetts in 1908. By Robert W. Lovett, M.D., and Herbert C. Emerson, M.D. Reprint.

Infantile Paralysis in Massachusetts in 1909: I. The Occurrence of Infantile Paralysis in Massachusetts in 1909. By Robert W. Lovett, M.D. II. Infantile Paralysis as Observed in Health District No. 15 during 1909. By Lyman A. Jones, M.D. III. Methods of Treatment in Infantile Paralysis. By E. H. Bradford, M.D.; Robert W. Lovett, M.D.; E. G. Brackett, M.D.; Augustus Thorndike, M.D.; Robert Soutter, M.D.; Robert B. Osgood, M.D. IV. The Diagnosis of Infantile Paralysis in the Prodromal and Early Acute Stage, as Found in the Experimental Study of Acute Poliomyelitis in Monkeys. With Report of Findings in Four Human Cases. By William P. Lucas, M.D. Reprint.

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Original Articles.

SPINAL ANESTHESIA.

BY FREEMAN ALLEN, M.D.,

Consulting Anesthetist, Massachusetts General Hospital and to the Children's Hospital, Boston.

THE early workers in spinal anesthesia, chief among whom were Bier, of Berlin, and Tuffier, of Paris, reported frequent untoward effects both during and after operation, and a considerable mortality. This was in the days when cocaine was used, and before the importance of adrenalin was recognized. Since 1899, when Bier's first work appeared, cocaine has gradually given way to the less toxic and equally efficient stovaine, novocain or tropacocaine, and is now never used. Also the importance of mixing adrenalin with any solution to be injected into the spinal canal has been recognized.

The result is that spinal anesthesia can no longer be considered dangerous, but is now relatively safe and has a distinct place in surgery.

On Nov. 9, 1909, at the Massachusetts General Hospital, we began a series of spinal anesthesia cases which now amounts to 117 cases. These combined with 34 cases done by the writer outside of the hospital make a series of 151 cases.

INDICATIONS FOR SPINAL ANESTHESIA.

Alcoholism, old age, debility, certain cardiac cases, bronchitis, arteriosclerosis, extreme dread of general anesthesia, diabetes, urinary septicemia, shock, intestinal obstruction, renal insufficiency.

These are some of the conditions which singly or in combination have been our indications for doing spinal anesthesia. With very few exceptions there has been a clear indication in all of our cases.

In the course of the work, however, we have come to distinguish certain classes of cases in which spinal anesthesia works so well as to be the anesthetic of election whether a definite indication is present or not. These are simple herniotomy in men, prostatectomy, hemorrhoids, fistula in ano, amputations of leg or thigh, cystoscopy and urethral or bladder operations.

Of the 151 patients, only 14 were women. There were no children.

Of the 14 women, several asked to have spinal anesthesia on account of dread of ether. The same is true of the men, who in many instances were delighted with it and recommended it to their fellow patients.

Besides the above-mentioned operations, 3 cases of appendectomy were done.

In one railroad accident case both thighs were amputated under spinal anesthesia. It is highly probable that in this case general anesthesia would have been fatal. The patient survived and is now well.

The results of spinal anesthesia in prostatectomy are remarkably satisfactory.

PREPARATION OF PATIENTS FOR SPINAL ANESTHESIA.

There need be no special change from the routine preparation of patients for general anesthesia. It is, however, important to feed and if necessary stimulate patients just before spinal anesthesia. They should at all events never be brought to operation starved. They should be given a light breakfast the morning of operation and an eggnog just before operation. The rectum must be emptied, as under spinal anesthesia the sphincter ani is completely paralyzed.

Rather large doses of morphine (gr. ¼) should be given twenty minutes or half an hour before spinal anesthesia, especially if the operation is to be a long one.

TREATMENT OF PATIENTS DURING AND AFTER OPERATION.

The psychic element is of great importance in spinal anesthesia, and the patient's "morale" must be handled with care. The choice between general and spinal anesthesia should not be "put up to" the patient. The surgeons should decide whether or not the case is one for spinal anesthesia. If it is, the advantages of this method over general anesthesia should be explained to the patient.

Spinal anesthesia, although a routine in many European clinics, is still new in America. The result is that surgeons and attendants unfamiliar with the method are apt to make too much of it and unwittingly make their patients feel that something very extraordinary is going to be done. This is bad for the patient's courage.

When puncture is being done, as few people as possible should be present. After puncture has been done it is better not to question the patient at all as to his sensations or lack of them. If patients feel ill or are in pain they will always say so promptly. Persistent questioning as to whether a patient feels pain or not does no good and may easily make him imagine he does feel pain. Therefore, we test the anesthesia not verbally, but with a pin concealed from the patient, relying upon reflex movement for a guide. If the anesthesia seems satisfactory when tested by a pin-prick, the incision should be boldly made without telling the patient and without questioning him in any way. If left alone, a patient will often express surprise to hear that the operation is begun when it is more than half finished.

It is important to screen the field of operation from the patient. This may be done by a screen with which many operating tables are fitted, or by placing a towel over the patient's eyes. We have seen perfectly anesthetized patients lose their "nerve" entirely on catching sight of the wound.

It is a good plan to have a sympathetic nurse or attendant act as "mental anesthetist" by conversing with the patient during operation.

SOLUTIONS USED.

Cocaine has now no place in spinal anesthesia. We use stovaine, novocaine or tropacocaine, always in combination with adrenalin. Freshly prepared solutions have not given satisfaction. The solutions used must not be subjected to the degree of heat necessary to sterilize them, as this spoils their efficiency. They also become in-

efficient if exposed to alkalies. Therefore, the syringe must not be boiled in water containing soda, and the ampoules containing the solution must be made of alkali-free glass. Proprietary preparations give the best satisfaction. They come in hermetically sealed ampoules which must be filed open. We use:

(1) Stovaine-Billon (Poulenc Frères, Paris; Parmele Pharmacal Company, New York). This is dispensed in ampoules of 2 ccm. each. Each cubic centimeter contains adrenalin-borate, 0.00013; stovaine, 0.04; chloride of sodium, 0.0011.

The average dose of stovaine is 4 cgm. These ampoules contain 8 cgm. and are, therefore, double dosed, enabling us to give a minimum or maximum dose. We never use more than 6 cgm.

(2) Novocain, 5% solution (Meister Lucius Bruning, Hoechstadt am Main, Germany).

Ampoules of 3 ccm. containing novocain, 0.15; adrenalin borate, 0.000325; 5 drops of 1:1000 boric solution. Dose, 2–3 ccm. (10 or 15 cgm. novocain). Usual dose, 2.5 ccm.

(3) Tropacocaine as used by Bier. He uses at present only tropacocaine. Ampoules contain 1.3 ccm. of 5% solution tropacocaine, plus adrenalin hydrochloride 0.00013 per cubic centimeter. The dose of tropacocaine is thus 5 cgm.

In the series of 151 cases stovaine has been used 88 times; novocain, 36 times; tropacocaine, 27 times.

Stovaine gives a more intense and longer anesthesia with a smaller dose than the others, but must be used with great caution. Novocain requires a larger dose than stovaine to produce the same effects and is less toxic. Tropacocaine is the safest of the three and is used entirely by Bier, but it does not produce as lasting an anesthesia as the others.

The duration of anesthesia varies with the drug and its dose. It is usually from forty-five minutes to two and a half or three hours. A dose of tropacocaine (5 cgm.) often lasts only forty-five minutes, but may last an hour and a quarter. A dose of novocain (10 cgm.) will often last two hours and sometimes longer. A dose of stovaine (4 or 5 cgm.) will last two hours or more.

By increasing these doses an anesthesia of three hours can be obtained. No operation requiring so long a time as that should be done under spinal anesthesia, as the patient's nerves will not ordinarily stand it.

INSTRUMENTS.

We use syringes and trochars made by Georg Haertel, of Breslau, and exactly similar to those used by Professor Bier. The syringes made especially for spinal anesthesia have not stood repeated boiling, so we have substituted the 5 or 10 ccm. German "Record" syringes. These have graduated glass barrels, metal pistons and metal points, and stand boiling well. Of course the piston must be out of the barrel when boiled owing to the uneven expansion of glass and metal. The trochars are made of nickel and, being pliable, cannot break off in the tissues or if struck against bone. They are 10 cm. long with a diameter of 0.8 mm. They have a short excavated bevel and are fitted with mandrins. The short bevel is necessary to insure the whole of the lumen being in the canal at the time of puncture.

In Germany, where many spinal punctures are made in succession, the syringe and trochars are left always ready in a thermochest so that when in use they are at about body temperature. The thermo-chest is not necessary when only one puncture is done at a time. The syringe should, however, be hot when used as this warms the solution to be injected, making it approximately body temperature and thus much better tolerated by the patient. A small file such as is provided by the makers of Stovaine-Billon should be boiled with the syringe and used to file open the ampoules of the solution.

TECHNIC.

Position. — In very sick patients it may be necessary to make the puncture with the patient in the recumbent posture. It is objectionable, however, because it is more apt to result in unilateral anesthesia. If it must be done, the patient should lie square on his side with the knees drawn up, the forearms flattened on the chest, the head flexed and the whole back arched as much as possible.

It is much better, however, to have the patient *sitting* squarely on the table with his feet hanging over the side, the arms folded across the abdomen, the head flexed on the chest and the back bowed as much as possible toward the operator. The skin for a circle of six inches about the point of puncture should then be cleaned by shaving if necessary, soap and water, antiseptic alcohol, and ether.

The edge of a sterile towel should then be stretched across the spine in such a way as to connect the two highest points of the iliac crests. The towel's edge should then cross the body of the fourth lumbar vertebra, which can be palpated, and from this the first or second lumbar interspace located. Puncture may be made in any lumbar interspace, but generally the second or third is the best. The cord ends opposite the body of the second lumbar vertebra.

Having located the interspace, the skin over it should be marked by some blunt instrument or by the finger nail. The boiled syringe and trochar, together with the ampoule of anesthetic solution, must be at hand on a sterile table. The syringe is put together, the ampoule opened and the solution drawn into the syringe through the trochar and accurately measured. The mandrin is replaced in the trochar, which is then wiped dry with a sterile sponge.

An assistant then thoroughly freezes the skin over the marked space with ethyl chloride.

Puncture is made in the median line or a little to one side of it. The first step is to quickly pierce the skin and subcutaneous tissue, and then stop. Then the mandrin is withdrawn from the trochar, which is pushed carefully forward, possibly slightly upward, in the median line. As soon as

the dura is pierced there will be a flow of spinal fluid from the trochar.

The fluid should flow either in a rapid succession of large drops or in a steady stream. If it does not flow in this manner, injection should not be made, but the trochar moved to and fro or cleared by reinserting the mandrin until a suitable flow of fluid is obtained. This is of the greatest importance, and neglect of it is one of the commonest causes of failure.

When a few drops have escaped from the trochar the syringe containing the solution is attached and the piston gently withdrawn until a suitable amount of spinal fluid has been allowed to mix with the anesthetic solution. The amount of fluid thus withdrawn varies from 2 to 10 ccm. Usually 4 or 5 ccm. suffice.

The mixed fluids are then gently injected, the syringe detached, the trochar withdrawn, the puncture covered with a sterile towel or dressing and the patient placed recumbent with the head well supported.

Professor Bier regulates the height of the anesthesia by the force of injection, amount of spinal fluid used to dilute the anesthetic and by the use of the Trendelenburg posture. If his technic is regidly adhered to and only tropacocaine used, this may produce good results; but the Trendelenburg posture has so often been followed by untoward symptoms during operation that we have given it up and rely more on the force of injection for obtaining a high anesthesia.

Failures to produce anesthesia are most often due to faulty technic or inefficient solutions; and less often to anatomical causes, such as obesity or osteo-arthritis of the spine.

In the series of 151 cases there have been 7 failures. Three of these were early cases and were due to inefficient solutions. These solutions were freshly prepared and spoiled by overheating.

In two cases probably due to osteo-arthritis of the spine the vertebral interspaces could not be palpated and puncture seemed impossible. These were, however, early cases and among the later cases several patients with osteo-arthritis of the spine were successfully punctured, although sometimes five or six attempts were necessary.

In one case obesity was so great that no vertebral interspaces could be palpated and after two attempts it was given up. This was also an early case and several cases of obesity have been successfully punctured since.

The following is an example of failure due to error in technic. In a middle-aged man puncture was made in the second lumbar interspace. Spinal fluid flowed in very slow drops, and moving the trochar produced no better flow. The operator being hurried, injection was made when only a few drops of spinal fluid had been withdrawn to dilute the anesthetic solution. The result was total failure. In such a case another puncture should be made in a different interspace.

UNTOWARD EFFECTS DURING OPERATION.

The commonest untoward effects that occur during operation are nausea and vomiting, faintness, air-hunger, pallor, sweating and restlessness. These are all toxic symptoms and are due to too great an upward diffusion of the anesthetic drug in the spinal canal. The commonest cause of this is the use of the Trendelenburg posture or too forcible an injection in an effort to obtain a high anesthesia. Too large a dose will also cause them. They can easily be avoided by caution in these matters.

Nausea and vomiting occurred during operation in nine of our cases. It was always transient and subsided promptly with treatment. If taken in time these symptoms may be checked in some patients by giving a stiff drink of whiskey or brandy. If this fails the head and shoulders should be raised and a small dose of strychnine given hypodermically. Facial massage and lip-friction by the repeated application of hot towels acts very well.

After operation the patient should be placed in bed with the head and shoulders raised. Feeding and stimulation may be begun at once by mouth. Nothing given by rectum will be retained until the anesthesia has entirely passed away. Special precautions against hot-water bottle burns are necessary.

AFTER-EFFECTS.

The commonest immediate after-effects of spinal anesthesia are headache, backache, stiff neck, sciatic pains, paralyses, ocular palsies. Our cases have been remarkably free from after-effects. Only two of our cases have had headache. In both cases it was very severe occipital and frontal headache and resisted treatment by ordinary headache remedies. In one case it lasted over twenty-four hours.

One patient, a doctor, complained of sciatic pain which he likened to "growing pains." This pain was very severe and required morphine to control it. It lasted eighteen hours.

There were a few cases of transient stiff neck.

Case.

One case, the first done outside the hospital, was striking as illustrating effects during and after operation that may or may not be due to spinal anesthesia. The patient was a heavily built man of fifty-five years, with mitral disease, slight arteriosclerosis, very deaf. He gave a history of two previous attacks of numbness of the left arm and hand. The patient required operation for double inguinal hernia. He was given ¼ gr. of morphine twenty minutes before operation.

One and one-half cubic centimeters of Stovaine Billon (6 cgm. stovaine) diluted with 3 ccm. of spinal fluid was injected in the second lumbar interspace. The injection was fairly forcible and the patient placed in rather marked Trendelenburg for three minutes. The table was then placed level and the patient cleaned for operation. In about five minutes he complained of faintness and showed marked pallor, sweating, air-hunger, nausea, retching and vomiting. Brandy by mouth produced no improvement. The operation was

begun and the anesthesia proved to be perfect. Soon after the beginning of the operation the patient lost consciousness and the respiration became Cheyne-Stokes in character. Massage of the face and lips with hot water produced slight improvement. The pulse improved after a hypodermic of strychnine. Patient remained unconscious throughout the operation and for two hours after being put to bed. On being put to bed distinct and complete left hemiplegia was observed. This cleared up in less than twenty-four hours, but left slight paralysis of the left wrist which persisted two days longer.

During the next twenty-four hours there developed complete paralysis of the right leg. This persisted for three weeks. It then gradually cleared up and in two months was entirely well.

In view of the patient's two previous attacks of apparent left hemiplegia it does not seem certain that this was altogether due to spinal anesthesia.

The above case was undoubtedly alarming, but the majority of the cases were strikingly favorable and convince the writer that spinal anesthesia has a distinct and useful place in surgery.

The writer wishes to thank the members of the Surgical Staff and the House Pupils of the Massachusetts General Hospital for encouragement and assistance.

ETIOLOGY OF ELEPHANTIASIS.*

BY GEORGE CHEEVER SHATTUCK, M.D., BOSTON,

Assistant Physician to Out-patients, Massachusetts General Hospital; Physician to the Harvard Clinic.

HAVING recently become interested in sporadic elephantiasis through seeing a few cases, I undertook by a review of the literature to ascertain the present state of knowledge of this disease. Although much has been written about it, important questions of etiology remain obscure. Firstly, there are several types of elephantiasis, and several allied or similar conditions which merge with it in such a way as to render sharp distinctions impossible. Moreover, cases pathologically typical show striking differences in clinical history and in apparent etiology.

The term elephantiasis, as you know, formerly had a wide application. There was E. graecorum, now called leprosy, and E. arabum which included all other forms. Virchow regarded Madura-foot as a form of elephantiasis and was in doubt whether or not to include also fibroma molluscum. After this the application of the term became progressively narrower until a relation had been established between elephantiasis and filariasis. A tendency was then shown to regard the tropical cases as true elephantiasis and to speak of sporadic forms as pseudo (Brault) or false elephantiasis. This tendency met so much opposition from Hutchinson and others that sporadic and endemic cases are now included alike within the current meaning of the word.

There are several important varieties. One of the congenital forms involves the whole body. It occurs generally in acephalic monsters, and is due probably to congenital defect of the lymphatic system (Virchow). Elephantiasis lymphangiectodes and E. telangiectodes (Esmarch and Kuhlenkampff) resemble angiomata, are probably congenital and seem more closely related to tumors than to acquired elephantiasis. There is a similar cystic form (Virchow), a fibromatous form related to fibroma molluscum (Esmarch and Kuhlenkampff), and a neuromatous variety, but type cases of these have little in common with ordinary elephantiasis.

As this paper deals only with lymphatic elephantiasis, these forms need no further mention here.

Elephantiasis is again divided into groups corresponding roughly to etiology, — the congenital, the sporadic, and the endemic, — but until important questions of etiology have been settled, no classification on this basis can be satisfactory. The congenital cases present great variety. A few of them resemble so closely the common acquired forms as to suggest a similar etiology; but other cases are quite different, and so little is really known that I prefer to leave congenital elephantiasis out of this discussion.

Acquired cases of lymphatic elephantiasis are divided for descriptive purposes into elephantiasis of the legs, of the genitals, of the face and of the scalp. The older writers gave separate names to cases differing in external appearance or consistency. They distinguished thus, E. glabra, E. verrucosa, E. ulcerosa, E. mollis and E. dura. These distinctions do not correspond to essential differences.

Elephantiasis in the broader sense is not a distinct disease but a group of pathological conditions which leads to progressive enlargement of the part affected. How far this is true of acquired lymphatic elephantiasis is an important question. Undoubtedly, acquired elephantiasis is much the same in its clinical manifestations and in its pathology whether it appears endemically or sporadically.

The character common to typical cases of lymphatic elephantiasis is progressive enlargement. This enlargement is due to chronic edema, hyperplasia of connective tissue and dilatation of lymphatic vessels. The *central question* in the etiology of elephantiasis is as to the *relation between edema, hyperplasia* of connective tissue and *lymphatic dilatation*. To answer this question it is necessary to study independently the causes which may lead to each of these conditions.

Edema may be traceable to local or to distant causes of venous stasis; for example, to phlebitis; to chronic cardiac or renal disease; to disturbances of innervation, peripheral (Obersteiner and Redlich), or central (Edinger), as in polyneuritis or syringomyelia; to abnormal blood, as in anemia; to cachexia; or to inflammation. Experiments of Ranvier show that ligation of the femoral vein in a dog is not followed by edema unless the sympathetic fibers to the leg have been cut. Cutting the sympathetic causes arterial

* Read before the American Society of Tropical Medicine, June 11, 1910, St. Louis, Mo.

dilatation and increase of local intravascular pressure. Cornil and Ranvier believed this to be the real cause of edema, excepting perhaps the edema of cachexia. They say that if tension is sufficient, edema will occur even without obstruction of veins. They attribute the edema of inflammation to the same cause. Guyot [1] suggested trophoneurosis and Cornil,[1] interstitial neuritis as possible causes for the edema of elephantiasis. P. zur Nieden [2] believed that edema in elephantiasis was due to mechanical obstruction of lymphatic circulation, resulting from inflammation, and Lallement [3] attributed it to atony of vessel walls.

Abundant clinical evidence shows that obstruction of lymphatics does not often produce manifest stasis of lymph, and Cohnheim's [4] experiments indicate that lymph stasis cannot produce *edema* if lymph formation is normal and if the veins are patent.

Therefore, the edema of elephantiasis is rarely if ever due to obstruction of lymphatics solely, but lymphatic changes may act as contributive causes of edema. It is important to recognize that venous thrombosis is commonly present in lymphatic elephantiasis, that proliferation of endothelium in the capillaries is one of the earliest changes (Winiwarter), and that this change favors obstruction. Edema in elephantiasis is influenced also by gravity. It begins generally in the legs and extends upward. In the earlier stages the edema is diminished by rest in bed and increased by walking.

Observation shows that chronic edema from almost any cause may form the basis for subsequent elephantiasis and that persistent edema is its first visible manifestation. In the majority of chronic edema, however, no elephantiasis follows. Kaposi says that edema with lymph-stasis is more likely to result in elephantiasis than is pure serous edema. From histological studies, Wernher concludes that the edema of elephantiasis begins in the skin.

We come now to the causes of varicosity and thickening of lymphatics, dilatation of lymph spaces and stasis of lymph. Virchow says that, in elephantiasis, obstruction and dilatation of lymph channels occurs early and that sometimes only the small, sometimes only the large, ones are affected. It has been observed earliest in the papillary layer of the skin (Winiwarter) and where the network of lymph capillaries is most extensive (Busey). When lymph channels are dilated, we may assume that there is some degree of lymphatic stasis, whether edema be present or absent, but experiments show that obstruction of large trunks, even ligation of the thoracic duct, does not always cause ectasis (Magendie, Dupuytren, Lesser [5]). Why changes in the walls of lymphatic vessels do not always follow retardation of lymph-circulation is explained by the rich anastomosis and the low pressure in the vessels. This is true especially of the smaller lymphatics (Fischer). Unna believes that lymph stasis can be produced only by hindrance to the escape of blood from the veins and that lymph stasis can under no circumstances produce extensive lymphangiectasis. He quotes various experiments to prove this. Moreover, ectasis occurs so frequently without obstruction of lymphatics that other explanations for it are needed. The following theories have been offered: that ectasis may result sometimes from proliferation (Langhans, Torock, Nasse [5]), that atony may cause it (Corre [6]), that congenital weakness or anomalies may predispose to it (Busey, Fischer), that gravity may be the chief factor (Wernher [7]), and that chronic heart disease with resulting venous and lymphatic stasis may produce it (Weigert [8]).

Busey shows in his monograph that the etiology of lymphangiectasis and of obstruction of lymphatics is multiple, and that to account for it in some cases, a congenital change or an inherited weakness must be assumed. Fischer says that, owing to the disagreement of pathologists, no satisfactory conclusions concerning it can be reached. He himself believes that proliferation of lymphatic vessels is an important factor, but he agrees with the majority that lymphatic varices may result when, in a limited area, most of the lymph vessels are obstructed, and he explains that, by overfilling, the elasticity of the vessels is impaired, and that insufficiency of valves may result either from dilatation or from destructive inflammation. He compares the production of lymphatic varices to that of venous varices. It is generally agreed that the filaria can produce varices in the lymphatics, but the way in which it does this is purely conjectural. Winiwarter believes that ectasis of small lymph-spaces is the *first* change in elephantiasis.

Briefly, we have reason to believe that stasis of lymph may sometimes be promoted if not actually caused by obstruction or destruction of lymphatic trunks or glands, by agents acting from within or from without, by proliferation of the smaller lymphatics, by changes in the walls of the lymphatic vessels due to inflammation, or by widespread destruction or thrombosis of small lymphatic vessels. These conditions may be either acquired or in part at least congenital.

Clinical observation teaches that lymph stasis, or a probable cause for such, is often a demonstrable antecedent to elephantiasis. If not a forerunner, it appears in the early stages of the disease. Busey is justified in the conclusion that *lymph stasis is a necessary factor in elephantiasis*, but that the *mode of its production is not essential*.

The third process which always accompanies elephantiasis is hyperplasia. Winiwarter says that it takes place in the endothelium of capillaries in tissue that appears normal near the margin of elephantiasis. A definite increase of vessels has been observed (Welt, Langhans, Rindfleisch [9]). In the early stage round-cell infiltration is found along the veins, but not around the lymph-vessels.

[1] Quoted by Guillet.
[2] Quoted by Hastings.
[3] Quoted by Hastings.
[4] Quoted by Jarisch.
[5] Quoted by Fischer.
[6] Quoted by Guillet.
[7] Quoted by Hastings.
[8] Quoted by Winiwarter.

Dilatation of superficial lymph-capillaries and spaces is accompanied by proliferation of endothelium which leads gradually to obliteration of the deeper vessels. Capillaries, arteries and lymph vessels of the skin contain clumps of endothelial cells and coagulated fibrin, the nerve sheaths show increase of fibrous tissue, and inflammatory hyperplasia occurs in the glands (Cornil). Connective tissue hyperplasia is first apparent in the deeper layers of the skin. It penetrates thence into the subcutaneous tissue, especially along nerves and vessels, leads to atrophy of fat and muscle, and in extreme cases replaces them entirely. When the periosteum is attacked, the bones hypertrophy. In the earlier stages of elephantiasis all components of the skin except the elastic tissue may hypertrophy, but with further increase of connective tissue the other structures atrophy (Jarisch). Enormous increase of smooth muscle has been observed in the scrotum (Rindfleisch [9]), but the changes here are the same in general as those of elephantiasis of the legs. Virchow likens the cut surface in E. dura to bacon, says that it resembles a mass of scar tissue and that the essential change is progressive increase of connective tissue.

How can this proliferation be explained? Andral looked upon it as a "scirrhous degeneration." Virchow believed that an "irritative" condition exists from the first and that, in cases following venous obstruction, slight injury leads to inflammation. Wernher explained that chronic irritation results from decomposition of stagnant lymph, that this irritation leads to increased growth from the abundant building material, that "subinflammation," and finally inflammation, follows. Kaposi thought that stagnating lymphatic edema renewed by attacks of inflammation was the basis of connective tissue hypertrophy, and to lymphatic and inflammatory edema he attributed a high nutritive value. He could not explain why serous edema without inflammation is sometimes followed by elephantiasis. Inflammatory edema is characterized by a network of fibrin not seen in simple edema (Cornil and Ranvier). Busey and Jarisch accept the theory of increased nutrition through stasis, especially lymph stasis, and Kock [10] attributes hyperplasia to stasis combined with inflammation as in chronic suppuration, ulceration or eczema. It was pointed out by Winiwarter that elephantiasis is most apt to occur when repeated and long-standing arterial hyperemia has coexisted with impeded outflow of venous blood and of lymph. He attributed this hypertrophy to overnourishment, and considered stasis to be the most important predisposing factor. The stasis might be produced by any sort of mechanical obstruction or by chronic inflammatory hyperemia.[11]

These views were generally accepted until Bard [12] asserted that chronic edema *per se* could not cause a permanent increase of connective tissue. He attributed the sclerosis to inflammation, and advanced the theory that chronic thickening of cardiac valves, and sclerosis of the liver and kidneys, so often occurring with it, were all inflammatory and due to the same underlying cause; and that elephantiasis was a similar process.

After the advent of bacteriology Achalme [13] attempted to explain the supposed chronic inflammation by maintaining that the streptococcus could remain latent in the tissues and be responsible also for the attacks of acute inflammation. Guillet and others [13] tested this theory by attempting to cultivate bacteria from lymph withdrawn in the absence of demonstrable inflammation, and by searching for bacteria in sections of tissue from elephantiasis. Their results were uniformly negative. In the presence of acute inflammation the streptococcus has been isolated from a great many cases of elephantiasis, and Prout has asserted that elephantiasis, whether sporadic or endemic, is due to streptococcus infection. The majority of recent writers recognize that the streptococcus plays an important part in the etiology of many cases of *sporadic* elephantiasis; but they follow Manson in believing that the filaria is the principal factor in *tropical* elephantiasis. Dufougeré, who spent five years in the Antilles, believed at first that all elephantiasis was due to streptococcus lymphangitis. While there he saw many patients who had had repeated attacks of lymphangitis, but the majority of them did not develop elephantiasis. Nevertheless, every one of his 62 cases of elephantiasis affirmed that the trouble began with lymphangitis. Dufougeré isolated a peculiar diplococcus from 9 cases, and attributed elephantiasis to that rather than to the streptococcus. At about the same time Le Dantec [14] isolated a similar diplococcus, but he considered the presence of filaria necessary for the production of elephantiasis and explained the later disappearance of the filaria as due to inflammation produced by the diplococcus. Various other organisms have been cultivated in a few instances (Renon, Sabourand, Brault).

Less than a year ago Dubruel published some very important work on elephantiasis. His observations extended over five years, and for three years he was in Tahiti or neighboring islands. In this region elephantiasis is common, but other manifestations of filariasis, such as chyluria and varicose groin glands, are rare. Specimens of blood taken in the evening from 200 cases, about one eighth of the total population in the island of Moorea, were negative, although elephantiasis occurs there in about one twelfth of the population. No case of chyluria was seen, and no filaria was found by examination of centrifugalized lymph from cases of elephatiasis which had been operated on. The filaria was observed only in a single case which had been sent to the hospital with the diagnosis of typhoid fever.

Blood withdrawn in the absence of fever from outside the diseased area in cases of elephantiasis gave no growth on ordinary media, but at the

[9] Quoted by Luitheln.
[10] Quoted by Jarisch.
[11] Winiwarter.
[12] Quoted by Guillet.
[13] Bernhard and Blumenthal.
[14] Quoted by Dufougeré.

height of an attack of lymphangitis, blood from any part of the body yielded staphylococci in pure culture. Fluid taken from old cases that had not had acute inflammation for years generally gave no growth. Fluid withdrawn in the presence of lymphangitis showed streptococci more frequently than that withdrawn between attacks. Sometimes the fluid showed also staphylococci, but they were not infrequently mixed with other organisms. Two kinds of bacilli and a diplococcus are mentioned.

Important evidence points to the possibility of contagion in elephantiasis.

Dubruel's conclusions are as follows: That it does not appear that the filaria plays the part in elephantiasis attributed to it by Manson; that tropical elephantiasis should be brought closer to elephantiasis nostras, a bacterial disease following repeated erysipelas, and that during acute attacks of lymphangitis patients should be regarded as infectious and should not be admitted into open surgical wards.

From regions where the filaria and its intermediate host abound, Manson presents evidence proving that the filaria is an important factor in the production of elephantiasis. That it can cause dilatation and varicosity of lymphatics is probable. That it can of itself produce inflammation or fever is not proven. Manson says that, by injuring the lymphatics, the filaria predisposes to bacterial infection and that to infection the lymphangitis and fever are due.

It is undeniable, at any rate, that inflammation of bacterial origin often precedes, and generally accompanies, the development of elephantiasis wherever found. Doubtless in many cases inflammation plays an essential part in causing hyperplasia of connective tissue. The view that hyperplasia in elephantiasis may sometimes result from chronic non-bacterial irritation, or from hypernutrition in the absence of inflammation, is questionable, but many cases in which bacterial inflammation was never manifest can be cited in its favor. To explain this group of cases, and those in which elephantiasis develops after a single inflammatory attack, congenital anomalies or weakness of lymphatics may be inferred. On the other hand, it has been suggested that the congenital cases which resemble acquired elephantiasis may be due ultimately to intra-uterine infection.

SUMMARY.

1. The essential characteristics of typical acquired elephantiasis are lymphangiectasis, hyperplasia of connective tissue, and chronic edema.

2. The relation of these to each other in the production of elephantiasis is not clear.

3. It appears that these changes may frequently be attributed to the interaction of stasis and of inflammation.

4. Stasis always occurs early and persists.

5. Inflammation may precede or follow stasis, or may not be manifest at any stage of the disease.

6. Inflammation when present may be acute or chronic; and is generally traceable to bacterial infection.

7. Either chronic stasis or inflammation from any cause may predispose to elephantiasis, but even when they occur together, elephantiasis does not always result.

8. There is reason to suppose that congenital weakness or anomalies of lymphatics may play an essential part in the production of some cases of elephantiasis; and that such weakness or anomalies can be inherited.

9. The filaria is an important factor in the production of endemic elephantiasis of some regions, but it is not essential to the occurrence of endemic elephantiasis.

10. Elephantiasis in filarial regions results indirectly from filariasis through bacterial infection.

11. Sporadic lymphatic elephantiasis and endemic elephantiasis are not essentially different.

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CONGENITAL OPHTHALMOPLEGIA EXTERNA.

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CONGENITAL ophthalmoplegia is a rather rare condition. In the medical journals and reports of the last thirty years I have found records of only seventy-four cases. Most of these were in journals or memoirs devoted to affections of the eyes, only a few appearing in those dealing with diseases of the nervous system.

It is some years since I saw Mr. S. His birth had been difficult, instruments having been used.

Since infancy there had been strabismus of the left eye; irregular movements of the head and left hand. There had been, at least at times, sugar in the urine. He was said to have a peculiar gait in walking, unsteady, with much motion of the body and head. No history of other peculiarities during his earlier life could be obtained. He was fond of study and of reading. He had graduated from college.

He had never had any severe sickness, nor any injury, was not strong, had a delicate stomach, was very nervous. He had run down from worry as to his mother's health and from close application to his studies; he had an attack, which was called grippe, after which there had been intestinal disturbance, attended with a looseness of the bowels. For a while he had passed three or four quarts of urine in twenty-four hours, which was said to contain sugar. During his last year in college he was obliged to stay in bed much of the time, studying in bed.

His eyes were almost immovable, no motion being more than a few lines in extent. In reading he moves his head from left to right and back to left, following the lines of print across the page. When closed, the lids are tremulous; they do not fully close, especially the right. The right pupil reacts to light only in sympathy with the left; if the right is exposed alone it remains about one half dilated. The left pupil reacts normally to light. For near vision both pupils react slightly. The field of vision is nearly or quite normal in both eyes. Both disks are indistinct in outline, the left the more so; the vessels are clear in their whole course; there is no distinct cupping.

When not reading there is a constant, not extensive, rotation of the head to the left, then back to the median line, irregular, slow, not jerky. The left hand is kept by his side, fingers closed; the right hand by his side, fingers extended; at times there is an athetosic movement of the fingers, more on the right. He can perform all motions; touches his nose readily, with fingers of either hand, with his eyes closed. When the arms are extended there is a tremor of the right; the left is nearly steady. The tongue is protruded with a motion of the tip athetosic in character. He walks without trouble, slightly unsteady. Knee jerk and plantar reflex are normal. When seen, no sugar in urine.

About two years after I saw him Mr. S. died. As he lived at a distance from Boston, I did not learn of this until some time later.

This affection is of special interest as being not only congenital, but also a family disease, and in many cases hereditary. It deserves as much consideration as other family diseases. Thirty-three persons belonged to only nine families, two or three generations being affected. In five families, including twelve persons, only one generation was affected. In one family in a collateral branch, cousins, were said to have had the same defects as the two brothers. (Reported by 11.) That is, in fourteen families, more than one in each family, forty-five in all, suffered from congenital ophthalmoplegia externa in a greater or less degree. In twenty-nine families there was one patient in each family.

Of the seventy-four cases of which reports have been found, 45 were males, 27 were females; the sex of 2 is not given.

The amount of loss of power in the muscles varies greatly in different cases, and in different muscles in the same case, from a slight impairment to complete loss of power. The muscles on the two sides may be unequally affected; often only one or two muscles are paralyzed. Sometimes the internal rectus is paralyzed so it does not act alone, but it will act in conjunction with the external rectus, as it has two sources of innervation. In a few cases the superior rectus is said to have been paralyzed, yet when the lids were closed the eyes rolled up as if the superior rectus acted.

The amount of loss of action in the levator palpebræ varies greatly; sometimes the lids cover the whole cornea, generally only a part, and usually the amount of paralysis is not equal on the two sides. Very often the frontalis enables the patient to raise his lids enough to uncover at least a part of the pupils. Sometimes an extra strong exercise of the will enables the patient to move his eyes through a small arc in certain directions, but this power is soon exhausted.

In most of the reports the oblique muscles are not mentioned and it is very difficult to determine from the description of the symptoms whether or not they were paralyzed.

A large majority of the patients had some defect in vision, either diminished visual power or some refractive error. The pupil reflexes were impaired in only three cases. Diplopia was rare. The fundus was usually normal.

In twenty-eight cases all the recti were more or less paralyzed. In ten cases the recti innervated by the third nerve alone were affected. The external rectus alone was paralyzed in fourteen cases; the levator palpebræ in fifty-three cases.

The pathological changes which cause congenital ophthalmoplegia externa may be found in the muscles or in the nerve nuclei in the medulla. It is not likely to be in the nerves as the paralysis is too sharply limited to a few muscles for the lesion to be where the fibers for so many muscles lie as near each other as they do in the third nerve.

In six patients (reported by 3, 13, 30, 33, 34, 37), there has been found a change in the structure of the muscles when an attempt has been made to correct strabismus by an operation; the muscles were either wanting or were reduced to mere fibrous bands, or were evidently very weak, yielding readily to slight traction. In one case (reported by 19), the patient died from diphtheria and an autopsy showed that one levator palpebræ superior was wanting, the other very weak; the recti and oblique muscles were inserted abnormally in the globe so they could not move the eyes in the proper directions. Having found the muscles thus affected in so many cases, all in which there are reports of operations, it is probable that the same condition exists in many others.

Several authors have entirely ignored the pos-

sibility of a muscular origin and have referred all cases to nuclear origin. No examination of the nuclei of the nerves in congenital cases has been found. Several times in ophthalmoplegia externa not congenital, such changes have been recognized, and probably they exist in many of those in our list.

As the nucleus of the superior and inferior recti is distant from that of the external rectus, and there are no commissural fibers connecting these nerves, as are found between the internal and external recti, a single lesion could not be the cause of the impaired innervation of all these muscles. In those cases where all the recti acted imperfectly, was there defect in the insertion or development of the muscles due to some vice of intra-uterine growth, as was found in a few cases; or were the nuclei of the third and sixth nerves at fault from some intra-uterine affection similar to polio-encephalitis?

In six cases (reported by 7, 8, 9, 16, 17) there was loss of power or paralysis in the external rectus and the facial muscles. The sixth and seventh nerves do not run near enough to be affected by the same lesion after leaving the medulla without other nerves being also implicated. Only where they are adjacent in the medulla, where the fibers of the seventh curve around the sixth nucleus at the eminentia teres to pass to its nucleus, do the two nerves lie so near that both are liable to be exposed to the same morbid changes. In these cases the lesion was undoubtedly at or near the nuclei of these nerves.

In two cases (reported by 4, 29), there were difficult births; in one, softening of one side of the pons and of the right corpora quadrigemina was found as result of injury at the time of birth. In my case there was also difficult birth and the cerebral lesion extended beyond the origin of the motor oculi nerves.

It is evident that lesion of the nuclei in the medulla is sufficient to produce paralysis of the muscles of the eye and probably that is the only pathological change in many cases. Whether such a lesion is the cause of the change in the structure of the muscles found in so many patients, we do not know, as post-mortem examinations have been lacking. This is a field for future investigation.

The distribution of the blood vessels in the medulla, the floor of the fourth ventricle and the aqueduct explains the limitation of the lesions. The arteries entering the mid-brain are very small, are end-arteries; they have very limited or no anastomoses and each supplies only a small area of the cerebral substance. An occlusion or narrowing of the caliber of one of these arteries would deprive a very limited area of its normal blood supply without affecting neighboring areas, hence only one or a few groups of nerve cells would be destroyed or their activity seriously impaired. The general freedom of the intrinsic muscles would be explained by the more anterior situation of their nuclei, probably insuring them a larger and more certain blood supply.

In six cases (reported by 8, 9, 11, 16, 23), there were clearly other signs of defects in intra-uterine growth, as feeble memory, deformed hands and feet, clubfeet, right hand wanting and right arm short, muscles generally flabby and weak, absence of patella and Achilles reflexes.

Why should the condition be hereditary or a family peculiarity in so many cases?

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THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Continued from No. 18, p. 692.]

ERASIONS.

(Female.)

CASE 94. M. F., female, nineteen, single. Operation, July 17, 1903.

Same incision used as for complete excision of the knee-joint. When joint was opened and knee flexed, a small pannus was seen beginning to encroach upon the cartilage of the femur. A small area of soft bone and thin cartilage was noted on the inner aspect of outer condylar articulating surface. This area was excised and pannus removed. Head of tibia and remaining portion of joint normal in appearance.

Discharged Aug. 19, 1903, wearing plaster cast.

May 18, 1904. Ten degrees motion in joint. No swelling or sensitiveness. Wearing leather cast.

June 1. Omit cast four hours daily.

July 6. Pain from over-use during past two weeks. No evidence of renewed activity of disease.

1908. Patient has never had any recurrence of the disease, but has no motion now in the joint.

CASE 95. S. B., female, fifteen, single. Operation, Aug. 28, 1903.

Same incision as for excision. Joint fluid, wine color in appearance. No flocculi present. A considerable amount of adipose tissue, "boggy" in nature, distributed throughout joint, some of which resembled granulation tissue. Most of this tissue was adherent to internal condyle of femur and showed a tendency to encroach upon its cartilaginous surface. Joint cartilage showed its only abnormality in a lack of luster. All abnormal tissue was removed and cartilage carefully curetted so as not to injure normal tissue.

Sept. 14. Discharged wearing cast.

Oct. 17, 1905. Knee has remained stiff since operation. Under anesthesia knee was manipulated and a few degrees of motion obtained.

Oct. 26. Patient has a few more degrees of motion than when she returned to the hospital. Discharged unrelieved.

April 4, 1906. Motion of 15°. Walks with limp.

CASE 96. H. R. C., female, twenty-three, single. Operation, Aug. 17, 1904.

Same incision used as for excision. As soon as joint was opened a small amount of straw-colored fluid was liberated and a few grayish-purple granulations protruded from the wound. The entire anterior surface of joint was covered with this same tissue. Immediately below internal condyle of femur a similar mass of tissue was found, which when excised and when opened proved to be cystic, contained cheesy material and clear fluid. The external and internal condyles were covered with a purple pannus. All pathological soft parts removed and pannus curetted off as much as possible. Patellar ligament restored with three heavy silk sutures. Posterior wire splint.

Aug. 25. Cast applied. Pain upon attempted motion. Discharged home.

Ultimate result was a pathological cure and ankylosis.

CASE 97. A. E., female, twenty-four, single. Operation, Nov. 19, 1906.

Same incision as above. When joint was opened a small amount of straw-colored fluid containing "rice bodies" escaped. Synovia redundant and rice bodies attached. Pockets behind the crucial ligaments containing this same material were excised. Bursæ between semimembranosus and tendinosus similarly treated. One small focus curetted out from anterior aspect of inner tuberosity of tibia. Partially detached portions of the semilunar cartilage removed and areas curetted from the cartilaginous surfaces of both bones. Posterior wire splint.

Dec. 3, 1906. Plaster cast applied ankle to groin.

Jan. 1, 1907. Cast changed and patient discharged to St. Luke's Home.

During the following year the patient gradually improved and obtained a little motion, but not enough to be of practical value to her. She then went to her home in Sweden and reports (1909) that she has not been able to work because of the poor motion in the joint. There does not seem from her description to be any sign of disease.

There were 13 erasions, — 9 in men, 4 in women. There was one slight skin infection among these. One case was so bad when we got inside the joint that an excision was attempted, but the disease extended so far into the tibia that a thigh amputation had to be done. He is now (1910) using an artificial limb and has had no trouble from the leg. One of these cases was a wrist. The others were all tuberculous knee-joints. There was one death among this group and that was a few days after leaving the hospital and was due to tuberculous meningitis.

It will be observed in studying the cases in this group, viz., the excisions and erasions, that the danger of disseminating a tuberculous infection through surgical procedure is not a wholly negligible matter. Care must be exercised to allow nature to start her protective immunizing processes, both local and general, before one takes the risk of opening up new tissue to infection and absorption.

Our technic of approaching the semilunar cartilage has undergone more changes than that of any other operative procedure upon the joints. The great difficulty is to persuade oneself to get the center of the incision far enough down upon the femoral condyles. The modification of the method employed which was suggested by Mr. Robert Jones, of Liverpool, has proved most helpful. By making the skin incision a straight one, having its center over the line of the joint, and then flexing the leg over the end of a table, the cartilage will present at once when the capsule is incised. The removal of the detached portion should then be accomplished, using either a tenotome or a long-handled, short-bladed pair of scissors. Nothing but the instruments ever need enter the joint cavity. The capsule should be closed carefully and by a separate row of catgut sutures which should be sufficiently resistent to digestion so that they will remain at least three weeks. Then close the fibrous capsule by a second row of such sutures and the skin with a continuous catgut or an interrupted silkworm gut. If there is much ooze in the joint, it is better to use interrupted sutures and insert a pedicle silk seton for thirty-six hours.

Fixation in plaster or upon posterior wood or wire splints after the operation has been abandoned at this clinic because there seemed no surgical advantage during the first week, and after that period mobilization is what is desired, and that can best be secured by not having any initial stiffness due to splinting to overcome. Passive motion, fomentation and massage are indicated at the end of the first eight days, and in the course of the third week right-angled flexion should be secured, and then weight-bearing and voluntary motion may be permitted. A flannel or a "Bender" bandage should be worn for a month or six weeks, and massage had better be continued throughout this entire period. The removal of joint mice requires no essential modification in technic, except that it is well to know that the back of the knee-joint is readily reached by an incision through the popliteal space, care in avoiding the vessels and nerves in this situation being the only thing of special importance. In certain cases the mice are only to be found in this posterior pouch of the joint. It is not safe to attempt the

removal of these loose bodies under local anesthesia. They may slip away, and in attempting to find them there is great danger of breaking the asepsis and infecting the joint. It is always best to search for more than one, though only one may have presented itself. They often hunt in pairs. The greater frequency of the occurrence of displaced internal as against external cartilages has been emphasized by our experience. We also would call attention to the constancy with which the semilunar displacements are accompanied by hypertrophy of the alar ligament nearest to the dislocated cartilage and the advisability of removing this at the same time that the cartilage is removed.

SEMILUNAR CARTILAGE.

(Male.)

Case 98. J. S., male. Operation, Nov. 15, 1901.

A five-inch linear incision over inner aspect of left knee. Internal semilunar cartilage found detached except at its outer end. Entire inner segment of cartilage removed. Wound closed and light plaster cast applied with leg in extended position. Cast continued one week.

Nov. 22. Discharged. Convalescence uneventful with complete restoration to normal function.

Case 99. F. G. T., male, thirty-seven, married. Operation, Feb. 10, 1905.

Right knee-joint opened on inner side of patella. When capsule was incised about 5 oz. of straw-colored fluid were removed. A hyperemic area was found on cartilage of inner condyle of femur. The anterior and inner portion of the cartilage was dislocated and was removed. Wound closed.

Feb. 24. Discharged. Convalescence uneventful.

Patient had no subsequent symptoms referable to the knee-joint.

Case 100. J. F. S., male, forty. Operation, Nov. 20, 1905.

Left knee-joint opened over inner aspect. When capsule was incised a greenish, semifluid substance was evacuated and the tip of the internal semilunar was found detached. This was removed and a small villous fold attached to inner capsule was also excised and wound closed.

Nov. 28. Discharged.

Patient regained motion rapidly and at last visit to Out-Patient Department had no symptoms from the operated knee.

Case 101. J. McM., male, fourteen, single. Operation, May 18, 1906.

Curved incision made over outer aspect of left knee. Over head of fibula on joint line a mass was dissected away which was found to be a portion of the external semilunar cartilage. The remaining portion was also excised and wound closed.

May 29. Discharged. Convalescence uneventful.

No subsequent symptoms from this joint.

Case 102. T. W., male, thirty-six, married. Operation, June 8, 1906.

Semilunar incision over inner aspect of right knee-joint. Internal semilunar cartilage displaced and there was considerable fatty growth about the ligamentum alaris. The cartilage and lipomatous growths were removed. Wound closed.

June 22. Discharged. Convalescence uneventful.

No history of subsequent symptoms.

Case 103. S. H., male, thirty-nine, married. Operation, April, 1908.

Left knee opened on inner side. Internal semilunar cartilage partially detached. This was removed and also the infra-patellar fat pad, which was larger than normal. Nothing further abnormal found in the joint. Wound closed.

April 28. Discharged. Convalescence delayed by a stitch abscess.

Case 104. H. G., male, twenty, single. Operation, May 19, 1908.

Right knee opened over inner aspect. Internal cartilage only slightly detached and not dislocated. Anterior portion of capsule showed villous thickening. This was removed and cartilage excised.

June 3. Can flex knee beyond a right angle without discomfort. Discharged.

July 10, 1908. Favors knee slightly when walking. Motions normal. No pain or tenderness. R) Hydrotherapy.

Case 105. J. F., male, twenty, single. Operation, May 19, 1909.

Left knee-joint opened on inner side. Considerable excess of fluid. Internal semilunar cartilage folded and anteriorly displaced, but still attached. Whole inner, anterior cartilage removed, which allowed complete extension.

May 25. About 20° active motion.

June 4. Motion to a right angle.

June 11. Motions normal.

Case 106. J. D., male, twenty-six, single. Operation, May 26, 1909.

Left knee-joint opened on external aspect. Subpatellar fat pad enlarged; external semilunar not detached, but easily displaced outward. Portion of fat pad and cartilage removed. Wound closed and light plaster cast applied.

May 31. Motion to a right angle without pain.

June 21. Motion normal.

Case 107. J. W., male, twenty-three, single. Operation, June 7, 1909.

Left knee opened over outer aspect. Considerable excess of straw-colored fluid. Small subpatellar lipoma removed. Loose external semilunar cartilage was also removed. Wound closed and light cast applied.

June 13. Motion to 40° without pain.

June 20. Discharged. Motion to a right angle. Patient was heard from about three months later and reported a perfect return of function to knee.

Case 108. J. C., male, twenty-six, single. Operation, July 28, 1909.

Knee opened over inner aspect. Knee flexed in Jones position and a partially detached cartilage easily dissected out. Wound closed.

Aug. 8. Convalescence normal to date. Discharged to care of his own physician, who later reported a perfect return of function.

Case 109. A. O., male, thirty-four, married. Operation, Dec. 8, 1909.

Left knee opened over inner aspect. Knee flexed as in last case and internal semilunar cartilage found detached and was removed.

Dec. 22. Rapid recovery of normal function, which was preceded by a slight stitch abscess. Discharged.

Jan. 3, 1910. Motions of knee normal. Patient walking about with cane.

Case 110. D. D., male, sixteen, single. Operation, Dec. 29, 1909.

Right knee-joint opened over outer side. External semilunar cartilage partially detached and removed in two pieces.

Jan. 3, 1910. Patient comfortable. No pain or tenderness.

SEMILUNAR CARTILAGE.

(Female.)

Case 111. A. K., female, twenty-one, single. Operation, March 13, 1905.

Right knee-joint opened by 7 cm. incision over inner anterior aspect. When capsule was opened, considerable synovial fluid escaped. Several fat tabs were adherent to the alar ligament and anterior aspect of capsule, several of which were removed. Anterior and inner portion of internal semilunar being partially detached, was excised. Wound closed and light plaster cast applied.

March 25. Active motion, 15°.

March 29. Discharged. Active motion to right angle.

CASE 112. L. E., female, twenty-eight, single. Operation, May 10, 1907.

Incision 2 inches on inner side of right knee. Anterior portion of internal semilunar found loose. This was removed; also the greater portion of infrapatellar fat pad. Four strands silk left between stitches as wick to be removed in three days.

May 22. Passive motion daily. Very little pain. Discharged.

Jan. 2, 1908. Knee is becoming flexed and aches constantly. Re-entered hospital. Right knee in 25° permanent flexion. Extension limited. One cm. atrophy over right patella. A prominent ridge can be felt to inner border of patella. A loose bony fragment seems to be present, sensitive to pressure and the seat of a marked click when leg is flexed. This fragment seems to offer mechanical obstacle to complete extension.

Jan. 3. An anesthetic given and incision made parallel and close to old scar. Line of joint obscured by a fragment of partly cartilaginous, partly calcified tissue, which had the appearance of a displaced semilunar cartilage turned so that the broad surface which is normally attached to the head of the tibia was parallel with the long axis of that bone. The fragment was firmly bound down to tibia by fibrous adhesions. When this fragment was removed the leg could be almost completely extended without force. A few degrees of flexion remain. Plaster cast applied.

Jan. 13. New cast applied. Discharged home.

CASE 113. E. B. M., female, twenty-one, single. Operation, Feb. 11, 1908.

Incision 5 cm. in length over outer side of knee. Anterior border of external semilunar cartilage found detached. This is removed, together with the enlarged infrapatellar fat pad. Plaster cast ankle to groin.

Feb. 19. Convalescence uneventful. No pain. Active motion to 45°.

Feb. 24. Patient able to walk about the room and little discomfort is caused thereby. Voluntary flexion to a right angle. Discharged home.

CASE 114. J. A., female, single. Operation, March 10, 1909.

Incision 3 inches long over inner side of right knee. When knee was flexed internal semilunar cartilage seen to protrude over anterior margin of tibial head. Anterior portion removed.

March 19. No pain or temperature. Wound healed. Motion in the joint to a right angle.

March 23. About on crutches. Discharged home.

Subsequent history, complete return of function in joint.

All the cases in this group did well with the exception of one, and that was No. 110.

She was an hysterical case, and in light of the subsequent history her case is easily understood. The joint eventually was restored to very good function.

JOINT MICE.

CASE 115. C. C., male, twenty-one, single. Operation, Feb. 21, 1906.

Right knee-joint opened over outer side. The foreign body appeared as soon as the capsule was incised. The joint was explored with the finger and no other foreign bodies found.

March 3. Convalescence uneventful. Discharged.

No history of recurrence or further symptoms from the joint.

CASE 116. A. S., male, nineteen, single. Operation, Oct. 10, 1906.

Right knee-joint opened over inner aspect. In synovial pouch at inner side of joint a white, smooth, unattached body, size of almond, was found and removed. A calcareous area in the center was seen when body was split open. Joint opened on outer side and a second foreign body removed. Wounds closed.

Oct. 22. Discharged. Convalescence rapid and progressive.

CASE 117. W. J. K., male, forty-three, married. Operation, Oct. 7, 1907.

Left knee opened over inner aspect. Several osteophytes found on tibial condyle, most of which were removed, and one free body found and removed. Outer side of joint opened and a similar though smaller body removed. Wounds closed.

Oct. 15. Flexion to 90° without pain.

Oct. 19. Flexion beyond a right angle without pain. Discharged wearing flannel bandage. No subsequent symptoms.

CASE 118. E. F. P., male, thirty-two, single. Operation, Dec. 30, 1908.

Examination under ether did not reveal the foreign bodies. Tourniquet applied. Right knee opened over inner aspect. Synovial membrane, quadriceps pouch, and immediately about the incision evidence of capsule thickened as in a villous arthritic condition. Considerable excess fluid containing few inspissated clots of fibrin. Several hypertrophied tags dependent from the alar ligaments. In the mid line of the joint below the patella and attached to infrapatellar fat pad was a small dependent calcareous tag which was excised, and measured $\frac{3}{8}$ by $\frac{1}{4}$ inch. Two small loose bodies found in posterior part of joint by forcible pressure on the popliteal space. Margin of trochlear surface hypertrophied throughout. In places this hypertrophied tissue overlaps the bony surfaces beneath. Patella presents broad surface at base due to this pathological condition of cartilage. Small scars on femoral condyle indicate the site from which these loose bodies were detached. Irrigated with sterile water and wound closed.

Jan. 12. Discharged after a normal convalescence.

CASE 119. W. M., male, fourteen, single. Operation, June 25, 1909.

Joint opened on inner side. No fluid. Beneath hamstring tendons was found detached a large, round, hard mass, size of a cherry. Rough area in inner condyle showing place of detachment. Wound closed.

June 28. Motion to right angle.

July 6. Discharged. No recurrence of symptoms to present date (1910).

As in the cases of semilunar operations, the results have been good, and no untoward circumstances attended any of the cases. We would urge the importance of avoiding operative interference in these cases until after the joint had been kept at rest for a few days and the traumatic exudate had become absorbed and the injured synovia had become quieted down.

VILLOUS ARTHRITIS, INFECTIOUS ARTHRITIS.[4]

This group is concerned chiefly with the knee-joint, though some other articulations are in-

[4] In this group the joint lesions were generally polyarticular, but the larger joints of the locomotive apparatus were the ones subjected to surgical treatment.

cluded in the list of cases. The technic employed is similar to that in other arthrotomies, at least as far as the methods of performing the operations are concerned.

We have often employed two straight incisions on either side of the patella. With scissors the large fringes and villous enlargements are removed. The bases of these fringes cicatrize and the synovial membrane grows over the base. It is well to wash out these joints with hot, sterile salt solution before closing the capsule, and they ought always to be drained with setons for forty-eight hours. Early manipulative treatment should be the rule in these cases. The therapeutic conditions met by arthrotomy in these cases are (1) the removal of toxins which, if allowed to remain, would be damaging to the joint; (2) the removal of the products of the previous inflammatory conditions even when they are not capable of exerting any toxic influence upon the joint; and (3) the removal of fringes whose presence in the joint are a mechanical irritant preventing the restoration of the synovia to a normal condition.

Physical therapy, principally in the form of stimulating douching with hot and cold water, protective splinting to guard against overstrain, and bandages to keep down swelling and control the extremes of motion, are indicated. Massage has to be guardedly employed in these cases, particularly where the infection has been a recent one.

The growth of a pannus over the margins of the articular cartilage should be removed where it is evident by an arthrotomy, for its persistence inevitably means cartilaginous erosion.

INFECTIOUS ARTHRITIS.

(Female cases.)

Case 120. A. D., female, twenty-six. Operation, July 30, 1906.

Curved incision over outer side of right ankle and capsule of cuneiform-metatarsal articulation exposed. Cartilage lifted off anterior articular surface of cuneiform. A section of the cuboid was removed. No pus found.

Aug. 7. Stitches removed. Slight serous discharge. Plaster applied, with window for dressing.

Aug. 14. Discharged.

Case 121. S. A., female. Operation, Feb. 19, 1901.

Linear incisions made on either side of the patella. All capsular adhesions were broken up above and below patella. Small area of roughened bone noted on under surface of patella. Wounds closed, leaving gauze wick under patella.

Feb. 22. Patient has required sedatives to relieve pain in joint. Gauze wick removed under anesthesia and posterior wire splint used.

April 15. Discharged home.

Case 122. J. P., female, twenty-three, single. Operation, Aug. 27, 1901.

Linear incision 8 cm. over outer aspect of left knee. Capsule thickened, and when incised about 20 ccm. turbid fluid escaped. Several small synovial outgrowths were present, which were excised. Joint cavity irrigated with hot bichloride solution. Plaster bandages applied to leg. A study of the fluid shows abundant pus cells; no bacteria; culture negative.

Sept. 4. Wound clean. Hot fomentations b. i. d. Discharged.

Case 123. K. F., female, sixteen, single. Operation, Sept. 3, 1901.

Right knee opened over outer anterior aspect. Capsule found very thick and vascular. Joint cavity was small. Some fluid present which contained flocculi of fibrin and blood clots. A few synovial "tags" were removed. Hot corrosive irrigation. Plaster of Paris bandages to leg.

Sept. 11. Cast split. No pain except with motion.

Sept. 18. Stitches removed. Wound clean. Pain and tenderness on motion.

Sept. 19. Leg manipulated to 40° under ether.

Sept. 25. Passive motions daily. To leave off cast two hours daily.

Sept. 29. Under anesthesia complete flexion and extension obtained.

Oct. 4. Passive motion to 80°. Left in this position two hours, then flexed and split cast replaced.

Oct. 9. About on crutches. Ninety degrees flexion possible.

Oct. 13. Passive motion to right angle without pain. Active motion limited. Discharged home.

Case 124. A. L., female, fifteen, single. Operation, March 4, 1904.

Incision over inner side of right knee. About 2 oz. of creamy, pale yellow fluid escaped upon opening the capsule. Synovia thickened, hemorrhagic, and presented several ragged tags, .5 to 1 cm. in length. These were removed. Joint irrigated with hot salt solution. No wick used for drain. Plaster cast.

March 14. Cast split. No pain accompanying the slight amount of motion tried.

March 15. Flexion of 15° obtained.

March 18. Under ether leg flexed beyond right angle, causing the rupture of several adhesions. Leg put up on pillows in position of 45° flexion.

March 23. Flexion to 90°.

March 29. Complete extension impossible, owing to thickening of soft parts. To use hot and cold showers at home.

Case 125. A. O'N., female, forty, married. Operation, May 6, 1904.

Inner condyle of left femur exposed through long linear incision through an excess of subcutaneous fat. Synovial membrane seemed converted into a more or less lobulated mass of fat, and joint cavity smaller than normal. Along the border of the condyle the cartilage was hypertrophied and formed a shelf-like projection extending upward ½ inch on the femur. This ridge seemed to be composed of irregular squares of cartilage. The upper edge of the patella presented a similar pathological process. A slightly vascular pannus was situated beneath the projecting ledge of cartilage. Both were removed and joint cavity closed. Plaster cast applied.

May 9. Pain in the knee for two days, but not complained of to-day. Cast removed.

May 25. Convalescence uneventful. Good motion. Advised hot and cold showers at home.

Specimens show hypertrophic arthritic condition. Ultimate good operative result. Had a similar set of symptoms with other knee which improved without operation.

Case 126. L. L., female, thirty-two. Operation, Dec. 8, 1905.

Left knee, left elbow and both wrists manipulated four days preceding without relief.

Incision 8 cm. over inner border of left knee. Subcutaneous tissues very vascular. When capsule was opened, the synovial membrane measured 0.4 cm. in thickness, its surface thrown into purplish ridges. Joint fluid normal in amount. Attached to the alar ligaments

was found a large fringe 3 cm. long, 2 cm. wide, movable and attached by broad base. Several small fringes found throughout the joint. A few patches over middle of external condyle, but no definite erosion. Two spine-like processes on the under surface of the patella, which probably caused the conditions on the trochlear surface above mentioned. Plaster cast with leg in extended position. Fingers, left elbow and wrists were again manipulated.

Dec. 9. Plaster casts split on account of pain.

Dec. 19. Tonsillitis accompanied by excerbation of knee symptoms readily yielded to treatment.

Dec. 22. Cast removed.

Dec. 26. Only 10° motion of knee; joint very sensitive.

Jan. 2, 1906. Discharged relieved. Motion in knee gradually increasing.

CASE 127. M. T., female, fifty-three, married. Operation, Jan. 21, 1905.

Under anesthesia knee was forcibly flexed and extended a few degrees. Patellar adhesions prevent further motion. Incision made over inner aspect of right knee. Synovia very vascular. Patella freed with blunt dissector and chisel. Considerable gain in extension, but incomplete owing to contracted hamstrings. The internal hamstring was tenotomized. Plaster cast applied with leg fully extended.

Feb. 3. Convalescence uneventful. Discharged.

CASE 128. F. L., female, twenty-four, married. Operation, Aug. 16, 1907.

Incision 4 inches long over the outer side of left knee. Large prepatellar fat pad. Also large amount of disintegrated fat found in joint and removed. Capsule and surrounding tissues congested.

Aug. 29. Convalescence uneventful until yesterday, when, without instructions, patient bore her weight upon knee. To-day complains of considerable pain.

Sept 12. Except for above indiscretion and temporary results, convalescence progressive. Discharged home.

CASE 129. A. G. G., female, twenty-three, single. Operation, Feb. 19, 1908.

Left knee-joint opened by linear incision over outer side. Synovia thick and fibrous. Joint cavity small owing to adhesions in quadriceps pouch and between patella and femoral condyles. Patella freed by instruments, in consequence of which complete extension and flexion were possible to a right angle. Plaster cast applied with leg in full extension.

March 4. Discharged relieved.

CASE 130. J. L., female, twenty-seven, married. Operation, Oct. 14, 1908.

Left knee-joint opened over inner side. Capsule thickened. Patella adherent and quadriceps pouch obliterated by adhesions. Adhesions freed and joint irrigated with hot corrosive solution. After closing joint 3 oz. of sterile olive oil was injected under patella.

Oct. 21. Leg manipulated under ether.

Oct. 28. As knee is too sensitive for any passive motion, an anesthetic was administered and leg manipulated, after which procedure 3 oz. of oil was again injected under patella.

Nov. 4. Moderate swelling of joint. Very painful when motion is attempted. About 5° motion in flexion. Sensitive over internal condyle. Patella barely movable. Discharged home before it was advisable, owing to family difficulties. Neglect and improper treatment followed and a bad result obtained.

Jan. 1, 1910. Knee very sensative to jar or motion. A few degrees flexion possible. Probable Neisser infection.

CASE 131. M. O'C., female, twenty-seven, single. Operation, Jan. 13, 1909.

Incision made over inner side of right knee. Quadriceps pouch bound down with adhesions of the organized exudative type. These were wiped out with sterile gauze and joint irrigated with hot salt solution after knee had been flexed to a right angle.

Jan. 16. Patient has run a subnormal temperature since she entered the hospital. Knee very sensitive to passive motion beyond 15°.

Jan. 27. About 20° passive motion and 10° active without discomfort to patient.

Feb. 3. Under ether adhesions were broken up when leg was flexed to a right angle. About 2 oz. of sterile olive oil was injected under patella and leg again flexed.

Feb. 17. Same procedure as in last note.

Feb. 20. Discharged. Gain in motion has been progressive but slow. The general condition of the patient was below par when she came under hospital treatment due to toxemia from long-standing Neisser infection. A miscarriage of four months while in the hospital also retarded convalescence. Fair delayed result, however.

CASE 132. E. W., female, twenty-three, married. Operation, April 7, 1909.

Skin incision as for excision of joint except that on outer side it was carried about one inch above top of quadriceps pouch. Patellar tendon cut and flap containing the freed patella dissected back. Fibrous ankylosis throughout the joint. This was broken up with knife and chisel and leg flexed to right angle. Skin was dissected back and long flap of adipose tissue with pedicle to outer side was dissected out, turned down between opposing bony surfaces and sutured, after first removing a thin slice of the lower end of the condyles. Patellar tendon restored with silk. Plaster cast applied.

April 19. Window cut and superficial slough found over inner condyle.

April 26. Cast removed and posterior wire splint substituted. Evidence of large slough over patella.

May 1. Large area of skin removed due to its gangrenous condition and hot enzymol packs continuously applied. This slough due to cutting the flap too near the skin.

May 7. Wound clean except for small area above tibial tubercle. Dressed with balsam Peru.

May 27. Some motion in knee, but little attempt made to move it on account of interfering with granulations.

June 2. Skin grafts taken from opposite thigh and transferred to granulating area over knee.

June 9. Three long skin grafts taken and wound covering over rapidly. Discharged home to-day.

CASE 133. J. S., female, forty-nine, married. Operation, July 9, 1909.

Incision outer side of right knee. When capsule was opened a large amount of red granular material was evacuated. A small lipoma was found under patella and removed. Numerous fringes removed and joint wiped out with sterile gauze and then irrigated with hot salt solution.

July 12. Patient has been very comfortable and is out of bed.

Aug. 1. Continues very comfortable. Swelling of fingers has subsided. Measured for caliper splints and discharged home.

The results of the previous series of operations have been quite satisfactory when the conditions for which they were performed are taken into consideration. One case of arthroplasty of the knee is included where it does not perhaps properly belong. There were no infections or

serious complications in any of the cases and motion was secured to certainly as great an extent as it was present before the operation, and in many cases it was greater. Even where the motion was not increased, the function of the joints was often markedly improved and the progress of the disabling arthritis in that particular joint at least was checked or retarded. Improvement in general condition was often associated with the removal of the contents of these infected joints. Toxic absorption from these chronic joints as well as from the more acute ones goes on to a considerable extent in many cases and evacuation of these toxic materials is important.

Case 134. J. W., male, thirty-six, married. Infectious arthritis. Operation, Feb. 3, 1905.

Right elbow-joint opened by incision 8 cm. in length over outer aspect of joint. When head of radius was exposed, the cartilage covering the head was redundant and a portion of this was removed. A similar incision made over inner side of joint and ulnar head exposed. The same pathological condition was found to exist there also. Arm could then be brought to within 5° of a right angle. Arm put up in extreme flexion. Left arm also put up in cast.

Feb. 7. Some swelling of right hand. Plaster removed and extension held by bandages.

Feb. 14. Plaster reapplied.

Feb. 25. Both arms manipulated under ether, and cast reapplied to right in flexion.

March 9. Discharged. Left arm much improved.

April 10. Flexion of right arm to right angle; extension to 35° beyond a right angle. Left elbow to 107° and extended to 40° beyond a right angle.

Case 135. H. L. F., male, twenty-four. Operation, Dec. 21, 1901.

Incision made parallel to sheaths of perineal tendons, left foot. These were found thickened, but not infiltrated. Incision carried forward over joint between the cuboid and astragalus; the joint was opened, exposing two small fringes and an overlapping ridge on the astragalus, all of which were removed and the wound was closed.

Patient discharged in ten days.

Case 136. J. B., male, forty, married. Operation, May 14, 1902.

Left ankle-joint opened by two incisions, one parallel with peroneal tendons, the other parallel with the tibialis posticus tendon. Several small vascular fringes found and removed. Cavity then lightly curetted and washed out with sterile water. Peroneal tendons divided in order to facilitate access to the joints of the posterior tarsus.

June 4. Convalescence uneventful to date. New cast applied and patient discharged relieved.

Case 137. N. F., female, atrophic arthritis with synovial hyperplasia (early), forty-eight, married. Operation, Jan. 27, 1904.

Usual linear incision made over inner side of right knee. Capsule found thickened to about 1 cm., and of a grayish gelatinous appearance. A small amount of clear, yellow fluid was enclosed. Digital examination revealed one small tab from synovial surface in lower angle of wound which was removed. Similar incision over outer side of joint, and a few small tabs found similar in nature to above. Synovial membrane was everywhere thickened and congested.

Wounds closed and plaster cast applied.

Feb. 2. Cast removed. Wound clean.

Feb. 4. Knee can be flexed 15° without force.

Feb. 8. Passive motion daily. To-day 50° motion possible in flexion. No power of voluntary extension after passive flexion.

March 1. Has been wearing caliper splint during day over flannel bandage. Knee can be flexed to a right angle easily.

Discharged home.

Case 138. M. F. Operation, Nov. 8, 1908.

Both knees were forcibly extended. Both patellæ can be moved slightly and no crepitation elicited beneath. Capsule of knee not thickened, but synovial membrane adherent throughout considerable part of the joint, thus diminishing the size of the cavity very materially. No motion possible in flexion. On exerting moderate degree of force, adhesions were broken up, apparently more between opposing layers of capsule than between the bones of the joint. About 25° of flexion secured in both knees. More could have been obtained, but at too great risk of trauma to joint.

After manipulation, about 3 oz. of sterile oil injected under inner side of patella; considerable pressure necessary. The effect of the injection was apparent in the separating of the opposing layers of membrane as the distention of the capsule progressed.

Dry sterile dressing and bandage.

Nov. 12. Patient complains of great tenderness in both knees. No attempt made toward passive motion.

Nov. 23. Oil has apparently been entirely absorbed in both knees. Both patellæ freely movable, but very slight motion of either knee can be obtained in flexion. Tenderness persists.

To have massage to thigh and calf.

Dec. 9. Operation.

Regular U-shaped incision made with apex over tibial tubercle. Skin flap dissected back and joint opened. Adhesions broken up with fingers in quadriceps pouch. Capsule opened on inner side and remaining adhesions broken up. Patellar tendon divided midway between patella and its attachment, under surface much eroded and a small portion was removed with chisel. Leg forcibly flexed and many adhesions broken up between femur and tibia; both surfaces much eroded. Latter surfaces curetted. Head of femur covered with four layers of Cargile membrane, which was sewed to fascia with catgut. Head of tibia treated in like manner. Bones then approximated with extension to prevent tearing of the membrane. Patellar tendon united with several strands of silk. Capsule closed with interrupted silk sutures and skin with interrupted catgut. Attempt to introduce oil in joint failure, as it oozed out between the stitches.

Patient suffered slightly from shock.

Dec. 11. Patient has temperature of 101°. Pulse, 110. Respiration, 22. Plaster cast split owing to edema of foot, and flannel bandage applied to lower extremity.

Dec. 17. Wound in good condition. Posterior wire splint applied.

Jan. 18, 1909. Wound dressed. Silk suture removed from sinus external to tibial tubercle.

Jan. 27. Operation. Right leg manipulated and 20° motion obtained without much force. Considerable serous ooze from old incision.

Feb. 7. After the manipulation temperature shot up to 103°. Skin wound partially broke down. Culture showed pure staphylococcus aureus. Hot boric acid poultices applied and infection readily yielded to treatment.

Feb. 15. Wound broke down on outer side (over exterior condyle another stitch removed).

Feb. 26. Wound gradually healing. Three stitches (silk) have been removed. Sodium chloride and citrate solution applied. Dry dressing and bandage.

March 10. No discharge. Wound practically closed. General condition of patient fair.

March 19. Patient sitting up to-day. No pain or temperature. Very slight motion of knee can be obtained.

April 4. Discharged home.

Patient had general atrophic process for a long time before the last operation, and same had been slowly progressive. It remains an open question as to the advisability of using Cargile membrane and as to operating upon cases with this diagnosis. Certainly no advantage has been gained from the arthrotomy in this case. Considerable difficulty was encountered from subsequent sloughing of the silk sutures used at time of operation. The entire Cargile membrane has sloughed out and there has been no benefit to the patient for all her suffering. The knees are straight and stiff, but there is so little power in her arms and hands that it is impossible for her to get up on her feet. The pain has largely disappeared.

(To be continued.)

Clinical Department.

CUTANEOUS DIPHTHERIA. FATAL PRIMARY CASE.*

BY EDWIN H. PLACE, M.D., BOSTON,

Physician in Chief, South Department, Boston City Hospital; Assistant in Pediatrics, Harvard Medical School.

CUTANEOUS diphtheria associated with diphtheria of the respiratory tract is not particularly uncommon. It has been seen at the South Department during the past three years in the following conditions:

(1) About the face and hands, often appearing much like an impetigo contagiosum, less often with distinct membrane. Cultures show virulent Klebs-Loeffler bacilli, and both types clear rapidly with the administration of antitoxin.

(2) On the auricle, chiefly the concha, extending from the middle ear; and behind the auricle inoculated upon the eczema so common in this region in children.

(3) Inoculated upon lupus vulgarus lesions on the face, following curettage.

(4) In wounds and abcesses on the neck and face.

(5) Inoculated upon varicella lesions, most commonly on the vulva or vagina.

At times it is severe in these locations, and similar cases of cutaneous diphtheria have been known to be the cause of small epidemics. That it may be fatal the following case shows. I am indebted to Dr. John H. McCollom for the privilege of reporting it.

H. B., age seven months. Admitted to the South Department March 24, 1908, referred by Dr. J. S. Stone, from the Children's Hospital Out-Patient Department.

Family history. — Negative.

Past history. — Breast fed. Had always been well except for eczema of pubic region, groins and thighs since birth.

Present illness. — Two days before admission, swelling and redness became marked over the area of the abdomen, genitals and thighs covered by the diaper. There was a considerable thin discharge. Feverish and fretful.

Physical examination. — Conscious, marked prostration. Well developed, fairly well nourished. Mucous membranes of mouth, throat and nose show nothing abnormal. No nasal discharge. Neck negative. Heart action rapid, 140, first sound softened, no murmurs. Lungs normal except for a few crackling râles at both bases.

Over the lower third of the abdomen, the vulva, perineum, anterior part of buttocks and the upper quarter of the internal surface of the thighs, the skin is markedly reddened, swollen and covered with a grayish hyaline membrane, firmly adherent, and when forcibly removed leaves a granular area which bleeds easily. Scattered through this area, especially the lower part, are small various shaped islands of healthy skin, some connected by narrow bands of healthy skin. No vesicles or pustules. Skin elsewhere normal.

The treatment was antitoxin, 12,000 units, strychnia and boric acid dressings locally.

On the third day after admission the membrane was clearing rapidly. No improvement in general condition; heart rapid and very weak. The temperature was subnormal on entrance, but this day rose moderately. During the day the color became of a peculiar gray shade, the heart weak, rapid, the first sound almost imperceptible. Numerous crepitant râles at the bases. Death occurred at 5 P.M.

Cultures from the skin showed typical diphtheria bacilli, and were identified by Dr. Lawrence Rhea by cultural tests and animal inoculation in the laboratory. Cultures from the nose and throat and from the nose and throat of the mother showed no diphtheria bacilli. The post-mortem showed, beside the skin lesions, some hyperplasia of the lymphoid tissue, "septic" spleen, begining bronchopneumonia of both bases and some pus in the middle ear.



The source of the infection was not discovered. There was no known exposure. Neither this child nor any other member of the family had had a sore throat, coryza or other illness recently. It seems probable that the mother or an attendant must have carried the disease on their hands and infected the eczematous lesions in washing the baby or changing its diaper.

The onset, masked by the previous eczema, was probably not recognized, and not until the process became widespread and the symptoms severe was a physician consulted. The severe systemic symptoms in this case may well be expected when we consider the extent of the membrane and the amount of toxin which must necessarily be absorbed.

*Read before the Boston City Hospital Alumni Association Annual Clinic, Feb. 2, 1910.

CONICAL STUMP AFTER AMPUTATION IN CHILDHOOD.*

BY CHARLES A. POWERS, M.D., DENVER, COLO.

THE patient is a girl of thirteen years whose left arm was amputated in its upper fourth by Dr. L. A. La Garde, of the United States Army, for congenital cavernous telangiectasis eighteen months ago. The condition for which the amputation was done extended from the fingers to the upper and middle thirds of the arm. Dr. La Garde kindly asked me to see the case in consultation with him; he exhibited the little patient at meetings of this society both before and after operation. The amputation stump was in all ways excellent, the flaps were ample, the bone well covered.

Those of you who were here when the patient was shown directly after the amputation may remember that the view was expressed that the bone would "grow down," that the stump would become conical and require bone resection. At this time you see that the prediction has been fulfilled; the stump is markedly conical, the bone presses against the skin, the skin is beginning to be adherent through this pressure. The stump is painful and a suitable amount of bone will be resected tomorrow.[1]

In previous papers[2] I have called attention to the practical certainty that when a little child suffers amputation through the upper part of the arm or the upper part of the leg a conical condition of the stump will result. I have never known this to fail. It occurs because the humerus and the bones of the leg develop in large part from their upper epiphyses. The growth takes place at the upper epiphysis and pushes the bone down into and through the soft parts. When the surgeon does his original operation it is best for him to tell the parents that this will probably take place.

The younger the child, the more frequently will the bone have to be cut off.

Medical Progress.

REPORT ON NEUROLOGY.

BY PHILIP COOMBS KNAPP, A.M., M.D.

[Concluded from No. 18, p. 696.]

THE RÔLE OF EMOTION IN THE GENESIS OF NEUROPATHIC AND PSYCHOPATHIC CONDITIONS.

THE Société de Neurologie and the Société de Psychiatrie devoted four sessions to the discussion of this problem[24] at the first annual reunion of the two societies last winter, dealing with the psychological, physiological, neurological and psychiatrical problems. Janet discussed the question on the psychological side. The reaction of the individual to any special circumstance may often be determined in advance by his constitution and education; in other cases, although the reaction is not organized in advance, there is a partial adaptation to the circumstance; in neither case does he consider that there is place for emotion. There are, however, circumstances for which the individual is not adapted by his previous organization, and to which he cannot adapt himself, although he perceives the circumstances and feels the necessity of reacting to them. In these cases, instead of the useful reaction, there are various disturbances of all the functions of the organism. To these disturbances, coming on under these conditions, he gives the name of "emotion." The disturbances are very complex. There are modifications of feeling, giving rise to fear, anger, shame, indignation, discouragement, despair, pain, or feelings of inadequacy, weakness, incapacity, indecision, etc. There are intellectual modifications, systematized agitations in the form of fears, obsessions and the like, or loss of memory and confusion. There are various disturbances of the visceral functions, boulimia, polydipsia, muscular spasm, vomiting, frequent micturition, incontinence or retention, sobbing, hiccough, cough, groans, laughter, palpitation, vasomotor constriction, increased secretions, anorexia, gastro-intestinal atony, choking, smothering, slow pulse, fainting, vasomotor dilatation, hemorrhages and suppression of secretions. There are also motor disturbances, either in the way of motor agitation or inhibition of necessary action. The entire condition may be regarded as a depression of psychological tension with insufficient adaptation and impotent efforts to remedy the condition. Emotional disturbances do not usually come on until after a latent period, and usually affect chiefly one special function. The exciting cause of the emotion may determine what special function shall be affected; the function which was active at the moment may be the one affected, or any function which was previously enfeebled may be affected. If the disturbance has taken a particular form after the first emotion, it may always take the same form after other emotions. The normal individual speedily adapts himself. If the emotion be intense, long-continued and frequently repeated, or if the individual be weak of will and of low psychological tension, the consequences become serious. Vogt, in the discussion, pointed out that the reaction, although inadequate, was not always useless; that an attack of hysterical sleep, for example, might preserve the nervous system from too great excitement. Emotion may lead to active disturbances, often of sudden onset and disappearance, and states of exhaustion, which develop and disappear slowly. Agreeable emotions, too, may excite neuropathic states. Ballet added that slow and long-continued emotions often gave rise to affective conditions. On the physiological side, Hallion showed that, as a rule, there was a definite relation between the intensity of the emotional shock and the reactions which follow. These reactions are often disordered, but, with moderate emotions, the excitement sometimes leads to a general nervous stimulation which aids the organism to adapt itself to the altered circumstances. Stronger

* Paper read and patient exhibited at a meeting of the Denver City and County Medical Society, Sept. 13, 1910.

[1] Three inches of bone were removed.

[2] New York Med. Rec., June 7, 1890. *Ibid.*, April 7, 1894. Ann. Surg., April, 1900.

[24] Rev. Neurol., xvii, 1551, Dec. 30, 1909.

emotions lead to harmful disturbances, and stronger yet may have depressive effects. The will can modify the mental state somewhat, and thus affect the reactions, but when the reaction has once begun, the will can act only slowly by antagonizing the effect of the emotion, which increases the subsequent nervous exhaustion. The vasomotor disturbances of emotional origin may have a certain mechanical effect by giving rise to cerebral hemorrhage, but, apart from this, it is questionable if they can actually engender nervous affections.

Claude presented the neurological problems. At the basis of all neuropathic states there exists a constitutional modification of the nervous system, structural alterations or more or less deviate functional aptitudes which create a particular state of emotivity. Emotion itself is only an exciting cause, secondary to the constitutional state. Emotivity, often heredity, may also be acquired as a result of education, the manner of living and physical and moral conditions. It may be considered as the manner of perceiving and expressing emotions, and is modified greatly by the repetition of emotions. He raised the question whether a disturbance of emotivity is not a necessary condition which enables emotion to provoke neuropathic symptoms. Emotion does not create the epileptic state, but it often acts as the exciting cause of an epileptic attack or its equivalent, and sometimes as the exciting cause of the first attack. It does not create hysteria, but it may provoke the hysterical manifestation in a subject whose emotivity was previously disturbed and may produce many of the accidents of hysteria, such as convulsions, paralysis or contractures, apart from suggestion. Emotion can give rise to transitory depression in normal subjects and in others may engender various manifestations of neurasthenic states, but it is not probable that emotions, no matter how intense or how frequently repeated, can alone produce neurasthenia. Constitutional weakness and hereditary degeneracy are necessary factors. Emotion may excite choreiform conditions, or myoclonus, but it never causes Sydenham's chorea, although it may aggravate it. It also exaggerates tics, and may put the subject into a condition where tics may develop. Emotions may engender certain pathological states which consist of a permanent exaltation of emotivity and are manifested by reactions of the same sort as those which translate the emotion, but of which the subject is conscious. The most frequent symptoms of these states are sensory disturbances, tremor, asthenia, anxiety, depression and hallucination, and they are especially common in traumatic conditions. Dejerine believes that sudden emotion produces hysteria and gradual and continued emotions produce neurasthenia. Emotion is the most important, indeed, the sole factor in the genesis of both affections. Predisposition, however, seems necessary in all cases of hysteria and in the great majority of cases of neurasthenia. The various symptoms come on without any mental representation, without the subject's knowing how or why, and they are certainly not the result of suggestion. In the vast majority of cases careful inquiry will discover the predisposition. Sollier held that the same emotion could be followed by different effects in different subjects, the emotion permitting the emotivity to manifest itself according to the constitutional type. Janet felt that careful inquiry was necessary to determine a pre-existing emotivity and predisposition. Emotivity was a tendency to replace superior operations of adaptation, which had become impossible, by the exaggeration of inferior operations and especially by visceral agitations. Aboulia plays an essential part in emotivity. Bonnier maintained that many emotional reactions were of bulbar origin and believed that he had repeatedly modified them by the reflex action on the bulbar centers from cauterization of the trigeminal terminations in the nose. Crocq stated that in many cases the predisposition was not hereditary but acquired from bad hygiene, excesses, etc., and that in some cases, where there was no predisposition, a neurosis could be produced simply by nervous shock, which was denied by Dejerine and Sollier, but supported by Ballet and Babinski. Dejerine and Dupré both urged that, if emotion could cause neuroses without predisposition, all persons subjected to emotions would suffer alike, which is not the case. Roubinovitch had studied 126 cases of epilepsy, in 20 of which emotion seemed to have acted as an exciting cause, but on further inquiry the emotion was found to be only of secondary importance. Dejerine had seen two cases in which emotion had produced the first epileptic seizure, but he believed that a special predisposition was essential. Janet thought that emotion often provoked attacks in epileptics and that sometimes it determined troubles which in their further course might lead to epilepsy, or it might modify pre-existing neuroses and transform them into epilepsy. Dufour denied that emotion could produce epilepsy in a person without predisposition, which is sometimes manifested by convulsions in infancy. In discussing the relation of emotion to hysteria it was decided to limit the discussion to hysterical crises, paralyses and anesthesias. Dejerine cited cases to prove that an hysterical crisis may develop spontaneously without any previous suggestion, and added that emotion might sometimes cure hysteria. Sollier thought that emotion never created hysteria, but that it was one of the chief factors in exciting hysterical accidents, most of which are merely phenomena produced by emotion. Babinski admitted that emotion might be followed by constriction of the throat, vasomotor and secretory disturbances, tremor, tachycardia, loss of consciousness, outcries and gesticulations. It may even cause a true crisis in a person previously hysterical, but it cannot produce alone a typical hysterical attack, which is always due either to suggestion or to simulation. Such attacks are now rare, which would not be the case if they were due to emotion. Dejerine admits that the classical attacks that Charcot described are purely artificial. Claude called attention to the fact that a crisis might be produced in the first

instance by emotion and later occur from other influences due to auto-suggestion. The crisis is an emotional reaction, and in an emotional state suggestion acts more readily. Janet could cite many cases where a crisis came on after an emotion, and where later other influences complicated the repetition, but the emotion was the original exciting cause. When a patient sees a crisis and imitates it, there may also be the emotion of fear. Sollier believed that various causes, emotion, suggestion, irritation, contagion and others besides might excite a crisis, which is merely the reaction of the nervous system against the inhibition which has struck it. Vogt maintained that even when there was suggestion, the emotional element associated with the suggestion determined the crisis, and stated that by psycho-analysis he had proved the emotional origin of various crises. In regard to other hysterical phenomena, there was a similar difference of opinion, Babinski contesting that all hysterical conditions were due to suggestion, Dejerine, Pitres, Janet and others insisting that the influence of suggestion was exaggerated. Babinski cited various instances where a large number of persons had been exposed to emotional strain without producing hysterical accidents, but, as Dejerine pointed out, the emotion was not sudden, but foreseen, and, as Janet showed, his data were derived from untrustworthy observations. Neurasthenia, according to Dejerine, is due solely to emotion; overwork, infection and intoxication do not cause it unless emotion be added. It develops only in the predisposed, but the predisposition varies greatly. With this Sollier agreed, but the emotion acts in consequence of the special pre-existing emotivity, which is the special factor, the emotion itself being merely an exciting cause. According to Dejerine, the neurasthenic is exceedingly suggestible, even more so than the hysterical, and is often cured by persuasion, yet the mental state is wholly different from that of hysteria. The hysterical is indifferent, the neurasthenic depressed, obsessed and concentrated on his troubles and exaggerating their importance. Sollier urged that emotion may inhibit functions, as in hysteria; or exhaust them, as in neurasthenia. For Dejerine, asthenia and fatigue are accessory in neurasthenia; there is always an emotional cause. Babinski had found an emotional traumatic neurosis, following the Messina earthquake, in which the symptoms were tachycardia, vasomotor disturbances, tremor, headache, pain, insomnia and anxiety, for which he suggested the name "emotional neurosis," the symptoms persisting for months. Dejerine and Claude both insisted upon the fact that traumatic neuroses did not develop except in the predisposed. After a study of 138 cases of chorea, Souques came to the conclusion that emotion, even occurring in neuropathic subjects, was incapable of producing the disease, which is caused by infection. Oddo, on the other hand, after a study of 150 cases, concluded that emotion was a frequent cause of aggravation, relapse or recurrence, especially in emotional children, and that profound emotion, in 10 cases, actually caused the first attack of the disease, a conclusion to which Crocq subscribed. In regard to tic, Meige held that while emotion could aggravate, it did not create it. Janet accepted this conclusion, but believed that emotion could make tic return after it had once disappeared, and could systematize a tic or alter its form; it could also cause a psychasthenic state in which tic might develop. Raymond maintained that emotion may profoundly affect the brain, disturbing the psychical, motor, sensory, vasomotor and thermal centers and causing reactions of the most varied sort. Against such shocks there is a certain power of inhibition which varies with age, sex, temperament, general health and the frequency of the shocks. Emotion may cause psychasthenia and hysteria without the intervention of suggestion or auto-suggestion in the predisposed, and depressing emotions are a common cause of neurasthenia.

The psychiatrical problems were presented by Dupré, who said that emotion gave rise to a psychical shock which determined effects of excitement, depression or functional deviation, varying with the intensity of the shock and the condition of the subject. The important factor is the constitutional emotivity characterized by exaggeration of the tendon, skin and pupillary reflexes, sensory hyperesthesia, unstable equilibrium of vasomotor and secretory reactions, tendency to spasms, the intensity and diffusion of the physical and psychical effects of the emotions, and insufficiency of motor inhibition, both reflex and voluntary. The pathological manifestations of this emotivity are in the domain of anxiety, under the form of obsessions, phobias and impulses. Dejerine accepted the idea of an emotional psychopathic constitution, but stated that some persons show many external manifestations of emotion, agitation, cries, tears, pallor, flushing, etc., while others show none, yet in the latter the effects may be much more serious. Janet added that the essential thing which caused pathological results from emotion was the impotence of the will, leading to impotent effort and emotional disturbances. Dupré and Régis, however, argued that the emotivity might appear very early, before the will was developed. In regard to obsessions and phobias, Janet believed that the crises, although often in relation with slight emotions, were due chiefly to impotence of the will. Emotions may give rise to periods of depression in which the crises were of much more frequent occurrence. Arnaud contested the idea that emotion was the cause of obsession. The obsession is primary, due to a consciousness of incapacity, and exists before the age when emotion is of much importance. Dupré also claimed that the emotional constitution was the basis of mania and melancholia, which was denied by Janet, who held that the alternations and periodicity of maniacal depressive insanity were not of emotional origin, although emotion might cause the anxious depression of psychasthenia. Babinski urged that emotion never produced maniacal depressive insanity, in which opinion all agreed, and Régis called attention to the influ-

ence of abdominal intoxication as an important factor in the production of melancholia. Dupré, Claude and Janet also admitted that emotion in a number of cases may give rise to a confusional psychosis, which is often transitory, but may become chronic. Dupré also had found, on inquiry of many obstetricians, that emotions during pregnancy have no influence on the mental state of the child, but emotions in the parents at the time of conception do have a decided influence.

It seems clear, from the cases cited in the discussion, that emotion is an important factor in the genesis of various neuroses, such as psychasthenia, hysteria and neurasthenia, and also of some psychoses; that in many forms of nervous and mental disease it may act as an exciting cause, aggravate the condition or excite certain symptoms. Its action is not constant, it affects some persons and spares others, or affects a person at one time and not at another. The factor of predisposition is important, yet, as the discussion shows, it is not easy to prove the existence or non-existence of predisposition. In many cases, too, emotion is only one of various factors which work together to produce the nervous disorder.

Reports of Societies.

THE AMERICAN CLIMATOLOGICAL ASSOCIATION.

WASHINGTON, D. C., MAY 3, 4 AND 5, 1910.

[Continued from No. 18, p. 701.]

DR. W. F. R. PHILLIPS, of Washington, read a paper on

NATURAL AND ARTIFICIAL OR HOUSE CLIMATES.

Dr. Phillips stated that the Association holds that there is something curative in climate and that climate itself is an entity capable of being beneficially used as such in the treatment of certain diseases in particular and, in a less degree, of diseases in general. He is convinced that this is based on facts that have been and can be experimentally demonstrated. Some confusion has arisen because of what different people understand climate to be. He takes Hann's definition of climate as the "sum total of the meteorological phenomena that characterize the average conditions of the atmosphere at any one place on the earth's surface." This includes physical as well as chemical attributes of the atmosphere. There is a tendency to consider that climate is necessarily a natural product and that it can be in no wise an artificial one, — one due to man's direct or indirect activities. Artificial climates are the average atmospheric conditions of our buildings of all kinds, our habitations, our factories, schools, theaters, assembly halls, etc., and the assembling of such into villages, towns and cities and all other natural environments rendered abnormal or artificial by us as the result of man's activities. Indoor atmosphere was contrasted with outdoor atmosphere. Conditions in New England in winter were described. We have certain average conditions of the atmosphere in our houses that are deserving of being called climates and that these climates are largely postulated by our outdoor atmospheric environment or climate. Our whole problem of heating and ventilation is a struggle at adaptation to climate. When we send our consumptive patient out of the city to the country, mountain or plain, seashore or sanatorium, from the casement of a tenement to its roof, or from an area room to the fire escape, we are again recognizing climate. We need more laboratory experimentation to fix these values.

DR. J. O. ROE, of Rochester, N. Y., read a paper on

WHY WE TAKE COLD.

The theory of mechanical congestion of the internal organs by the action of cold on the surface of the body is entirely inadequate because we all know that this form of congestion does not lead to true inflammatory action, since, in an attack of acute coryza, the Schneiderian membrane is so near the surface of the body that the blood should be driven away from it by cold and not into it.

Dr. Roe said that coryza or cold in the head is in fact simply a manifestation of disturbance of the vasomotor centers which is caused by a toxic condition due to uneliminated débris of unassimilated or effete products, which is very commonly termed "lithemia." The toxic effect of the lithemic product on the sympathetic nerve ganglia produces a contraction of the arterioles throughout the body and, consequently, an increased blood pressure. Since, then, the capillaries of the mucous membrane throughout the body receive less support on account of its great vascularity than the capillaries of other parts, they give way under the increased blood pressure with the resulting mucous fluxes from the various surfaces. When the mucous flux, which is nature's method of relieving the engorgement, has accomplished its purpose and the toxins have had time to become eliminated by the necessary fasting, and when the restoration of the cutaneous circulation has taken place, then these overdistended capillaries return to their normal caliber, the discharge ceases and the cold or coryza is cured. Dr. Roe acknowledged the rôle of chilling of the body, improper protection, exposure to drafts, damp air, etc., but he considers colds usually due to a depressed condition of the system, a disturbed equilibrium of the vascular system, diminishing the resistance of the system to external changes, whereas such exposure would have no effect if the subject were in a normal condition. Four special germs are held responsible. The bacillus of Friedländer seems to be nearly always the exciting cause of a nasal cold; in the throat and fauces, the bacillus septus; while in the larynx and bronchi, the micrococcus catarrhalis and the micrococcus paratetragenosus seem to be responsible for the cough and bronchial irritation. The use of autogenous vaccines according to the method of R. W. Allen, of London, was advised. Dr. Roe showed the danger of repeated colds.

DR. HUGH M. KINGHORN, of Saranac Lake, read a paper on

THE EMPLOYMENT OF COLD IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

Dr. Kinghorn does not regard the tuberculin treatment such as to be regarded as the basis of treatment in pulmonary tuberculosis. At present the dietetic-hygienic or fresh-air treatment is the only one of established value. He gave Brehmer and Dettweiler credit for overcoming the prejudice against cold air. Following these came Loomis and Trudeau in the Adirondacks. Hypernutrition is the factor of first importance, and cold air helps to bring it about. Patients in his experience do best in cold weather. It is a popular saying in the Adirondacks that one winter

is worth two summers. The treatment should begin at the same time that the diagnosis is made, and should be carried out rigidly. He stated his belief that the patient should at this time be carefully cautioned against settling up his business affairs before he leaves for the health resort or before he begins treatment. He is now suffering from symptoms of his disease, and this perhaps the most critical time of the whole illness. Many cases are irreparably lost at this time because they try to settle their affairs. This extra tension and anxiety may bring on a hemorrhage, or fever, and either of these may alter a good incipient case to an advanced or acute case within a short time. The patient should, therefore, be put at rest and his arrangements should be made by friends. Nourishment and air are therapeutically on a par. The patient should, if possible, spend his entire life in the open air. He derives benefit from cold air not only when the weather is sunny and dry, but also when it is cloudy and damp and when there is wind and rain. Kinghorn believes that there is no basis for the assertion that cloudy and rainy weather are injurious. Snow and rain should not interfere with the cure, proper shelter being provided. Even a moderate degree of fog is not harmful unless it is saturated with coal dust, as in cities. The temperature of the air is not a factor of such great importance as was once supposed. But he acknowledges that thin-blooded and weak patients feel better in warm climates. Rapid changes of temperature should be guarded against. Dr. Kinghorn discussed the question of clothing and cautioned against producing sweating by too heavy clothing, chest protectors, etc. He advocated a process of hardening by using at the outset a sponge of the chest, arms and back in the morning with cold water. For most patients it is not advisable at first to take a cold tub bath each morning, but to stand and sponge from a basin of cold water. He should then rub dry quickly with a coarse towel. At night the legs should be sprayed. Later on, when the patient is strong, a morning tub may be substituted for the sponging. Breathing exercises were also advised, but these are dangerous while there is sputum.

Dr. Charles L. Minor, of Asheville, N. C., read a paper on

THE EFFECTS OF HEAT AND COLD IN PULMONARY TUBERCULOSIS.

Dr. Minor showed that empiricism precedes scientifically demonstrated principles in therapeutics, and it is easier to record impressions than scientific truths. He instanced the use of cinchona bark by the ignorant Peruvian Indians. He hoped that some day, as a result of the work of meteorologists and climatologists, we shall be able to accurately determine why cold or warm air has the effect on pulmonary invalids which years of experience have shown them to possess. Cold weather has a beneficial influence on pulmonary tuberculosis as compared with hot weather. Dr. Minor referred to the former popularity of southern Italy, Madeira and Mediterranean ports for the consumptive. That body temperature is reduced by cold weather all who have followed the temperature curves of cases of tuberculosis know, and Birch had demonstrated that in India the human body temperatures range distinctly higher than in England; while Brown-Séquard made similar observations on a journey from Mauritius to France. Hot climates are dangerous in all cases attended with high heat production, and this includes tuberculosis. It is a matter of common experience, corroborated by scientific observation, that cold weather, if not too extreme, when it can be depressing, tends to do certain things for the body which chance to be just those which we have found favorable in tuberculosis. It raises appetite, assimilation, oxygen absorption, weight, vigor, resisting power and blood pressure; while it lessens pulse-rate, breath-rate, temperature and decreases skin activity. Of course there are many degrees of cold, and it is hard to say which is the most desirable.

Patients, however, with constitutionally low vitality, especially the aged, require warmer climates; so also patients with the more severe forms of kidney trouble. Chronic rheumatism in a tuberculous patient is an indication for a warmer climate. Bronchitis and laryngitis also require it in some cases.. The essence of the difference between hot and cold weather in their effects upon tuberculosis is that the one is a sedative, the other a tonic and stimulant.

Dr. Charles Fox Gardiner read a paper on

THE THERAPEUTICS OF COLD IN COLORADO.

After sketching the history of the cold-air treatment of tuberculosis and its gradual rise in favor as the method of treating the disease, Dr. Gardiner said that in Colorado they had an exceptional opportunity to compare the effects of warm and cold air. The difference between summer and winter, apart from the actual temperature, is not, perhaps, as marked as in many other health resorts. During both seasons in Colorado, dampness of atmosphere and soil are more nearly the same. There is little snowfall in the average winter, and rarely large areas of snow melting into slush. It almost never rains in winter. Watering carts are used to lay dust during the entire year in several of the cities in Colorado. There are few muggy days, and never any exhausting heat. Both Dr. Solly and the author had patients sleeping out of doors as early as 1884 and before. The colder temperature of winter has several advantages in the treatment of tuberculosis over the warmer air of summer.

Dr. Gardiner states that he has found direct sunlight of much benefit to his patients, provided the weather was cold and they had proper protection for the head, the eyes being shaded from all glare. Cold stimulates the appetite. The temperature of patients in a heated term tends to be higher. Pulmonary hemorrhages are probably more liable to occur in winter; night-sweats in summer. Invalids are generally impressed with the benefit derived from winter weather. The geographical distribution of phthisis shows the benefit derived in tuberculosis by individuals living in dry, cold, elevated regions; also that all races have a more rapid and pernicious form of tuberculosis in damp, warm regions.

DISCUSSION OF PAPERS OF DRS. KINGHORN, ROE, MINOR, GARDINER AND PHILLIPS.

Dr. J. Hilgard Tyndale, of Lincoln, Neb.: I understood Dr. Kinghorn to say that vaccine therapy has not risen to the dignity of being universally accepted. If cold air (hygienic) treatment be the accepted method, is it not a fact that more or less permanent arrest by cold-air treatment is mere self-immunization; that is, that it strengthens the defensive powers in the same way that the use of tuberculin does; that, therefore, the use of tuberculin is surely a method to be pursued, at least to be tried, always suited to the individual case. If it is found suitable, then it is to be pursued at the dosage which suits the individual, or if found unsuitable, then to drop it. If cold-air treatment is based on self-immunization, the same basis applies to the use of tuberculin. In my sanitarium in Lincoln, Neb., we use tuberculin in all suitable cases. Vaccine therapy is made obligatory under our laws for indigent state consumptives, as far as the equipment of the

hospital is concerned, but the patient is in no wise compelled to submit to it.

DR. THOMAS W. HARVEY, of Orange, N. J.: Having progressed slowly in the treatment of pulmonary diseases by the use of cold air from tuberculosis to pneumonia and then on to prolonged bronchitis, I have found that all cases of pulmonary trouble are improved by putting them into cold air. In other words, many of my cases of bronchitis, after they had got through the beginning of their illness, get more and more cold air, and I find that my patients with bronchitis and a lingering cough are improved by stopping my various cough medicines, hypophosphites and other things, and taking them outdoors, or putting them up in a bedroom window or in a room with a lot of windows open; even the little children three and five years old I find improve faster and lose their irritating cough with the treatment of cold air, so I have almost come to the conclusion that even the tuberculosis cases which have improved most by being outdoors are those with bronchitis.

DR. JAY PERKINS, of Providence, R. I.: We have heard so much, or the public has heard so much, of the cold-air treatment that it is being carried to extremes. You people in health resorts may not appreciate that as much as those of us who are outside. But I know that in our cities there are a great many people and physicians who are carrying the cold-air treatment to extremes, and to the extreme that they do not give their patients the treatment that Dr. Kinghorn has mentioned, and that is that the patient should be comfortable. Time and again I have seen patients who have slept out of doors and slept with their windows open by the direction of the physician in attendance, and they followed directions so conscientiously that they have suffered from the cold, and that extreme exposure has done them more harm than good. I never advise a patient to sleep out in winter; in the summer I do advise it. In reference to another thing which has just been mentioned. While I am a firm believer in the fresh-air treatment for bronchitis, I wish to differ a little.

Another thing to which I object is putting patients previously accustomed to warm rooms directly into the cold air of winter. As a result of this Dr. Perkins cited one patient who developed a bronchitis which she has been two years getting over. She left the sanitorium in a very bad condition, and went back home and lived under more reasonable conditions, and is gradually getting better.

DR. W. F. R. PHILLIPS, of Washington, D. C.: These papers have brought up some interesting nuts for us to crack. I do not propose to crack any of them myself, for I confess that they are too hard for my teeth. In Dr. Minor's paper he spoke of cold being a tonic, and cited an instance where anthrax bacilli were not infective when the temperature was lowered. I wondered whether he recalled also the fact that some animals immune to anthrax bacilli could be made susceptible to infection thereby by making them cold; if I recall correctly, the rat and the pigeon are absolutely immune to anthrax when at normal temperature. So here we have something that it would not do to base any very considerable deduction upon.

Another thing Dr. Minor attributed a tonic influence to, that is, he seemed to attribute in his paper some of the improvement noticed in the fresh-air treatment to the effect of cold weather, in increasing the excretion of the carbon dioxide, and to increasing oxygen assimilation; in other words, in metabolism. Dr. Kinghorn insisted that it was necessary in fever cases to keep them absolutely quiet to conserve the metabolism. Why is increased metabolism brought about by cold weather beneficial at one time and apparently increased metabolism by exercise not beneficial at another? So it seems to me that we have several things that are problems for us to consider, and if these papers have done nothing else, they have simply brought this to our attention.

While Dr. Roe was reading his paper and referred to the popular belief that drafts are the occasion of colds, I wondered how often we sat in drafts, got wet feet, and other things, and did not get cold; and whether it was not merely an incident in the catching of cold that when we got it we began to look back to see what we had done in the previous few days that was a little out of the ordinary and pick on that little thing as the real thing that gave us the cold.

DR. HUGH M. KINGHORN, of Saranac Lake, N. Y.: I am a great believer in the value of tuberculin treatment. In fact, I use it a great deal together with the cold-air treatment, but what I meant to say in my paper was this, that while tuberculin treatment is of considerable value in the hands of some physicians, that is, while they get good results from it, yet it is not the basis of the treatment of pulmonary tuberculosis. The fresh-air treatment is *the* treatment, and is the basis of treatment to-day for pulmonary tuberculosis. The tuberculin treatment is merely a help, but the fresh-air treatment is *the* treatment.

With regard to keeping the fevered patients at rest and increasing the metabolism, it is with a view to avoiding any exercise whatever. The quieter you can keep them, the better are your chances of reducing the fever.

DR. C. L. MINOR, of Asheville, N. C.: It is, of course, true that in the present state of our knowledge we can record only impressions on such a subject, though I trust that the work in meteorology of such men as Dr. Phillips will in fifty or one hundred years give us a working basis and make the subject capable of scientific analysis as it is not at present.

Now, as to the doctor's objection, I think he is in error, and he will find that in my paper I have said that extreme cold can be and often is depressing, though we all know by experience that moderate degrees of cold are tonic and bracing. Had Dr. Davaine run the temperature very much lower, Dr. Phillips would have found results in accordance with his ideas.

As to the question of the increase of metabolism when fever is raised, it is, of course, true that at such a time we wish by rest and other means to lessen metabolism as far as possible, as every added cause of oxidation in the body increases fever and its tissue waste; where, on the contrary, there is little or no fever, a rational increase of metabolism is beneficial and graduated exercise invaluable. I make this plain to my patients when explaining to them how to exercise by telling them that as long as their deposits in the bank of health are barely sufficient to meet the needs of their mere living, they cannot afford to weaken their credit in that bank by overdrafts as represented by exercise, but that when by rest, food and quiet they have built up their credit in the bank and have a surplus, then they can afford to spend part of that surplus for something more than the mere necessities of living.

As regards Dr. Kinghorn's paper, I would wish to refer to his discussion of the question of sleeping out. Every good therapeutic measure is apt at first to be overdone, and this is true, I believe, of sleeping out, which is now spoken of as a *sine qua non*. My view is that if every moment of time from breakfast until bedtime is spend outdoors, then the patient can safely and well afford to sleep in a room provided it has at

least two and, better, three, windows, especially if he is still febrile and liable to setbacks. When, however, as is liable to be the case when the patient returns home, he must necessarily spend a good part of his time indoors, then I believe it is essential that he sleep out to square up the difference and to get at night the oxygen he has missed in the day.

Dr. James M. Anders, of Philadelphia, read a paper on

STREET DUST AS A FACTOR IN SPREADING DISEASE; METHODS OF REMOVAL.

He considered, first, the effects of the inhalation of non-infectious street dust and, second, street dust as a vehicle for conveying disease germs, or the influence of infective dust. Dr. Anders classified the various kinds of filth composing street dust, from the excrement of horses, dogs and human beings to soot, plaster and cement. Human expectoration received attention. All this contributes to the dust found in houses in our cities and towns. Nasopharyngeal irritation results, and we can trace to it frontal sinus disease, pharyngitis, tonsillitis, laryngitis, asthma and bronchitis, as well as conjunctivitis, pulmonary congestion and edema. Anthracosis was referred to. The dust caused by automobiles was noted. Dr. Gilman Thomson states that it is no exaggeration to state that nine tenths of the acute inhalation diseases and chronic catarrhal diseases are due chiefly and directly to dirt inhalation. The house fly is a carrier of contagion.

The street cleaning of cities should be entrusted to the Health Department and be conducted on scientific lines. The vacuum or pneumatic method as practiced in Berlin gives the best results. It raises no dust and is more complete. The use of crude oil on the streets, especially those paved with asphalt, is inadvisable. Sprinkling was advocated. Street cleaning should be done at night. Dr. Anders suggested that a committee of the American Climatological Association should be appointed to consider the subject from its hygienic and medical aspects, and to make a report at the next annual meeting. The legitimate scope of this committee should include an appeal to the mayors of all cities requesting them either to appoint special commission or to urge existing bureaus of health to study the problem with special reference to the good results already obtained elsewhere.

DISCUSSION

Dr. J. H. Elliott, of Toronto, Canada: Just a word regarding the use of oil on the streets. The city of Toronto two years ago began the use of oil on the macadam streets, and it will interest those who are here from cities where there are macadam streets to know that our city has adopted the use of oil on all the macadam streets, not only because it is more effectual, but because it is cheaper. It is cheaper to oil a macadam road than it is to water it.

Dr. I. H. Hance, of Lakewood, N. J.: Last year the streets of Lakewood were oiled very largely at a cost not much greater than water. In this connection there was one source of dust that was not mentioned in the paper. It is the handkerchief which is carried around by the ordinary individual; you do not come in contact with it in the street proper, but in the street car, and when some one sitting next to you on the street car pulls out a soiled handkerchief and shakes it out, you may be the victim of infection. I think it is a very serious factor in the spreading of contagion. It would almost seem as if one should get up a society for the use of clean handkerchiefs.

Dr. Thomas Darlington, of New York, N. Y.: There are one or two thoughts that occur to me. They are, first, in regard to smoke. I had the privilege of arresting 243 persons, prominent manufacturers, for smoke coming from their chimneys, and only obtained eight convictions.

In New York City the greater per cent of the dust in the street, about 90%, is due to horse travel, and that, of course, will be largely gotten rid of by means of more motors.

So far as the uncovered foods are concerned, last year I caused over 1,900 people to be arrested and obtained convictions for uncovered food, but there are just as many to-day as before. Making arrests in large cities does not stop the violation of the law.

So far as spitting is concerned, perhaps if the paper of Dr. Anders could be circulated it would do a great deal of good towards educating the people. Women do not spit very largely from the fact that they do not smoke. There was a time when it would have taken half of the people of New York to arrest the other half for spitting. It is a question of educating the people that spitting is not the thing to do. After all, it is the education of the public that is needed.

The question of the removal of dust is a very difficult thing, because many large cities are committed to certain plans and it is almost impossible to have the latest manufacture of any thing, particularly if it is patented; a patented article, as a rule, cannot be bought by the city. But I have very great hope in the future that we can have more education. The same thing is true about the farmer. If he believed that there were germs on his hands or on his pails which, transmitted to children, would cause their death, he would wash his hands, and he would wash his pails.

Dr. N. S. Davis, of Chicago, read a paper entitled

A NEGLECTED FOCUS OF TUBERCULOSIS.

He dealt with prison tuberculosis and stated that each prisoner who is set free with tuberculosis is sure to become a focus from which the disease will spread among his friends and neighbors; further, there is a strong liability that under these circumstances he will relapse into a criminal life. The mortality of prison tuberculosis is very high, about 60% according to Dr. Davis. Jails are commonly infected; ventilation is bad and the prisoners are in a very receptive state. Dr. Ransom's work at Clinton Prison, at Dannemora, N. Y., was quoted and commended. The experience of the farm at Huntsville, Texas, was given and the reduction of mortality at other prisons was noted. By improved methods of dealing with tuberculosis the mortality at Sing Sing, N. Y., was reduced to one fourth; at Auburn, to one ninth, and at Clinton it compares favorably with that at sanatoria where consumptives of all classes are received. In Texas all consumptive prisoners are sent to the farm at Huntsville, and during the first three years of its existence 180 cases were received; the mortality fell off one half.

Dr. Davis made a plea for laws requiring examination of every one arrested and detained in prison more than one or two days, and a re-examination as often as once in six months. Segregation was advocated and more attention to hygiene of the persons and cells of the prisoners. Outdoor treatment was advocated. Early trials were urged and prisoners in an advanced stage should not be pardoned, but cared for by the state.

DISCUSSION.

Dr. E. O. Otis, of Boston, Mass.: To the list of prison sanitariums which Dr. Davis mentions I would add one in Massachusetts. We have a special state

sanitarium for prisoners at Rutland, to which tuberculous prisoners are transferred from the various penitentiaries of the state and treated under similar outdoor conditions as exist in a state sanitarium a short distance away.

DR. J. H. ELLIOTT, of Toronto, Canada: The paper brought up two very important points, the treatment of tuberculous prisoners and the care of prisoners to prevent them becoming infected while serving their sentences. These are two quite different problems and unfortunately the second, which is most important, the prevention of infection, is closely bound to our present jail system. I think that we all recognize that our present system of confinement in jail is one which makes a prisoner a confirmed criminal. But if we take our prisoners out of the jails in which they are confined, usually at manual labor, and move them out into the country on a farm, we shall not only make men of them, but will lessen this mortality due to infection in the prisons. Following the example of some of the cities and states in the United States, our provincial government in Ontario has bought a large farm where they have good water supply, beds of gravel and sand, deposits of rock, particularly limestone rock, and the prisoners are already being transported to this farm and are building roads and putting up buildings. I think we should do all we can to foster this in the different states and provinces, and in this way indirectly to some extent, and also very directly, we shall lessen this mortality.

DR. HENRY MARTYN BRACKEN, of Minneapolis, Minn.: The question of the care of prisoners of penitentiaries is rather a simple matter, but the proper care of those in the jails and workhouses is a difficult proposition. And this is true because the prisoners of penitentiaries, the larger institutions, are under the control of people rather outside of politics, while the jails and workhouses are often under the control of changing supervision, from a medical point of view, and even those who have charge of the medical end take little interest in the sanitary side of it. The transfer of tuberculosis patients to special sanatoria or farms is certainly most desirable, and, where it can be carried out in relation to the larger institutions, is most satisfactory. In Minnesota the proper care of those in the state institutions has been observed carefully for years. The same man, a resident of Stillwater, has been in charge, and I think it must be at least fifteen years ago that there was a division set aside for the care of tuberculosis patients, and they were given special work keeping them outside as far as possible. Special care was taken to disinfect their cells and destroy their clothing and bedding, and in the reconstruction of the new institution a special ward for the tuberculosis prisoners is being provided. The death-rate of that institution from tuberculosis went down very low, then it went up because of the importation of a lot of tubercular prisoners from outside of the state. Then the rate was again reduced. I simply want to emphasize the point that there is a difficulty in taking care of these individuals in the smaller institutions, and the society's attention should be directed to improve the local conditions.

DR. GUY HINSDALE, of Hot Springs, Va.: I read a paper on this subject before the society at our meeting in 1905 and gave an account of an inspection of the Eastern State Penitentiary of Philadelphia, where the segregation of prisoners in solitary confinement has been used for so long. That prison was subject to a very heavy mortality from tuberculosis amounting to two thirds of all deaths. After the report which I made to the Pennsylvania Society for the Prevention of Tuberculosis, and to the inspectors of the prison, it was very thoroughly overhauled and the cells disinfected, and special attention given to the tubercular prisoners by way of giving them better air and exercise and carrying out to some extent the outdoor cure. This resulted in great improvement in the mortality rate of that prison, and under Dr. W. D. Robinson, who was the prison physician for a great many years in Philadelphia, and Dr. W. W. Leach, the resident physician, the hygienic conditions of that prison were immensely improved. Dr. Robinson took the matter up so vigorously that it gave rise to some controversies, but his work is to be thoroughly commended.

It occurs to me that the practice of sending prisoners to the road on the chain gang which is common in our southern states is preferable to putting them in solitary confinement as they do in the Eastern State Penitentiary in Philadelphia.

DR. C. L. MINOR, Asheville, N. C.: One of the difficulties in meeting this problem which I would wish to dwell upon is that we are handling not merely the poor, but the criminal poor, and, in my experience, persons of this class prefer not merely to be dirty, but take a vicious pleasure in soiling and defacing their surroundings, so that you cannot get their co-operation in improving the sanitary condition of prisons. The negro in our Southern jails is very ignorant and very dirty, but rarely malicious, but the scum of Europe, such as Dr. Davis sees in Chicago, can be made to improve their ways only by superior force and by an amount of vigilance which it seems impossible to hope for while, as is the case, politicians run these institutions.

DR. N. S. DAVIS, of Chicago, Ill.: I do not feel pessimistic about it, but to reform jail management, the present method of the care of prisoners must be completely changed. If they are still to be put in small cells which cannot be properly ventilated and cleaned, which are unwholesome in every respect, it is almost impossible to accomplish anything, but I believe this will be changed. I hope that those present will agitate for the needed reforms.

DR. ARNOLD C. KLEBS presented a paper on

SURGICAL TUBERCULOSIS TREATED IN THE HIGH ALPS.

He described the method adopted by Dr. Rollier and Dr. Bernhard. Rollier recently reported on thirty-five patients treated by heliotherapy at high altitude. His experience includes nearly 150 cases of tuberculosis of various locations, exclusive of the lungs, treated by mountain sunlight with excellent results.

DR. ARTHUR K. STONE read a paper on

TUBERCULOUS PERITONITIS; A PLEA FOR THE TREATMENT OF PERITONEAL TUBERCULOSIS BY HYGIENIC RATHER THAN SURGICAL MEASURES.

This paper appeared in the JOURNAL, June 16, 1910.

DISCUSSION.

DR. E. O. OTIS, of Boston, Mass.: Last winter a child about ten years of age was referred to my service in the Tuberculosis Clinic of the Boston Dispensary with a diagnosis of peritoneal tuberculosis. The diagnosis seemed clear. The unusual thing was that the child seemed to be in perfect general condition with rosy cheeks, and apparently suffering no inconvenience. She was put under good hygienic conditions, kept out of doors, and as time went on the ascitic symptoms gradually disappeared and apparently the child was making a rapid recovery. I simply mention this as an instance corroborating what Dr. Stone said.

DR. C. L. MINOR, of Asheville, N. C.: In my practice up to a year or so ago I always advised operation in

peritoneal tuberculosis, and usually have had very satisfactory results, so that I learned to feel a good deal of confidence in the operation. Recently I have had some cases in which I have tried a purely hygienic treatment and have gotten some very satisfatory results.

I believe the difficulty often is that as a good many of these cases have not done well after operation, the doctor feels that he cannot advocate so serious a step. But I believe we owe it to our patients to give them the chance, and that we have enough records of good results by surgery to feel that, after giving medicinal measures a fair trial, we are fully justified in calling in a surgeon, since the danger should not be great and the likelihood of improving the outcome seems to be fair. The operation which I refer to has been a simple opening of the abdomen, an examination of the condition of the parts, which were usually studded with many tubercles, and then sewing up the wound without the use of irrigation, chemicals, etc.

Dr. Elliott: There are two questions on which I would like to have information. First, should we, because of the intestines being involved, give a diet other than that we would ordinarily give in a case where fever and tuberculosis are present?

The other question is while the surgical treatment is acknowledged to have been successfully employed in the wet cases, have we any figures to show us whether the operation is effectual or harmful in the dry cases? I think there is a general belief that in the dry cases surgical interference is harmful.

Dr. Stone: It seems to me that the mere operation of opening and sewing up again is simply the idea of doing something, something that you do not do in the lung cases you are attending, and your lung cases, taken in time, get well. In the abdominal cases you have the idea along with the surgeon that if you do something you cure your patients. We all see our lung cases go along without marked change for a long time and then change quite suddenly for the better, and in some of the abdominal cases that I followed out, patients who were sent home to die, went home and improved; one took up Christian Science and in three weeks was around and down at the beach. Still another went up into a back county of New York and had a physician who gave a pill and the patient immediately got well. And so it has gone in that way.

I do not feel that an operation is altogether a perfectly simple thing. I find that one third of the cases in Massachusetts had ulcers in the wounds afterward. I found in literature that there were cases where bad accidents occurred, as rupture of the intestines.

How long to wait? That is a question that Dr. Gelpke has considered quite extensively, and he states that he would not remove fluid under six weeks, but just more than that I could not state.

Dr. Will H. Swan, of Colorado Springs, Colo.: I think this paper is a very timely one and one of very great value because I think we should not take the position to which all of us have been inclined that tubercular peritonitis is necessarily a surgical disease. At the same time I think there are a certain number of cases where there are symptoms of abdominal pain, digestive disturbances that go on for considerable time, and by and by we get an attack of what is pretty definitely appendicitis, and with operation patients get well of that attack, and they are very much better and many of them relieved of their abdominal symptoms from that time on, and do very much better with the tuberculosis which may be coincident. I believe in many of these cases we have a vague indistinct chronic appendicitis that we have not been able to recognize up to a rather more definite attack to call attention to it. We have had it upon a number of times. I have in mind now two or three cases where I have been trying to get the consent to operate for what I suspect to be occurring, that is, chronic appendicitis, where there has been not marked but vague abdominal symptoms. If the patient is not doing very well, and no apparent reason for it, I wonder if an operation and the removing of the appendix might not be fitting. In regard to diet, I think there is no special change that should be considered, for in these particular cases that I have been trying to discuss, those with the general involvement of the peritoneum, the intestines are not involved. Hemmeter, in 56 autopsies upon patients dying of intestinal tuberculosis, found that in none of them was the peritoneum involved, and in several cases which I have seen where the peritoneum became involved by way of the intestine, it was evidently the colon peritonitis that developed and not a tuberculous one. I cannot state exactly in regard to prognosis of the dry cases as compared with the wet ones where there has been operative interference. I noted that in the Massachusetts General Hospital, on looking up this series of cases, the dry cases, operative and non-operative, gave a better source of statistics than the wet ones as to the permanency of cure. This is at variance with most observers.

We must consider that a certain number of these dry cases probably were wet at some time, and that a certain amount of effusion often occurs, and the patients do not record it. I find that in the history a number of times that patients have stated that their bellies have been swollen at some time, but when they came under the observation of the hospital and the doctor, the abdominal cavity was perfectly dry.

May 4, 1910. Afternoon Session at 2:30 p.m.

Joint session with the Climatological and Otological societies at the New Willard Hotel. General topic for discussion: "Vaccine Therapy."

According to an arrangement suggested by the Executive Committee of the Congress, the Climatological Association invited the Laryngological and Otological Associations to hold a combined meeting on May 4, at which the subject of Vaccine Therapy should be discussed from the standpoint of these three associations. Accordingly the following members prepared papers and took part in the discussion:

American Otological Society: Dr. B. Alexander Randall, Philadelphia, Pa.; Dr. Henry O. Reik, Baltimore, Md.

American Laryngological Association: Dr. J. W. Gleitsmann, New York City; Dr. H. S. Birkett, Montreal, Canada; Dr. F. C. Cobb, Boston, Mass.; Dr. C. G. Coakley, New York City.

American Climatological Association: Dr. Jas. Alexander Miller, New York City; Dr. Herbert M. King, Liberty, N. Y.; Dr. Walter A. Griffin, Sharon, Mass.

(To be continued.)

Book Reviews.

Clinical Commentaries Deduced from the Morphology of the Human Body. By Prof. Achille de Giovanni. Translated from the second Italian edition by John Joseph Eyre, M.R.C.P., L.R.C.S.I., D.P.H. Cambridge. New York: Rebman Company. 1910.

This volume, dedicated to Charcot, presents the results of the author's critical studies in anthropometry and his exposition of the theory, more familiarly associated with the name of Bertillon, of human individuality based on and determined by measurements. Generalizing from this, De Giovanni undertakes to bridge the gap between morphology and pathogenesis by deducing from his anthropometric observations certain "combinations," types or categories, each characterized by peculiar pathologic susceptibilities. These types, which amount to little more than a rehabilitation of the old diatheses on morphologic instead of empiric grounds, represent classes to which individuals may by their measurements be conveniently referred. This ingenious theorem seems rather a curious example of Latin rationalism than a contribution of particular value to clinical medicine.

Physical Examination and Diagnostic Anatomy. By CHARLES B. SLADE, M.D., Instructor in Physical Diagnosis, University and Bellevue Hospital Medical College, New York. 12mo. Pp. 146. Illustrated. Philadelphia and London: W. B. Saunders Company. 1910.

A small, succinct and well-arranged book on any subject in medicine is welcome in these days of somewhat ponderous treatises. In this volume of 146 pages, including a full index, is contained the fundamental methods and principles of physical examination, well illustrated largely by line drawings. As an outline of a large subject the book is to be strongly commended. It aims to be practical and makes merely the modest claim of being a preparation for more comprehensive works. It is admirably printed, with a judicious use of italics and heavy-faced type for paragraph headings.

Chemical and Microscopical Diagnosis. By FRANCIS CARTER WOOD, M.D. Second edition. New York and London: D. Appleton & Co. 1909.

The work is divided in nine parts, as follows: Blood, gastric contents, feces, parasites, oral and nasal secretions, sputum, urine, exudates and transudates and milk. It will be seen at a glance that all the branches of clinical laboratory technic are covered in such a category, and careful scrutiny of the various chapters will disclose them to be as complete as is necessary for use by student, teacher or practitioner. Schmidt's method for the examination of intestinal contents is a useful addition to an American textbook. The progress of medical research requires especial notice to be taken of the Wassermann reaction, the opsonic index and the tuberculin reaction. This new edition maintains the high reputation achieved by the book in its original form. It is scientific, yet eminently practical, and a credit to American medicine. In fact, no better work on laboratory diagnosis has been published in any language. The text is illustrated by many excellent colored plates, photographs and drawings.

The Harvey Lectures. Delivered under the auspices of the Harvey Society of New York, 1908–09. By Professors A. CALMETTE, W. G. MACCALLUM, GRAHAM LUSK, W. FALTA, M. J. ROSENAU, A. B. MACALLUM, J. B. LEATHES, PHILIP HANSON HISS, JR., and Doctors JOHN F. ANDERSON and C. B. DAVENPORT. Philadelphia and London: J. B. Lippincott Company. 1910.

Few American scientific publications comprise within so small compass the names of so many distinguished authorities as those of the Harvey Society. This fourth series of lectures, as the editor suggests in his preface, furnishes "a striking example of the many points of contact between medicine and the collateral sciences." Probably the subjects most likely to attract general interest are "Intestinal Infection and Immunity in Tuberculosis," "Fever," "Anaphylaxis," "Problems in Immunity," and "Heredity in Man." Though their treatment is in no sense popular, these and the other essays which compose the volume should appeal not only to physicians, but to other intelligent readers, for they deal with scientific problems of actual importance in the human life of the day.

Hand-Book of Electro-Therapeutics. By WILLIAM JAMES DUGAN, M.D. With 91 illustrations. Philadelphia: F. A. Davis Company. 1910.

Treatment by some form of electricity has been, and promises long still to be, one of the strongest trump-cards of the medical charlatan. The present volume undertakes to describe the legitimate uses of electricity in medicine, the methods of its application and the indications and contra-indications of its employment. It is clearly written and well illustrated and should prove a valuable manual of a department of therapeutics little understood or utilized by the average physician. For the therapeutic and diagnostic uses of the x-ray, the reader is referred to special treatises on that subject.

Chirurgische Operationslehre für Studierende und Aerzte. Von Prof. Dr. FRIEDRICH PELS-LEUSDEN, Oberarzt der chirurgischen Universitätsklinik und Leiter der chirurgischen Universitätspoliklinik an der Königlichen Charite zu Berlin. Mit 668 Abbildungen. Berlin and Vienna: Urban & Schwarzenberg. 1910.

This well-printed volume of seven hundred and twenty-eight pages appears without a binding, undoubtedly a mistake for a book which is aimed to find a circulation in this country. Moreover, it is uncut, and so doubly unapproachable. The volume has many extremely good points. It deals with surgical therapeutics only and is brilliantly illustrated with most informing diagrammatic cuts. Excellent operations are chosen for description, and are related with the usual German dreariness. Nevertheless the book is so admirable a compendium of the best modern practice that we doubt not it will find a place in all reference libraries.

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SOME BIOLOGIC ASPECTS OF CANCER.

From *Biometrika*, "a journal for the statistical study of biologic problems," we have received an interesting reprint of "a statistical study in cancer death-rates" by G. D. Maynard, F.R.C. S.E., of Pretoria. At a time when the increasing death-rate from cancer in our own country and among other civilized nations is becoming matter of so much medical moment, such a study is of particular value. Dr. Maynard presents a very extensive and profoundly mathematical investigation of the relations between cancer and a large number of attendant conditions, such as race, age, sex, occupation, climate, social status and other diseases, notable diabetes and insanity.

His work is based principally on statistics from the United States, but includes also figures from other countries. His conclusions are striking and deserve serious consideration. He finds that his statistics give no support to the suggestion that cancer is of infectious origin. He finds that correlations exist between cancer, diabetes and insanity, and believes that these are not fortuitous. He suggests that "conditions of modern life, acting on physiologically unsound material, may account for the correlations between these three diseases, as well as for their increasing rates." The remedy for this condition he finds in eugenics.

In other words, Dr. Maynard regards cancer as a disease of the unfit, and includes diabetes and insanity in the same category. True, all are in a sense cellular perversions, morphologic or functional. Yet the prospect in face of this grim trilogy is perhaps not so gloomy as might appear. For the question rises whether a person has cancer because he is unfit, or becomes unfit because he has cancer. If the former, then the situation is fatalistic enough; but if the latter, there is at least a reasonable prospect that if we could but rid him of his cancer he would again become as fit as the man who has successfully recovered from yellow fever, or a hare lip, or a broken leg, or appendicitis. At a time when the laboratory study of cancer seems to offer such high hopes that we may be able ultimately to solve its riddle, such conclusions as Dr. Maynard's should in no sense act as a deterrent from its further pursuit. Cancer well deserves its name "malignant," but, far from being considered a biologic stigma, should for the present certainly be regarded as a definite extraneous scourge to be grappled with and conquered by more tangible means than eugenics.

THE HOSPITAL SCHOOL FOR TUBERCULOUS CHILDREN AT FRANKLIN PARK.

Mr. Price, secretary of the board of the Consumptives' Hospital trustees, in the daily papers has defended the action of the majority of the board of the trustees (Messrs. McSweeney, O'Brien, Price and Mrs. O'Callahan), as the Boston *Journal* says, in voting to close the Hospital School at Franklin Park. The defense practically amounted to saying that as only a few children were being cared for, and as there were many more who probably had tuberculosis that could not be cared for, therefore this form of hospital work should cease. But this argument, carried out to its logical conclusion, would stop all the work of other departments of the tuberculosis hospital and put an end, if applied, to every form of hospital philanthropy, for never can we have provision made for all the sick of the city. The other argument, that the children, being school children, should not be fed, is also entirely beside the point. The children were tuberculous children needing care and were sent to this department of the hospital. Here they were allowed to attend school a part of the day as a therapeutic measure, and, as another part of the cure, were properly fed and kept in the open air. They were patients in a hospital, not scholars in a school.

The care of persons having tuberculosis in "day camps," whence they return to their homes at night, is a well-recognized method of arresting the progress of tuberculosis. Dr. Floyd, physician to out-patients at the Consumptives' Hospital, has had much experience in the conduct, since 1906, of such a "day-camp" at the House of the Good Samaritan. The statistics of his work

there in a period of several years will compare favorably with those of the average sanatorium. In all "day-camps," rest, fresh air, and good food, supervision in the homes, are the methods used to bring about favorable results. Patients with any form of tuberculosis must be fed, and among them, children, as well as any other unfortunates.

Physicians and interested laymen as well should hold these following simple facts regarding the Hospital School in mind. The Boston Association for the Relief and Control of Tuberculosis conducted a "day-camp" for tuberculous children during the summer of 1908. This was successful, and at the beginning of the school year the school board consented to furnish a teacher, who held a "district school" at the "camp." In this way the parents were persuaded to allow their improved but still really tuberculous children to continue in their outdoor life, for parents and children alike believe that school should be attended at all costs if the child is not distinctly sick. Later in the year the "camp" with the school attachment was moved, thanks to the Park Commission, to the roof of the refectory building at Franklin Park. These children, under the care of the physicians of the association, with the help of the teachers to maintain order and give employment to their busy brains, and the help of the nurse who followed them to their homes, and all under the wise direction of Miss Isabel Hyams, did exceedingly well, and at the end of the school year the experiment was pronounced by all who investigated or were connected with it as a success.

During the summer of 1909, some of the children went to the new land of the association, called Prendergast Camp, where they were looked after by a young man as teacher, taught in gardening and other nature studies, and amused, fed and kept in the open. Later the board of trustees of the Consumptives' Hospital voted to take over this work and thus to establish a department for children at the same place in Franklin Park. Provision was made for the care of one hundred children.

The board of trustees of the Boston Consumptives' Hospital had decided to build suitable hospital wards for the care of really advanced cases of tuberculosis. Plans had been drawn and the buildings were in the process of erection. An out-patient or dispensary department had been started, by means of which, and the co-operation of other hospitals in the city, it was hoped that a large amount of definite knowledge regarding the distribution of tuberculosis in the city of Boston would be acquired. A "day-camp" for adults which had been successfully conducted by the association was taken over. This was in the very beginning, and a number of patients were temporarily cared for while hospital accommodations were being prepared. This form of the hospital work will probably decrease in amount, though it will and should always have a place in the workings of a hospital department for the control of tuberculosis. The plans for the care of the adult case having been developed and slowly approaching completion, it seemed wise to take the next step and see what could be accomplished for the children.

As yet the world has done but little for the child with pulmonary tuberculosis. Unless the child is very sick or confined in bed it is hard to convince parents, teachers and even intelligent lay workers and some physicians that the child is dangerously ill. The public has not yet arrived at the place in its education in tuberculosis where it would recognize the need of placing such a child in a hospital even if there were such a place provided to send him. Such a children's department of a hospital as ours in Boston for the care of tuberculous patients should be provided. The school committee will have to co-operate in order that the best methods that we know of for enforcing rest and order can be carried out. Even after a children's ward has been built, there will always be a number of children who can best be cared for by the camp plan, the child thus remaining with the parents and becoming a constant source of hygienic information to the family,—an educational factor of great importance. The best way in which education of the community can be advanced will be along the line of the Boston hospital school. Here the children who are found by the school physicians and others to be definitely tuberculous, even when they are not so to be recognized by the laity, can be sent and put under the charge of competent physicians and nurses and given, with proper food and clothing, the best possible chance for their recovery. To accomplish this, the school side, which is really a therapeutic measure, will have to be emphasized and put to the front, because it is the school that the parent recognizes, while the real object is to get the child under hospital treatment. It is distinctly a hospital problem, not a school problem.

The questions at issue regarding the hospital school have been much obscured by the fact that it has been called an "open-air school," while the other fact, that was perfectly obvious to all the founders of the plan, that it was a method of caring

for tuberculous children, has been forgotten or disregarded. It is perfectly true that applications of methods used in this hospital school can be adapted to general school work for *non*-tuberculous children. But all the conclusions thus far have been based on the work done for the arrest of real tuberculous processes in the children that have been under the charge of the hospital trustees. That the trustees of the Consumptives' Hospital do not see their way to provide for all the children whom the physicians in the city send to them is no more reason for closing their hospital school than for closing the rest of their hospital because they have not beds for all the tuberculous patients of Boston. Let them do what they can, run their hospital school to the limit of its capacity, and not make preparations to close it at the end of the present fiscal year.

THE ECONOMIC COST OF DISEASES.

The concept of disease as a form of economic waste, though not exactly new, is rather likely to appeal to a good many Americans as a motive for efforts at its prevention. It is significant that, at a meeting of the Boston Chamber of Commerce last week, this aspect of disease was taken under special consideration, and reports on various topics of the question were presented by members of the Chamber of Commerce committee on public health and preventive medicine. Dr. Richard C. Cabot, the chairman of this committee, presented some figures representing the estimated pecuniary cost of the incidental ailments of life to the people of our community. There are in Boston approximately 150,000 wage-earners, receiving an average wage of $700 a year. If each of them loses twelve days, or two working weeks, a year from sickness, that loss represents to each of them $28, or a total of $4,200,000, besides a loss of 6,000 years of time. Moreover, the experience of certain large corporations has demonstrated that it actually pays in dollars and cents for the owners of mills, factories and workshops to make some provision for caring for the health of their employees. This may be done in various ways: by the employment of a graduate nurse as resident in such buildings, to supervise the hygiene and habits of employees, and by the establishment of "shop clinics" administered by properly qualified and paid physicians.

Propositions of this sort were presented and discussed at the meeting of the Chamber of Commerce by Dr. Cabot, Dr. L. R. G. Crandon, Dr. Horace D. Arnold and Mr. Stanley King. No definite action was taken, but it was evident that many of the ideas suggested were novel and appealed strongly to those present. The progress of preventive medicine is slow, when its motives are purely humanitarian; it will become more rapid when it is recognized by large classes in our society as the best means towards health as a business asset.

INCREASE OF BIRTHS IN FRANCE.

Official report from Paris states that during the first six months of the year 1910 the births in France exceeded the deaths by 21,189. This information has excited great satisfaction in France, where it is regarded as evidence of the cessation of the menacing decline in population with which that country is confronted.

At first glance the figures seem impressive, but as a matter of fact they probably represent only a temporary fluctuation, a gain that is trivial in itself and likely soon to be more than counterbalanced. Moreover, no adequate reason is assignable for such increase, since it is too soon for the taxation of bachelors and the provision of increased salary for government employees to have affected the birth-rate. Meantime the rate in Germany continues at 36 per thousand, in Austria 37, and in Hungary 40. It is to be feared that in France there is no immediate prospect of any such fecundity as is shown by her Teutonic and Magyar neighbors. Her brief increase is transitory and fallacious.

NEW THERAPEUTIC USE OF FORMALIN.

In the August number of the *American Journal of Orthopedic Surgery* is an article by Dr. Roland O. Meisenbach, of Buffalo, N. Y., presenting the results of some interesting and delicate animal experimentation performed with a view to determining the effects of chemical and mechanical stimulation upon bone-growth. A series of injections of various irritating substances was made in the region of the upper epiphyseal line of the tibia in young rabbits. The lesions thus formed were then studied by x-ray and microscope at varying intervals of time, with the result that the stimulated bone was found to ossify more rapidly than normal bone. Mechanical stimulation appeared to affect chiefly perichondral bone-formation, whereas chemical stimulation affected chiefly endochondral bone-formation. Of all the substances experimentally employed for injection, formalin proved most satisfactory, since it com-

bines the effects of mechanical and of chemical stimulation, causing the "formation of osteogenetic tissue by influencing the zones of provisional calcification and calcified matrix, and by increasing the number of osteoblasts derived from the perichondrium." The author believes that his observations suggest a possible new therapeutic use of formalin by injection to stimulate bone-growth in congenital shortening of a limb, in infantile paralysis, bone-tuberculosis, osteomyelitis, obstinate non-union of fractures. If verified by clinical application, the results of his admirable piece of research seem likely to be the suggestion of a new therapeutic procedure that may prove of great value in general as well as in orthopedic surgery.

MEDICAL NOTES.

A CENTENARIAN. — Mrs. Hela Hurd Cook, who died last week at Clayton, N. Y., was locally reputed to have been born in 1808. Her father fought in the American Revolutionary War.

THE HARBEN LECTURES. — The Harben Lectures of the Royal Institute of Public Health of London for 1912 will be given by Dr. Simon Flexner, of the Rockefeller Institute for Medical Research, New York.

YELLOW FEVER AT HONOLULU. — Report from Honolulu, Hawaii, states that a case of yellow fever, said to be the first ever known at that port, was discovered on Oct. 30, aboard the Japanese steamer *Hong Kong Maru*, just arrived from Manzanillo, Mexico. The patient has been isolated and the ship duly quarantined.

POLIOMYELITIS IN KANSAS AND IN NEW JERSEY. — Report from Topeka, Kan., states that acute poliomyelitis is still epidemic in that state, where there are said to be at present about one hundred and fifty cases of the disease. At Princeton, N. J., a student in the university died of poliomyelitis on Oct. 29, his death being the second that has occurred there from this infection during the past three weeks.

SOME RECENT CHARITABLE BEQUESTS. — Among other charitable bequests, the will of the late Margaret W. Frothingham, of Cambridge, Mass., allowed last week before the Middlesex Probate Court, makes legacies of $1,000 to the Cambridge Hospital and $500 to the Kindergarten for the Blind, Jamaica Plain.

The will of the late James C. Jordan, of San Francisco, Cal., recommends, although it does not bind, his widow and executrix to present to the Massachusetts General Hospital the sum of $5,000 to be used in such manner as she and the administrator of the hospital may decide.

TWO ACTIVE LIVING CENTENARIANS. — Mr. Charles Beaulieu, of Salem, Mass., is said to have been born on Nov. 3, 1810, in Canada. He was one of a family of fifteen children, and was brought up on a farm. He married in 1836, and had thirteen children, of whom nine are now living. He has always been a hard worker, has lived much out of doors, and still walks a great deal. To these habits he attributes his longevity and present vigorous good health.

Mr. O. M. Ziebach, alleged to be one hundred and seven years of age, was arrested and imprisoned on Nov. 1, at Fort Totten, Grand Forks, N. D., on a charge of introducing spirituous liquor into an Indian reservation. He is said to be the oldest man ever placed under arrest in the United States. It seems unfortunate that such venerable years should not have induced in him greater propriety and sobriety of conduct.

TESTIMONIAL DINNER TO Dr. J. M. BODINE. — For forty-five years Dr. James Morrison Bodine, as Dean and President of the Faculty, has presided over the destinies of the University of Louisville Medical Department. Now entering his eightieth year he continues to devote his energies to the cause of medical education. His many friends and pupils scattered throughout the country have deemed this an appropriate occasion to show their appreciation of his devotion and their affection for him personally.

To this end it has been decided to give him a testimonial dinner on Dec. 16, 1910, at the Seelbach Hotel in Louisville. Those friends whom the committee has been unable to reach by invitation are cordially invited to attend and are requested to signify such intention at once by writing to the chairman of the committee.

CHOLERA IN ITALY. — During the week ending Nov. 5, 63 new cases and 28 deaths of Asiatic cholera are reported to have occurred in Italy, showing a slight increase over the previous week. It must be remembered, however, that these figures are probably not entirely accurate or reliable. In a report recently made at Rome by the Italian national board of health, it is stated that much of the diffusion of the disease has been due to defects in the water supply of Apulia. It is expected that a measure will be introduced

into the Italian parliament authorizing the immediate construction of improved works, dams, aqueducts and wells in the effort to provide better supply for this district, and appropriating for the purpose an amount equivalent to $60,000,000.

More Milk Convictions. — Two milk dealers of Everett, Mass., were last week fined $15 each before the Malden District Court for having in their possession, for sale, milk not up to the standard required by law.

Before the United States District Court at Concord, N. H., on Nov. 1, eleven milk producers of that state were fined $10 each for violation of the pure food law in shipping to Boston, for sale, "milk containing deleterious or putrid matter." The interests and safety of consumers in this city are dependent on the responsibility and conscientious zeal of public officials outside as well as within Massachusetts.

Punishment for Refusing Vaccination. — Last week, it is stated, about three hundred and fifty students and several instructors in the University of Minnesota, at Minneapolis, refused to be vaccinated after exposure to a case of smallpox which occurred in the vicinity. For this infraction of state law, which provides compulsory vaccination under such circumstances, all recalcitrants were quarantined in their rooms and forbidden to take any part in college exercises for three weeks. It is to be hoped that this wise and condign punishment will prove of value not only as a disciplinary measure, but as a check to the growth of the so-called "anti-vaccination sentiment," whose spread threatens danger to the community as well as to the individuals by whom it is entertained.

Decrease of Population in Iowa and Vermont. — Figures from the recent United States census are not yet complete, and until they are there is little profit in speculation upon them. Most important should be the figures representing relative growth in number of native and alien inhabitants. Apparently only two states in the Union have shown an actual decline in population, — Iowa and Vermont. In the former case, it is accounted for by migration to the Canadian Northwest; in the latter, partly by the drain of the Civil War, partly by migration to Boston. The data which give comparative birth-rates remain yet to be worked out. Upon them will rest our classification with the French or with the English in the matter of racial fertility.

Convention of Military Surgeons. — The nineteenth annual convention of the National Association of Military Surgeons of the United States was held last week in Richmond, Va. For the first time in the history of the association, the sessions were attended by representatives from several foreign countries, among them Great Britain, France, Germany, China, Canada, Mexico and Guatemala. At the meetings were discussed various topics relating to the health of soldiers in the regular army and in the national guard, and of sailors and marines. The last day of the convention, Nov. 4, was devoted to subjects connected with the work of the United States Public Health and Marine-Hospital Service. It was voted that the next meeting of the association be held at Milwaukee, Wis.

Railroad Casualties in the United States. — The risk of railroad travel in the United States is illustrated by statistics from a recent bulletin of the Interstate Commerce Commission. In the year ending June 30, 1910, 82,374 persons were injured and 3,804 killed in railroad accidents in this country, an increase of 18,454 injured and 1,013 killed over the preceding year. That these figures are relatively much higher than the corresponding figures in Great Britain illustrates admirably the reckless carelessness and the cautious stability of the respective peoples. Railoads furnish not only much of the romance, but a considerable proportion of the surgical trauma of modern life, among both employees and passengers. Much of this waste of life and health would be as preventable as many of the infectious diseases by intelligent care.

American Public Health Association. — The American Public Health Association, comprising the United States of America, the Dominion of Canada, the Republic of Mexico and the Republic of Cuba, will hold its 1911 meeting in Havana, Cuba, from Dec. 4 to 9. The prospect of having the Association again in Havana has aroused the warmest interest among the physicians there, the secretary of sanitation, Dr. Varona, being particularly interested. The Academy of Medicine has offered its building for the general section meetings. The Hotel Sevilla will be the headquarters of the association. A few years ago a meeting in Havana would probably have discussed yellow fever. The changed situation in Cuba with respect to that disease is shown by the fact that yellow fever has been so completely extinguished on the island that

the local physicians desire rather that tuberculosis be given the most prominent place. The question of the milk supply will also be considered.

It is hoped that at this meeting the recently organized Sociological Section, and the Section on Sanitary Engineering, which was tentatively authorized by the Milwaukee meeting, may be put upon substantial foundations.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Nov. 8, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 26, typhoid fever 29, measles 8, smallpox 0, tuberculosis 54.

The death-rate of the reported deaths for the week ending Nov. 8, 1910, was 13.90.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Oct. 15, 1910, was 205, against 181 the corresponding week of last year, showing an increase of 24 deaths, and making the death-rate for the week, 15.94. Of this number 109 were males and 96 were females; 200 were white and 5 colored; 138 were born in the United States, 64 in foreign countries and 3 unknown; 51 were of American parentage, 126 of foreign parentage and 28 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 33 cases and 3 deaths; scarlatina, 9 cases and 0 deaths; typhoid fever, 30 cases and 2 deaths; measles, 4 cases and 0 deaths; tuberculosis, 42 cases and 22 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 25, whooping cough 2, heart disease 31, bronchitis 3. There were 16 deaths from violent causes. The number of children who died under one year was 50; the number under five years, 64. The number of persons who died over sixty years of age was 46. The deaths in public institutions were 83. Anterior poliomyelitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 3 cases and 5 deaths. Scarlet fever, 1 case. Typhoid fever, 1 case.

Deducting deaths of non-residents, the total is 174 and the death-rate is then 13.53.

RECEPTION AT THE FREE HOSPITAL FOR WOMEN. — On Nov. 3, a reception, to which we made reference in last week's issue of the JOURNAL, was held at the Free Hospital for Women, Brookline. Tea was served in the afternoon and all the wards of the hospital were opened for inspection by visitors.

SALE FOR ST. MONICA'S HOME. — The annual sale for the benefit of St. Monica's Home, Roxbury, is to be held to-day, Nov. 10, at Trinity Parish Hall, on Clarendon Street.

THE DOCTOR'S DILEMMA AGAIN. — In last week's issue of the JOURNAL we referred to an address by Dr. Richard C. Cabot on "The Doctor's Dilemma." Since that time Dr. Arthur W. Fairbanks, of Boston, in a letter to the public press, has taken issue with Dr. Cabot and expresses his belief that the growth of hospitals in no way menaces the existence of private physicians.

DONATION DAY AT CULLIS HOME. — On Tuesday of this week, Nov. 8, was held the annual Donation Day of the Ladies' Auxiliary of the Cullis Consumptives' Home, Dorchester. The administration rooms of the home were open throughout the day for the sale of articles contributed by friends of the institution. It is expected that a considerable sum of money has been realized from this sale.

FAIR FOR THE BROOKLINE DAY NURSERY. — On Friday, Nov. 11, to-morrow, a fair will be held by the managers of the Brookline Day Nursery, at the Nursery Building, for the benefit of the institution. The fair will be open from 10 A.M. to 6 P.M., and luncheon and tea will be served at appropriate hours. The Nursery has now been established nearly fifteen years, and its work is steadily increasing.

HIGH DEATH-RATE IN FALL RIVER. — In the issue of the JOURNAL for Oct. 27 we published a note stating that in 1909 the city of Fall River, Mass., had the second highest death-rate of cities with a population of one hundred thousand or over in the United States. This statement, which was also made in the public press, was questioned by the Fall River Board of Health. The matter has been investigated by the director of the census bureau of the Department of Commerce and Labor at Washington, D. C., and in a bulletin just issued he reiterates and confirms the original figure, 19.1. This high rate he believes due largely to the excessive infant mortality. In Fall River in 1909 the mortality of infants under one year was 39% and that of children under five years 50% of the total mortality, a proportion "greater

than that of any other large city in the United States, and nearly as great as that of the Filipino population of Manila, which was 64.9% for 1909."

NEW YORK.

Bequests.—Among the charitable bequests in the will of the late Isaac Smith Remsen, president of the I. S. Remsen Manufacturing Company of Brooklyn, is one of $5,000 to the Eastern District Hospital and Dispensary, Brooklyn.

A Low Death-Rate. — It is gratifying to note that the death-rate in the city in the month of October was one of the lowest, if not actually the lowest, ever recorded for a month. It was 13.90, as against 14.48 in September and 15.26 in October, 1909. The corrected death-rate, excluding non-residents and infants under one week old, was 13.03. Among the diseases in which there was a diminished fatality were the following: The weekly average of deaths from measles declined from 7 in September to 2.5 in October; the weekly average from scarlet fever from 3.75 to 2.75; from pulmonary tuberculosis, from 159 to 154.5; from acute bronchitis, from 14 to 11.25; from bronchopneumonia, from 67.25 to 63; from diarrheal diseases, from 190.75 to 146; from diarrheals in children under five years of age, from 181.5 to 138; and from cirrhosis of the liver, from 23.25 to 18. Among the diseases which showed an augmented mortality were the following: The weekly average of deaths from typhoid fever increased from 15.25 to 19; from diphtheria and croup, from 13.5 to 16; from pneumonia, from 46.5 to 67; from cancer, from 74 to 75; from apoplexy and softening of the brain, from 18.75 to 23.75; from organic heart diseases, from 108.75 to 110; and from appendicitis and typhlitis, from 9 to 15. While there is some increase in the deaths from typhoid fever over September, it is noticeable that the mortality from this cause in the city of New York is now less than at the same period last year.

Endowment, New York Foundation.—The bequest of $1,000,000 left by the will of Louis A. Heinsheimer to six Jewish charitable institutions, among which were the Mount Sinai Hospital and the Montefiore Home and Hospital, on condition of their uniting in a single federation, having reverted, in consequence of their refusal so to federate, to the testator's brother, Alfred M. Heinsheimer, the latter has now devoted the full amount of the bequest to the endowment of a new organization which he has founded. This has been chartered under the laws of the state of New York to promote charitable, educational and philanthropic enterprises, and is to be known as the New York Foundation. It will be absolutely non-sectarian in character, and the income of the foundation is to be expended preferably in co-operation with established institutions. Applications for appropriations can be made by the officials of any charitable or philanthropic institution or society, and these will be granted as far as possible in such cases as meet with the approval of the trustees. The president of the Board of Trustees is Dr. Morris Loeb, and the treasurer, Isaac N. Seligman, who is also treasurer of the St. John's Guild.

Current Literature.

Medical Record.

Oct. 29, 1910.

1. Grawitz, E. *Pernicious Anemia; Its Definition and Treatment.*
2. Wells, W. A. *Suppuration of the Antrum of Highmore.*
3. Rockwell, A. D. *Remarks on the Twentieth Anniversary of the American Electrotherapeutic Association.*
4. *Schwartz, B. *A Case of Typhoid Meningitis.*
5. Sheedy, B. De F. *The Saw and Crushing Instruments in Surgery of the Nasal Septum.*
6. Wolbarst, A. L. *Gonococcus Urethritis in Male Children.*
7. Gillman, G. *The Bedside Widal Test.*
8. Dlugasch, L. *Exophthalmic Goiter Simulating Typhoid Fever.*

4. Schwartz reports a case of typhoid meningitis in a boy of eight. Two weeks before he entered the hospital he began to have headache and abdominal pain, soon followed by a troublesome diarrhea and vomiting. Three days before admission he took to bed. On admission he was mentally dull; temperature, 101°, soon rising to 105°; pulse, 102; respirations, 36. Spleen palpable. Physical examination otherwise negative. No rose spots. Widal negative. The first meningeal symptom was noticed on the sixteenth day of the disease — a slight Kernig, soon followed by inequality of the pupils. Whites, 10,000; 72% polymorphonuclears. Two days later meningitic symptoms were more marked. Whites, 24,400; 68% polynuclears. Harsh breath sounds and moist râles at right base, posterior. Next day, coma and relaxation of the sphincters; temperatures, 101.5°; pulse, 144; respirations, 56. The diagnosis of tuberculous meningitis was made and lumbar puncture done. Twenty-five cubic centimeters of somewhat turbid fluid under great pressure were obtained. Death followed a few hours later. Examination of the spinal fluid showed cellular elements in excess with a predominance of small lymphocytes. Smear showed many Gram-negative bacilli, no cocci. B. typhosus was obtained in pure culture.

The writer reviews the literature of typhoid meningitis and insists that cases cannot be considered proven where contamination of the cerebrospinal fluid from admixture of blood is not eliminated. This is an essential precaution because typhoid bacilli are present in the circulating blood in practically all cases of typhoid fever. [L. D. C.]

New York Medical Journal.

Oct. 29, 1910.

1. Da Costa, J. C. *Report of Two Cases of Revolver Shot Wound of the Brain.*
2. Tousey, S. *Demonstration of a Simplified Technic for*

X-Ray Localization of Bullets in the Thicker Portions of the Body.
3. ABRAMS, A. *A Scientific Interpretation of Knatsu or the Japanese Method of Restoring Life.*
4. KINGSBURY, J. *Some Circinate Syphilides.*
5. BUERGER, L., AND WOLBARST, A. L. *The Fulguration Treatment of Papillomata of the Bladder.*
6. HAMILTON, W. D. *The Surgical Treatment of Chronic Gastritis and Duodenal Ulcer and of Cancer of the Stomach.*
7. *EGGLESTON, E. L. *Observations on the Variability of the Gastric Juice.*
8. KAHN, M. *Shakespeare's Knowledge of Medicine.*
9. POHLY, A. G. *Anemic Ulcer of the Throat.*

7. Eggleston reports on some clinical experiments with stomach cases. He finds that there may be marked variations in the composition of gastric juice secreted under the stimulus of the same food. These variations may be due to psychic influences. The inhibitory effect of iced food or drink on gastric secretion is slight. Foods containing free fats in any quantity, whether frozen or at ordinary temperature, have a decided inhibitory effect. Gastric secretion is markedly increased by fruit juices, cold or warm. Compound tincture of gentian seems to have but little effect as a gastric stimulant. [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

OCT. 29, 1910.

1. MALLORY, F. B. *Recent Progress in Microscopic Anatomy and Differentiation of Cancer.*
2. DOANE, P. S. *Mechanical Ileus Complicating Pregnancy.*
3. BABLER, E. A. *Colon Bacillus Infection of Operation Wound.*
4. *LEVY, R. *The Tuberculous Tonsil.*
5. BECK, J. C. *Conditions Demanding Enucleation of the Faucial Tonsils.*
6. SHURLY, B. R. *Enucleation of the Faucial Tonsils; Its Difficulties and Contra-Indications.*
7. LOEB, L. *Recent Progress and Present Status of Experimental Research in Cancer.*
8. WEIL, R. *Biochemical Investigation of Malignant Tumors and Its Diagnostic Application.*
9. *TYZZER, E. E. *Relation of Heredity to Cancer.*
10. BLOODGOOD, J. C. *Recent Progress in Surgical Treatment of Malignant Growths.*
11. MYER, J. S. *Cardiospasm with Dilatation of the Esophagus.*
12. *CARREL, A., AND BURROWS, M. T. *Cultivation of Sarcoma Outside of the Body.*

4. Levy claims that tuberculosis of the tonsils occurs more frequently than previously recognized, owing to newer methods of investigation. Clinically, tuberculosis of the pharynx with or without tonsillar involvement is among the rarer manifestations of tuberculosis. Clinical tuberculosis of the tonsils and that determined by histological examination present marked differences. There is absence of symptoms in the latter and definite subjective and objective manifestations in the former. The diagnosis of true tuberculosis of the tonsils is more satisfactory when based on both clinical and histologic findings. The clinical form is a very grave condition and is probably not curable. Extirpation of the tonsil is rarely indicated in tonsillar tuberculosis.

9. Tyzzer states that the hereditary influence in cancer is shown in regard to species by the frequency of mammary cancer in mice, while they are rare in cattle, which, however, frequently develop primary tumors of the liver and adrenal. Although much of the evidence collected tends to indicate that heredity is not an important factor in the development of cancer, it would appear that this question cannot be definitely settled without more accurate methods than have been hitherto employed. The importance of experimental breeding of animals cannot be overestimated for this work.

12. Carrel and Burrows, in their second article, report the successful growth of sarcomatous tissue outside of the body, even to the cultivation of a second generation. These grow luxuriantly. This work may open new fields for the study of cancer also. [E. H. R.]

THE LANCET.

OCT. 1, 1910.

1. *STUART-LOW, W. *Malignant Disease of the Nasal Passages; Its Diagnosis, Pathology and Treatment.*
2. *MOULLIN, C. M. *The Essential Cause of Gastric and Duodenal Ulcer.*
3. WOODCOCK, H. DE C. *The Physique of the Phthisical.*
4. BARLING, J. E., AND WELSH, D. A. *A Symptom-Complex in Ruptured Abdominal Hydatid.*
5. TAKAKI, Y. *Clinical Surgery in Japan.*
6. ROBINSON, H. B. *Henoch's Purpura with Enteric Intussusception. Reduction; Intussuscepted Area Gangrenous; Resection Two Feet Five Inches of Gut; Immediate End-to-End Union; Recovery.*
7. BOLTON, J. E. *The Relief of Symptoms of Prostatic Obstruction by Electrical Treatment.*
8. CHRISTOPHERSON, J. B. *A Reminder of the Battle of Omdurman. An Account of the Removal of Half a Shrapnel Bullet which had Remained Embedded in the Leg of an Arab for Eleven Years after the Battle, Sept. 2, 1898, to Dec. 1, 1909.*
9. BEARDS, C., AND GOLDIE, W. L. *The Etiology and Diagnosis of German Measles (Rubeola).*
10. THOM, G. *Stovaine; Its Use in the Treatment of Shock in Injuries of the Lower Extremities.*
11. GADD, H. W. *The Ownership of Medical Prescriptions.*
12. HIRSCH, C. T. W. *Motoring Notes.*

1. Stuart-Low, discussing malignant disease of the nasal passages, concludes (1) that pain is not to be relied on as an indication; (2) increasing and persistent stuffiness especially if unilateral is always suspicious; (3) unilateral and recurring hemorrhage is suspicious and the combination of this and stuffiness still more so; and (4) early diagnosis and early operation are of the utmost importance.

2. Moullin believes that, aside from trauma direct or indirect, embolism is the real cause of gastric ulcer in the vast majority of cases. [J. B. H.]

BRITISH MEDICAL JOURNAL.

OCT. 1, 1910.

1. RICHET, C. *Ancient Humorism and Modern Humorism.*
2. SPENCER, W. G., AND DORAN, A. *Absence of the Fallopian Tubes and of Menstruation.*
3. WILLIAMS, L. *An Address Entitled the Quickening Spirit.*

Section of Surgery.

4. KOCHER AND MACKENZIE, H. *Discussion on the Surgical Treatment of Graves' Disease.*
5. BOND, C. J. *A Method of Establishing Colotomy Openings and Permanent Ureteral Fistulæ.*
6. MILES, W. E. *The Radical Abdomino-Perineal Operation for Cancer of the Rectum and of the Pelvic Colon.*
7. KENNEDY, R. *A Case of Secondary Suture of the Circumflex Nerve.*
8. CRILE, G. W. *On Certain Factors that Influence the Immediate Results of Surgical Operations.*
9. MUMMERY, P. L. *The Operative Treatment of Chronic Mucous and Ulcerative Colitis.*
10. THOMSON, A. *Conditions Liable to be Mistaken for Cancer of the Stomach.*
11. BIRD, F. D. *Conditions Simulating Cancer of the Stomach.*
12. PATERSON, H. J. *The Early Diagnosis and Treatment of Cancer of the Stomach.*
13. MOULLIN, C. M. *The Action of Gastro-Enterostomy in Cases of Gastric and Duodenal Ulcer in which there is no Mechanial Difficulty.*
14. DEANSLEY, E. *Excision of Gastric Ulcers.*
15. MACLAURIN, C. *The Clinical Manifestations, Diagnosis and Treatment of Hydatid Disease of the Liver.*

Section of Tropical Medicine.

16. CANTILE, J. *Rupture of Hepatic Abscesses into the Lung.*
17. PHILLIPS, L. *Sandfly Fever (Phlebotomus Fever or "Pappataciefieber") in Cairo.*
18. FINK, G. H. *Dysentery.*
19. MADDEN, F. C. *The Incidence of Bilharziosis in Egypt and Its Clinical Manifestations.*

20. Phillips, L. *Typhoid and Paratyphoid Fever in Egypt.*
21. Archibald, R. G. *Human Botryomycosis.*
22. White, G. D. *The Effect of a Mosquito Net on the Air Within It. (Based upon Eighty Analyses of the Air Inside and the Air Outside the Net.)*

Oct. 8, 1910.

1. Mott, F. V. *The Huxley Lecture on Hereditary Aspects of Nervous and Mental Diseases.*
2. *Hutchison, R. *The Schorstein Lecture on Congenital Pyloric Stenosis.*
3. Sprigge, S. S. *Prizes and Performances.*
4. Roughton, E. W. *Woman's Sphere in Medicine.*
5. Thorburn, W. *The Evolution of Surgery.*

British Medical Association.

Section of Medicine.

6. Philip, R. W. *Introductory Remarks.*
7. Edsall, D. L., *et al. Discussion on Acidosis.*
8. Goodhart, J. F., *et al. Discussion on Chronic Constipation and Its Treatment.*
9. Humphrey, L. *Aneurysm of the Aorta Communicating with the Superia Vena Cava.*
10. Humphrey, L., and Dixon, W. E. *A Case of Acromegaly with Hypertrophied Heart; Pressor Substances in the Urine.*
11. Mackintosh, J. S. *Evolution of Racial Types of Europe: Its Bearing on the Racial Factor in Disease.*
12. Guelpa, G. *Starvation and Purgation in the Relief of Disease.*
13. Harris, W. *The Injection Treatment of Neuralgia and Sciatica.*
14. Sayer, E. *The Effects of Electrical Currents upon Blood Pressure.*
15. *Wilkinson, W. C. *Tuberculin in Pulmonary Tuberculosis.*
16. Ewart, W. *On Percussion of the Vertebræ.*
17. Souttar, H. S. *An Improved Form of Gastroscope.*
18. Hill, L. *The Influence of Air in Treatment.*

Section of Surgery.

19. Lane, W. A., *et al. Discussion on the Operative Treatment of Simple Fractures.*
20. Wickham, L. *Radium in the Treatment of Cancer.*
21. Martell. *A New Trephine.*

2. Hutchison, discussing congenital pyloric stenosis and its treatment, is of the opinion that all cases should be treated medically at first. He finds it very hard to decide which cases should be treated medically and which surgically; he believes a period of medical treatment alone can decide this, but that it should not be carried on too long if there is no improvement and the child's strength exhausted before handing the case over to the surgeon.

15. Wilkinson repeats his previously expressed views in enthusiastic praise of tuberculin as a most potent agent in the cure of all forms of pulmonary tuberculosis. He believes that in the majority of cases the sanatorium only partially finishes its work, discharging patients not cured who soon relapse. According to him, tuberculin is a much more important factor. Sahli, of Berlin, corroborates his remarks; others do not agree in regard to what he calls the failure of the sanatorium. R. W. Philip, in discussing both points of view, presents a sane and moderate statement of this question. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 40.

Oct. 6, 1910.

1. Pagel, J. *The Berlin Medical Faculty in Its First Hundred Years.*
2. Waldeyer, W. *Results in the Science of Anatomy in the Berlin Faculty during the First Hundred Years of Its Existence.*
3. Schwalbe, J. *The Medical Share in the Foundation of the University of Berlin.*
4. Freund, W. A. *What has German Medicine in the Nineteenth Century Added to the General Advances of Culture?*
5. Haeckel, E. *The Boundaries of Natural Science.*
6. Ribbert. *Sickness.*
7. Wassermann, A. V. *The Influence of Specificity on Modern Medicine.*
8. Hegar. *Disturbances in Development.*
9. Erb, W. *Clinical Casuistics from Practice. The Difficulty in Diognosing Progressive Muscular Dystrophy.*
10. Killian, G. *The Teaching in Regard to Reflex Neuroses from the Nose.*
11. Mamlock, G. *The Fiftieth Anniversary of the Founding of Friedrich Wilhelms University in Berlin in October, 1860.*

This number of the journal is taken up almost exclusively with an historic sketch of the progress made by the faculty of medicine at Berlin. It is in honor of the one hundredth anniversary of the establishment of that faculty. The article by Pagel is especially complete and covers the advances in most of the departments of the faculty. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 32.

Aug. 9, 1910.

1. *v. Bergmann, G., and Guleke, N. *Theory of Pancreatic Poisoning.*
2. v. Franqué, A. *Artificial Abortion and Vaginal Cæsarean Section for Habitual Death of the Fetus.*
3. Klingmüller. *Treatment of Gonorrhea in the Male.*
4. *Blum, L. *Treatment of Sciatica by Epidural Injections.*
5. Bergel, S. *Relation of Lymphocytes to Fat Splitting and Bacteriolysis.*
6. Viganò, L. *Specificity of the Meiostagmin Reaction in Typhoid.*
7. Solger, F. B. *Pictorial Representation of Primitive Man and Its Scientific Value.*
8. Küster, H. *Treatment of Transverse Impacted Fetus by Rhachiotomy.*
9. Mainzer, J. *A New Obstetrical Instrument.*
10. Polland, R. *Novoiodin, a New Substitute for Iodoform.*
11. Stromeyer, F. *Cryptogenetic Tetanus.*
12. *Graupner. *Nephritis in Basedow's Disease.*
13. Weber, A. *An Automatic Apparatus for Developing X-Ray Plates.*

1. v. Bergmann reviews the experimental work on pancreatitis and gives additional experimental evidence in favor of his theory of its origin. He then reiterates his conclusions, namely, that by autolysis of the pancreas a deadly poison may be produced both in man and in animals; that this autolysis may take place either when the pancreas is *in situ* or when a piece of sufficient size has been placed free in the peritoneal cavity; that a fatal poisoning may also be produced by the pancreatic juice of the same or of another animal or by commercial preparation of trypsin; that protection against this poisoning may be developed by preparatory injection of preparations of trypsin; but that neither trypsin nor steapsin of themselves cause the poisoning.

4. Blum describes his technic of epidural injection and recommends it for certain obstinate forms of sciatica and for a variety of other conditions. He says it is more effective than perineural injection, almost painless and free from danger. The canula is inserted through the lower sacral foramen and carried up several centimeters into the sacral canal but high enough to enter the dural sac.

12. The writer states that in severe cases of Basedow's disease hyperplasia of the thymus, lymph glands, spleen, and of lymphatic tissue in the thyroid and bone marrow may be observed, and that as a terminal condition there may be a severe toxic nephritis with necrosis of epithelium. [G. C. S.]

No. 33. Aug. 16, 1910.

1. *Döderlein, A. *Origin and Prevention of Puerperal Fever.*
2. Iversen, J. *Treatment of Syphilis with Ehrlich's "606."*
3. Taege, K. *Successful Treatment of a Nursing, Syphilitic Infant by Giving the Mother "606."*
4. Jacob, L. *Treatment of Typhoid with Pyramidon.*
5. Eschbaum. *Observations on Meningitis Cerebrospinalis Epidemica.*

6. *FRÄNKEL, J. *Results of the Crawling Treatment.*
7. *BECK, E. G. *Diagnostic and Therapeutic Value of Bismuth Paste in Chronic Suppuration.*
8. SAATHOFF, L., AND WIGGER. *The Personal Equation in Tuberculin Treatment.*
9. ENGEL, H. *Defervescence of Tubercular Patients under Koch's Old Tuberculin.*
10. BRAUS, H. *Experimental and Embryological Aspects of the Etiology of Congenital Luxation.*
11. HARNACK, E., AND HILDEBRANDT, H. *B. Chloromorphid as Companion and Antagonist of Apomophine.*
12. NEUMAYER, V. L. *Treatment of Suppuration with Crystalline Potassium Permanganate.*
13. ERKES. *Nösske's Method for Severe Injuries of the Extremities with Imminent Gangrene.*
14. DRIVER. *A New Eye-Dropper.*
15. GOLDFLAM. *Intermittent Limp.*

1. Döderlein emphasizes the loss of life that might be avoided by greater cleanliness in the handling of puerperal cases and makes a strong plea for the universal use of rubber gloves in this work.

6. The writer reports much improvement in cases of scoliosis in which the crawling treatment was tried.

7. Beck discusses fully the uses of bismuth paste in suppurative conditions. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 41.

OCT. 10, 1910.

The Hundredth Anniversary of the Royal University of Friedrich-Wilhelm in Berlin.

This entire number is devoted to the development of the medical departments of the university and consists of historical articles by the members of the faculty. [J. L. H.]

DEUTSCHE ZEITSCHRIFT FÜR CHIRURGIE. BD. 105.

HEFT. 3–6. JUNE–JULY, 1910.

11. *BIERMANS, A. *The Operative Treatment of Hirschsprung's Disease.*
12. FRANKE, F. *Cure of Multiple Cholangitic Liver Abscesses by Drainage of the Gall Bladder, with Remarks on the Drainage of the Biliary Passages (Cholecystodochostomy).*
13. *MÜHSAM, R. *The Use of the Murphy Button in the Large Intestine.*
14. VOECKLER, T. *The Question of Primary Appendiceal Carcinoma.*
15. SCHLICHTING, F. *Hard, Traumatic Edema of the Dorsum of the Hand.*
16. LOSSEN, W. *Cases and Pathogenesis of Appendicitis Due to Foreign Body.*
17. v. STUBENRAUCH. *Plastic Repair of Ureteral Defects in the Female.*
18. HAIM, E. *Volvulus of the Small Intestine as a Late Sequel of Appendicitis.*
19. SONNENBURG, E. *Diagnosis and Treatment of the Early Stage of Acute Appendicitis.*
20. SIEGMUND, A. *Thyroid and Wound-Healing.*
21. GRUNERT. *Indirect Fractures of the Fibular Shaft.*
22. *ZIEGNER, H. *The Coxitic Dislocations of Early Childhood.*
23. Brief Communications:
    a. PIAZZA-MARTINI, V. *Diagnosis of the Adhesions of Large Abdominal Tumors to the Anterior Abdominal Wall by Means of Auscultation.*
    b. THÖLE. *Knitted Sleeve for Operating Gowns.*
    c. THIEDE, W. *A Case of Perforation of a Gastric Carcinoma into the Free Abdominal Cavity.*
24. RETZLAFF, O. *Late Sequelæ of Epityphlitis.*
25. ZESAS, D. G. *Duodenal Ulcer and Its Surgical Treatment.*
26. STREMPEL. *Hot-Air Treatment after Laparotomies as a Means of Exciting Peristalsis, with a Contribution to the Prevention of Postoperative Peritonitis.*
27. *STUCKEY, L. *The Knowledge of Retrograde Incarceration.*
28. KLAPP, R. *A New Method of Operative Intestinal Closure.*
29. SCHREIBER, R. *The Treatment of Syndactyly.*
30. ISELIN, H. *Gunshot Wounds of the Heart.*
31. CANESTRO, C. *Late Intestinal Hemorrhages after Operation for Strangulated Hernia.*
32. Brief Communications:
    a. UMBREIT. *Compound Traumatic Epiphyseal Separation of Both Bones of the Forearm.*
    b. UMBREIT. *Hemorrhagic Glossitis in Hemophilia.*

11. After reviewing the literature of previously reported cases, Biermans records four cases of megacolon treated surgically. From his study of the subject he concludes that such patients should always be first examined carefully for sphincteric spasm and for abnormal valve-formation in the rectum. In megasigmoid he advises resection at two sessions. In congenital idiopathic megacolon he recommends colo-anastomosis, followed by resection. Volvulus or profuse diarrhea he considers imperative operative indications.

13. Mühsam reports 13 cases in which the Murphy button was used 14 times in making anastomoses of the large intestine, and from his experience concludes:

(*a*) That the Murphy button is suitable and justifiable for such use.

(*b*) That the risk of leakage is no greater than in suture anastomosis.

(*c*) That the principal danger is closure of the button by feces or foreign bodies.

(*d*) That early post-operative evacuation of the bowel is desirable.

(*e*) That at the slightest evidence of intestinal obstruction, the anastomosis should be inspected.

(*f*) That the advantages of employing the Murphy button are its relatively easy technic and shortening of the operation.

22. Ziegner presents a study of six cases, with excellent x-rays, from which he concludes that the coxitis of early childhood is usually an osteomyelitic metastasis, and generally appears in infancy. Coxitic dislocations he considers are principally spontaneous dislocations following rapid and extreme distention of the capsule, which after a time come to resemble congenital dislocations, and should be treated on the same principles. Even when there is extensive destruction of the upper epiphysis, he believes that the prognosis of the replaced hip is favorable. Prophylactically wide prompt incision is indicated in every suppurative coxitis of early childhood.

27. Stuckey collects from the literature 35 previously reported cases of retrograde intestinal incarceration, to which he adds 4 from his own observation; and from a study of this series reaches the following conclusions:

(1) The exact cause of retrograde incarceration is unknown.

(2) The rapidly progressive gangrene of the incarcerated coils depends on one of the following conditions: (*a*) The cutting off of the mesenteric vessels within the abdominal cavity by kinking. (*b*) The double strangulation of the mesentery in the hernial ring. (*c*) The cutting off of the vessels of the cecum and lower section of the ileum by kinking.

(3) The most reliable symptoms of retrograde incarceration are tenderness and local distention of the bowel directly overlying the hernia.

(4) Attempts at taxis in strangulated hernia should be absolutely rejected. The only rational treatment is immediate operation. [R. M. G.]

REVUE DE MÉDECINE.

SEPTEMBER, 1910.

1. PETRÉN. *Observation on the Treatment of Sciatica and Morbus Coxæ Senilis.*
2. CATOLA. *Investigations on the Central Nervous System of Children of Infirm Parents and Considerations of Pathological Predisposition.*
3. MARIE AND BEAUSSART. *Serum Diagnosis in Tuberculosis and the Etiology of Mental Diseases.*
4. *BERTIN AND GAYET. *Hereditary Syphilis and the Wassermann Reaction.*
5. *SALMON. *Pathological Sleep.*

4. Bertin and Gayet emphasize the importance of the serum reaction for syphilis in those cases of hereditary disease which lack the classical signs of the process. Hutchinson's triad is often absent, as well as the ordinary

tertiary lesions. The search for spirochetæ and the Wassermann reaction enable far more diagnoses than were made formerly.

5. In a most interesting article Salmon considers the conditions and causes of normal and pathological sleep. The physiological process is due to the stimulation by toxic products of metabolism of the sleep function in a stimulus which is normally neutralized by the glands of internal secretion, the hypophysis in particular. Normal sleep is not so profound that we cannot be roused at once and take on the proper functions of the body without pause.

But a morbid process exists, — "hypersomnie," — which is characterized by deep sleep at night, superseded by constant drowsiness during the day. Such individuals are difficult to rouse and tend at once to resume the deep sleep at any time, even during any of the voluntary activities of the body. Such a condition is found in the presence of excessive secretion of the hypophysis, diminished thyroid, ovarian and testicular secretion; as well as with tumors at the base of the brain or the vault of the pharynx, causing irritation of the hypophysis. The passive cerebral congestion found in persons subjected to rarefied air and that following epileptic seizures causes a toxic action, which results in an excessive and abnormal sleep.

This pathological sleep, unlike the physiological process, is the result of toxic substances which are present from overproduction, or from the failure of the internal glands to neutralize such poisons. These substances penetrate to the brain itself and cause chromatic hypersecretion.

[L. H. P.]

Il Policlinico.

September, 1910.

MEDICAL SECTION.

1. Bocci, B. *Critical and Experimental Studies Concerning Certain Controversial Questions in Physiology.*
2. Frugoni, C. *Clinical Studies on Alterations of the Respiratory Rhythm, with Special Reference to the Anginal and Neurotic Forms.*
3. *Giulio, P. *A Case of Acute Yellow Atrophy of the Liver Following Acute Alcoholic Intoxication.*

3. Giulio reports a case of acute yellow atrophy of the liver from Genoa. The total duration of the disease wa one week, and from the onset of grave symptoms (con vulsions, coma and collapse) three days. There was noth ing unusual in the case which is of interest only from the standpoint of etiology. Acute parenchymatous hepatitis can be produced by a number of pathogenic agencies which may be classified as follows:

(1) Infections — streptococcus, staphylococcus, B. coli and others.

(2) Auto-intoxications — from abnormal products of metabolism.

(3) Poisons — phosphorus, chloroform, alcohol.

This patient was an alcoholic and had just been through an acute intoxication. Chronic alcoholism is universally recognized as a predisposing cause of acute yellow atrophy because of its degenerating effect on the liver cells. Less well recognized is the influence of acute alcoholism as an exciting cause of this disease. [L. D. C.]

SURGICAL SECTION.

1. Gabaglio, R. *Fractures of the Carpal Scaphoid.* (To be continued.)
2. *Sabella, P. *Bilateral Ectopia and Sarcoma of the Testicle.*

2. Sabella reports an unusual case of bilateral complete retention of the testes, in which at the age of twenty-three there developed in each of the glands a tumor which, on removal by laparotomy, proved to be large round-cell sarcoma. At the end of a year after the operation there is no sign of recurrence or metastasis. In his discussion of the subject of ectopia testis, the author classes the varieties of retention as abdomino-lumbar (as in his case), iliac, inguinal and cruro-scrotal, the varieties of ectopia being sub-abdominal, crural and perineal. Pathogenetically he believes that malignant tumors of such retained or misplaced testes arise from the interstitial cells of the organ.

[R. M. G.]

Miscellany.

ARMY MEDICAL CORPS EXAMINATION.

The Surgeon-General of the Army announces that the first of the preliminary examinations for the appointment of first lieutenants in the Army Medical Corps for the year 1911 will be held on Jan. 16, 1911, at points to be hereafter designated.

Full information concerning the examination can be procured upon application to the "Surgeon-General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practice after graduation. The examinations will be held concurrently throughout the country at points where boards can be convened. Due consideration will be given to localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

The examination in subjects of general education (mathematics, geography, history, general literature and Latin) may be omitted in the case of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools, or graduates of medical schools which require an entrance examination satisfactory to the faculty of the Army Medical School.

In order to perfect all necessary arrangements for the examination, applications must be complete and in possession of the Adjutant-General on or before Jan. 3, 1911. Early attention is, therefore, enjoined upon all intending applicants. There are at present seventy-six vacancies in the Medical Corps of the Army.

MEASLES AMONG THE ALEUTS.

The captain of the United States revenue cutter *Tahoma*, flagship of the Behring Sea patrol fleet, has recently reported at Port Townsend, Wash., that the native inhabitants of the Aleutian Islands are being rapidly exterminated by measles, tuberculosis and pneumonia. This affords another interesting illustration, like the history of the Kanakas in Hawaii, of the exalted, almost pestilential virulence assumed among primitive aborigines by infections of which civilized man has from long exposure acquired greater tolerance. Measles particularly, that "domestic cat among diseases," as Dr. Woods Hutchinson has called it, seems to recover among such peoples as the Aleuts pristine qualities that emphasize its relationship to the severer exanthemata. It has been recommended that the native population of the Aleutian Islands be assembled at suitable stations and placed under competent medical surveillance in the effort to check the ravages of these diseases until such time as a natural partial immunity to them may perhaps be developed.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, OCT. 29, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,171	374	Waltham	10	1
Chicago	517	147	Pittsfield	11	1
Philadelphia	—	—	Brookline	9	0
St. Louis	—	—	Gloucester	5	1
Baltimore	—	—	North Adams	7	1
Cleveland	—	—	Northampton	3	0
Buffalo	—	—	Chicopee	9	4
Pittsburg	—	—	Medford	2	1
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster	2	1
Washington	—	—	Hyde Park	4	3
Providence	—	—	Melrose	5	0
Boston	203	56	Newburyport	7	—
Worcester	45	10	Revere	3	1
Fall River	28	14	Westfield	4	1
Cambridge	24	7	Woburn	2	0
Lowell	36	16	Peabody	5	1
New Bedford	30	19	Marlboro	3	0
Lynn	15	2	Attleboro	5	3
Springfield	19	5	Adams	3	1
Lawrence	22	8	Clinton	3	1
Somerville	16	3	Gardner	6	3
Brockton	12	5	Milford	5	0
Holyoke	21	8	Watertown	2	2
Malden	8	3	Plymouth	—	—
Chelsea	13	3	Southbridge	6	2
Newton	10	3	Weymouth	—	—
Salem	15	6	Framingham	1	0
Haverhill	9	1	Wakefield	—	—
Fitchburg	7	4	Webster	5	2
Everett	7	1	Arlington	6	—
Quincy	—	—	Greenfield	3	2
Taunton	11	—			

APPOINTMENTS.

The following appointments have been made to the staff of the Rockefeller Institute for Medical Research: Francis Henry McCrudden, M.D., Chemist to the Hospital; Thomas S. Githens, M.D., Fellow in the Department of Physiology and Pharmacology; James B. Murphy, M.D., Fellow in the Department of Pathology and Bacteriology; A. R. Dochez, M.D., Bacteriologist to the Hospital; F. Medigreceanu, M.D., Laboratory Assistant to the Hospital; W. H. Manwaring, M.D., Assistant in Pathology.

SOCIETY NOTICES.

THE NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — This society will meet at the Kensington Chambers, corner Boylston and Exeter streets, Room 203, on Thursday, Nov. 17, 1910, at 7.30 o'clock. Section of Surgery, Dr. Elizabeth T. Gray, chairman. Subject: Cæsarean Section. 1. "Short Résumé of the History of Cæsarean Section," Dr. E. T. Gray. 2. "Indications for Cæsarean Section, from the Obstetrician's Standpoint," Dr. Mary F. Hobart. 3. "Technique of the Operation," Dr. Mary A. Smith. 4. "The Immediate Results of Cæsarean Section," Dr. John T. Williams. 5. "The End Results of Cæsarean Section," Dr. Nathaniel R. Mason.

DR. BLANCHE A. DENIG,
Secretary.

NEW ENGLAND PEDIATRIC SOCIETY. — The twelfth meeting of the New England Pediatric Society will be held in Sprague Hall, Boston Medical Library, on Saturday, Nov. 26, at 8.15 P.M. 1. Business and nomination of officers. 2. "The Youthful Psychopath," J. W. Courtney, M.D., Boston. 3. "Proctoscopy and Sigmoidoscopy in Infancy as applied to Ileo-Colitis" (Preliminary report), Henry I. Bowditch, M.D., Boston. 4. "Examination of Spinal Fluids in Various Meningeal Conditions in Children," Wm. P. Lucas, M.D., Boston. 5. "Exhibition of a Fetal Monstrosity," James R. Torbert, M.D., Boston. 6. Election of officers. Light refreshments will be served after the meeting.

CHARLES P. PUTNAM, M.D., *President.* FRITZ B. TALBOT, M.D., *Secretary.*

ESSEX SOUTH DISTRICT MEDICAL SOCIETY. — The second meeting of the year will be held at the Belmont Hotel, Gloucester, Tuesday evening, Nov. 15. Dr. George C. Smith, of Boston, will speak on the "Treatment of Chronic Cardiac Affections." Dinner will be served promptly at 6.45 P.M.

GEORGE H. CRAY, M.D., *President.* WALTER G. PHIPPEN, M.D., *Secretary.*

AMERICAN ACADEMY OF MEDICINE. (Specializing in Medical Sociology.) — The fourth mid-year meeting will be held at the Lafayette Hotel, Buffalo, Thursday, Dec. 1, and Friday, Dec. 2, 1910, being a conference on "The Sociologic Influence of Hospitals and Dispensaries." Members of the profession and all others interested in the subject of the conference are invited to be present.

CHARLES McINTIRE, M.D., *Secretary,*
Easton, Pa.

BOSTON SOCIETY FOR MEDICAL IMPROVEMENT. (A Memorial and Historical Society.) — A meeting of the society will be held in Sprague Hall, Boston Medical Library, on Monday evening, Nov. 14, 1910, at 8.15. Program: "The Doctrine of Vitalism in Medicine," Dr. M. G. Seelig, St. Louis. Memorial meeting to Dr. H. L. Burrell. Speakers: Dr. E. H. Bradford, Dr. F. S. Watson, Dr. G. H. Monks. The members of the Suffolk District Medical Society are cordially invited to be present.

J. G. MUMFORD, M.D., *President.* DANIEL FISKE JONES, M.D., *Secretary,*
195 Beacon Street.

SOUTH BOSTON MEDICAL SOCIETY. — This society will hold its regular meeting, Monday, Nov. 14, in Hobah Hall. The paper for the meeting will be read by Medical Examiner Magrath. Subject: "Medico-Legal Advice in Massachusetts for General Practitioner." Refreshments will be served.

FRED N. STUART, M.D., *President.* JOHN C. ROGERS, M.D., *Secretary.*

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY. — Medical section meeting, John Ware Hall, Wednesday, Nov. 16, 1910, at 8.15 P.M. "Acute Poliomyelitis," John Lovett Morse, M.D. Discussion by Drs. R. W. Lovett, W. E. Paul and W. P. Lucas.

EDWIN A. LOCKE, M.D., *Secretary,*
311 Beacon Street.
HENRY JACKSON, M.D., *Chairman,*
380 Marlborough Street.

RECENT DEATHS.

DR. EDWARD HOLMAN HAMILL, who died on Oct. 30 at Chatham, N. J., was born in Alabama in 1843. He served throughout the Civil War as a captain in the Confederate Army. For some years past he had been consulting medical director of the Prudential Insurance Company of Newark, N. J.

DR. WILLIAM S. SEARLE, who died last week in Brooklyn, N. Y., was born in 1833. He was a graduate of the University of Pennsylvania and a founder and former vice-president of the New York State Board of Medical Examiners. He had practised medicine in Brooklyn since 1870. He is survived by three daughters and two sons.

DR. JOHN H. NESBITT, of New York, committed suicide by shooting, on Oct. 27, on board the White Star steamer *Arabic*, while on his way to England. He was suffering from nervous breakdown and had gone abroad in the hope of regaining his health. Dr. Nesbitt had been a police surgeon in New York for twenty-five years, and on account of his ill-health had been granted a two months' leave of absence from this service. He was born in New York City in 1854, and was graduated from the College of Physicians and Surgeons, New York, in 1875.

DR. CHARLES H. SHEPARD, of Brooklyn, N. Y., died on Oct. 29, in the eighty-sixth year of his age. He was graduated from the New York Medical College in 1859, and, notwithstanding his advanced age, was in active practice up to the time of his last illness.

DR. ROBERT HUNTER DUNCAN, of Brooklyn, N. Y., died on Oct. 31, at the Jamaica (Long Island) Hospital, from Bright's disease. He was born at Barrington, Nova Scotia, in 1862, and was a graduate of the Mount Ellison University at Sackville, New Brunswick, and of the College of Physicians and Surgeons of Baltimore. He later continued his medical studies in Edinburgh, Scotland, and for several years he was a ship's surgeon on the Pacific Mail line of steamers.

DR. CHARLES B. CURRAN, of Brooklyn, N. Y., died from pneumonia on Nov. 1. He was born in Brooklyn on Dec. 23, 1872, and was graduated from the Long Island College Hospital in 1893. For some time he served on the staff of St. Mary's Hospital, Brooklyn, and for fifteen years was an inspector in the Health Department.

DR. MICHAEL B. VAN BUSKIRK, of Aurora, Cayuga County, N. Y., died at the residence of his daughter in New York City on Oct. 30. He was graduated from the medical department of the University of New York in 1866.

DR. PAUL T. KIMBALL, a well-known physician of Lakewood, N. J., died suddenly from cardiac disease, on Nov. 2. He was a brother of Dr. Reuel B. Kimball, of New York, and forty-eight years of age. He was graduated from the College of Physicians and Surgeons, New York, in 1887, and afterwards served as interne at both the New York and the Woman's hospitals.

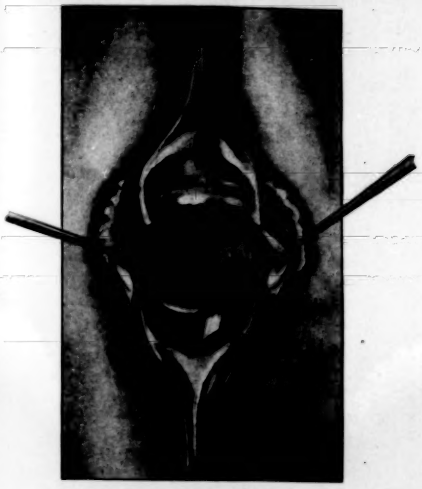


FIG. 1. Acquired atresia of the vagina showing pinhole opening where the septum had been incised for the relief of symptoms at the time of puberty.

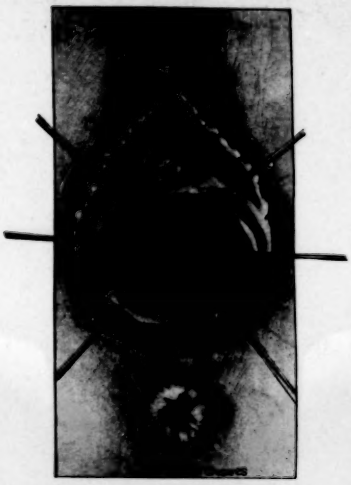


FIG. 2. Operation for acquired atresia of the vagina. The transverse septum has been dissected out, and the upper portion of the mucous membrane of the vagina united to the lower by interrupted catgut sutures.



FIG. 3. Operation for congenital absence of the vagina. The four flaps taken from the labia minora and the thighs are approximated over a glass form. The wounds where the flaps were removed are represented as sewed up with interrupted sutures. The pouch made by the four flaps is turned into the opening previously made by separating the bladder from the rectum.



FIG. 4. Operation for congenital absence of vagina. The glass form has been removed and the seams of the pouch completely sewed. The untied sutures seen issuing from the pouch were previously passed through the vault of the artificial opening made between the bladder and rectum. The pouch is inverted into the artificial opening and the stitches tied so as to prevent any prolapse of the pouch before it heals to the raw surface of the opening.

Original Articles.

OPERATIVE TREATMENT OF ATRESIA OF THE VAGINA.*

BY W. P. GRAVES, M.D., BOSTON.

ATRESIA of the vagina may be either acquired or congenital. The acquired form is by far the more common, being the result of an extensive adhesive vaginitis. Congenital atresia is due to defective embryological development and is always accompanied by other defects involving the genital organs.

ACQUIRED ATRESIA OF THE VAGINA.

The majority of cases of this condition represent the end result of a long-continued plastic vaginitis usually gonorrheal in origin and acquired before the age of puberty. The vaginal mucous membrane of the adult is peculiarly resistant to the gonococcus, and is rarely infected excepting secondarily, and then not frequently. The delicate undeveloped vaginal mucous membrane in the child, on the other hand, is extremely susceptible to a gonococcal infection, which causes a peculiarly profuse purulent vaginitis and one that persists with much obstinacy. Such a vaginitis on healing has a great tendency to plastic adhesions of the vaginal walls. The most common situation for these adhesions to take place is at the junction of the anterior and middle third of the vagina where the two walls are normally in constant contact. In this way the vagina becomes completely occluded, and when menstruation is established the catamenial flow is obstructed and retained in the vaginal pouch behind the adhesion. As this accumulation increases each month, pressure is exerted on the cicatricial adhesion, and it is gradually stretched out into a well-marked membrane or diaphragm, which under sufficient pressure from behind may protrude from the vaginal orifice. Sometimes the anterior and posterior walls of the vagina may be completely glued together throughout the whole length of the vagina, a condition which is illustrated by Case 4 of this article. The plastic adhesion may take place at the orifice and cause atresia of the hymen, or the labia may be glued together and the vulva completely obliterated. Such conditions are due to the fact that, in all cases of purulent vaginitis in children, the vulva is involved, and is probably often the primary locus of infection, the epithelium of the vulva, like that of the vagina, being extremely susceptible to infection in children while very resistant in the adult. The present paper is confined to only those cases where the adhesion takes place in the vagina.

Acquired atresia of the vagina may also occur in adult women and may be the result of adhesions forming after a vaginitis following severe lacerations at childbirth. Adhesions from this cause usually occur much higher up in the vagina, and sometimes may include only the cervix, in which case atresia of the cervical canal results. Senile vaginitis is not an uncommon cause of atresia of the vagina, but does not usually give rise to serious trouble because of the absence of menstruation. It sometimes happens, however, that secretions may collect behind an atresia even in women who have passed the menopause, and such a condition is illustrated by Case 3.

When the atresia has been acquired in early childhood, symptoms do not ordinarily manifest themselves until the age of puberty, though Kelly reports the case of a child where a large amount of mucus accumulated behind the atresia, causing a considerable tumor and indicating the necessity for an operation. At puberty the menstrual blood accumulates in the vagina behind the adhesive membrane, distends it and makes a tumor. If the condition is not relieved, the accumulation of blood added to by each menstrual period gradually distends first the vagina and then the uterus, and a very large tumor occupying a considerable portion of the abdominal cavity may be formed. In severe cases, as in Case 4, a double hematosalpinx may form. The pain is at first periodic, but may become continuous as the tumor enlarges.

The operation for atresia is one that is attended with considerable danger of fatal sepsis, and every precaution should be taken to prevent infection. After evacuating the old menstrual blood, which is always of a thick tarry consistency, the cavities of the vagina and uterus should be most carefully irrigated. Where there is a definite membrane occluding the vagina, the method of operation is of extreme importance. Cases 1 and 2 illustrate well the results which may ensue after an operation which consists only of an incision in the occluding membrane and the evacuation of the contents. The opening made by such an incision sometimes closes up entirely, but more often results in one or more pinhole apertures through which the menstrual blood may partially flow. A certain amount of mucus and blood is dammed back into the vagina, becomes foully infected and produces the dire results seen in Cases 1 and 2. In order to leave the vagina in a permanently normal condition the occluding membrane should be completely dissected out and the wound edges approximated with great care. Such a wound will heal up by first intention even in the face of a badly septic discharge. The details of the operation for dissecting out an occluding membrane are as follows:

OPERATION FOR ACQUIRED ATRESIA OF THE VAGINA.

After the septum has been incised and the contents of the space beyond have been removed, there should be a thorough cleansing of the parts. The edges of the septum should then be trimmed flush with the walls of the vagina. All scar tissue should be removed so as to prevent a future contraction. When the septum has been completely cleared away it will be found that there remains a denuded area which extends like a ring around the inner circumference of the vagina. The

* The drawings illustrating this article have been previously published in the *American Practice of Surgery*, vol. vi.

mucous membrane of the upper portion of the vagina should then be drawn down and approximated to that of the lower portion by interrupted catgut sutures. Such an operation should restore perfectly the normal caliber of the vagina and should not be followed by a tendency to the development of a stricture. The use of antiseptic douches twice or three times daily should be begun the day after the operation and should be kept up until the discharge completely disappears.

The following are four cases of acquired atresia which have occurred in my experience.

CASE 1. Mrs. A., age forty-five. Referred by Dr. Charles N. Cutler. Patient gave a history of a long-continued severe vaginitis at the age of ten, following an injury to the external genitals from falling astride a fence. At the time of puberty she had the usual symptoms of atresia, namely, great pain at the time for a monthly period, but without appearance of blood. She was operated upon, the operation apparently consisting of a puncture of the occluding membrane with an evacuation of the secretions. The patient was married at about the age of twenty-four. She menstruated regularly from the time of the operation, the menstrual flow being sometimes foul. When I saw the patient she was suffering from an extremely severe pruritus vulvæ. Examination showed a white leathery appearance of the external genitals which represented an early stage of the condition called kraurosis. Vaginal examination showed a well-developed membrane across the vagina situated at the junction of the outer and middle third. Through the membrane was a pinhole opening which doubtless represented the puncture which had been performed early in life. The patient had menstruated incompletely through this opening, and as the secretions, which were continuously partially dammed back by the occluding membrane, had become infected, a chronic pruritus had been caused by the irritating discharges. An operation was performed on the patient according to the method described above for acquired atresia, the contour of the vagina being entirely restored to its normal character. The condition of kraurosis, though relieved for a time, continued, however, to develop and necessitated a complete removal of the vulva, by which the patient was entirely cured.

CASE 2. Miss L., age twenty-two. Referred by Dr. Charles N. Cutler. Patient had a history of early vaginitis, monthly pain without blood at the age of puberty, and an operation of puncture of the vaginal membrane with evacuation of contents of the vagina. The patient menstruated incompletely and had frequent discharges of such a foul nature that she was extremely offensive to people about her. Examination showed a condition exactly like that of Case 1, namely, a membrane at the junction of the middle and outer third of the vagina, with a pinhole opening through which exuded a purulent discharge of a nauseating odor. An operation was performed by the method described above, a large amount of bloody purulent material being evacuated from the upper portion of the vagina, which had been distended. The vaginal mucous membrane showed a condition of the most severe inflammation. The wound of the operation healed by first intention and the patient after a period of local treatment for the inflamed vaginal mucous membrane made a complete recovery.

CASE 3. Mrs. M., age fifty-one. Referred by Dr. Charles N. Cutler. This patient had had several attacks of severe pelvic pain which were relieved after the sudden discharge of a large amount of mucopurulent matter. Examination of the patient showed that she had had a plastic vaginitis of the upper part of the vagina so that the cervix was entirely occluded. Pelvic examination showed that the patient also had evidences of an old pelvic inflammatory disease. The cervical canal was opened without ether, and after an unsuccessful attempt to keep the canal patent, I decided to perform an hysterectomy. The pelvis was found full of old adhesions. The pelvic organs were removed and the patient made a good recovery.

CASE 4. Miss E., age fourteen. Previous to my seeing her this patient had had two operations for supposed congenital atresia of the vagina. She had the typical symptoms of atresia accompanying functionating pelvic organs. Examination showed occlusion of the vagina less than an inch from the introitus. Rectal examination showed a very large tender uterus with tubal masses on both sides of the pelvis. There were signs of a mild pelvic peritonitis, and the patient was running some temperature. At the operation the anterior and posterior walls of the vagina were found completely glued together and the surfaces were separated with considerable difficulty. When the vault of the vagina was reached, no signs of a cervix or of a cervical canal could be seen. The cervical canal was found after much trouble and the uterus was evacuated of a large amount of dark, semi-fluid material. The uterine cavity was thoroughly irrigated. An incision was then made in the median line of the abdomen and both tubes were found to be enormously distended with blood. There was some pelvic peritonitis. The tubes were removed and the pelvis was drained. This operation did not prove satisfactory as it was found impossible to keep the cervical canal patent. A glass-stem pessary was kept in the uterus several times for long periods. The pessary, however, kept up an inflammatory condition and the cervical canal each time closed up within a few days after its removal. The patient's condition finally became a serious one, and it was necessary to perform an hysterectomy, which was followed by a complete recovery. Although this case had been pronounced one of congenital atresia by several surgeons who had seen her, I have classified it as of the acquired type, as all the pelvic organs were perfectly normal. Although no history could be gained, this girl unquestionably had had a vaginitis in childhood which had caused a complete atresia of the whole length of the vagina.

CONGENITAL ATRESIA.

Many cases of congenital atresia do not require operation because they are frequently associated with defective development, or partial absence of the internal pelvic organs, so that menstruation has not been established. It sometimes happens, however, that secondary sexual characters are normally developed, and operation for the purpose of coition is demanded by the patient. In other cases the internal pelvic organs may functionate normally, and it is important to establish an artificial vagina for the purpose of drainage. The establishment of a permanent artificial vagina is a matter of extreme difficulty, and only a few successful cases have been reported. The operation described in this article is based on successful operations by Burrage and Abbey, in which flaps were turned in from neighboring areas. One writer has been successful in grafting in the vaginal tissue removed from a case of cystocele. The following is the technic of the operation which I

have devised for congenital atresia based on the operations of Burrage and Abbey, and which in the only case where I have had an opportunity to try it was successful.

The patient is placed in the perineal position. A superficial transverse incision is made just below the urethra. Through this transverse slit the bladder and rectum are slowly dissected apart with the finger. The forefinger of the left hand should be kept in the rectum, and some blunt instrument like a urethral dilator should be held in the bladder by an assistant. The dissection should be carried by the right forefinger, the left forefinger behind and the blunt instrument in front acting as guides to prevent tearing into the wall of the rectum or bladder. In this way an artificial opening can be made of the exact proportions of the normal vagina. Care should be exercised not to enter the abdominal cavity. The next step is to line this cavity with a pouch of skin made up of flaps turned in from the surrounding parts. To accomplish this, the two labia minora are dissected off, from above downward, in such a manner as to leave a pedicle sufficiently large to furnish good circulation. The two surfaces are then split apart so that two paddle-shaped flaps remain. There should then be dissected from the inner side of the thigh two similar flaps which have their bases at the two lower corners of the artificial opening. All four flaps are then sewed together over a glass form, as shown in the cut (Fig. 4). Before the flaps are sewed together several catgut sutures, with the ends left long, should be placed in the vault of the artificial cavity. When the skin pouch has been nearly completed, the glass form is removed and the catgut sutures are brought out through the skin pouch. The pouch is then inverted and the sutures are tied in such a manner that the pouch fits snugly into the artificial cavity.

The history of the case in which the preceding operation was successfully performed follows:

Miss M., age twenty-seven, was a young woman of apparently normal development and attractive appearance. She gave a history of never having menstruated. She had had normal sexual feelings and was engaged to be married. Examination showed normal development of breasts, hips and external genitals. Further examination revealed complete absence of the vagina, there not even being a dimple to indicate the introitus. By rectal examination no sign of uterus or ovaries could be felt.

The operation described above was performed, and the pouch formed by the turned-in flaps from the labia minora and from the thigh healed by first intention with the exception of a small area in the vault, and a permanent functionating vagina was established.

CANCER OF THE SCROTUM.

BY ROBERT M. GREEN, M.D., BOSTON.

CANCER of the scrotum, or chimneysweep's disease, was apparently first described as a pathologic entity in 1775 by Percivall Pott. In a pamphlet, or Chirurgical Observation, entitled "Cancer Scroti," he writes of it as follows:

"There is a disease peculiar to a certain set of people, which has not, at least to my knowledge, been publickly noticed; I mean the chimney-sweeper's cancer.

"It is a disease which always makes its first attack on, and its first appearance in, the inferior part of the scrotum, where it produces a superficial, painful, ragged, ill-looking sore, with hard and rising edges; the trade call it the soot-wart. I never saw it under the age of puberty, which is, I suppose, one reason why it is generally taken, both by patient and surgeon, for venereal, and, being treated with mercurials, is thereby soon and much exasperated; in no great length of time, it pervades the skin, dartos and membranes of the scrotum, and seizes the testicle, which it enlarges, hardens and renders truly and thoroughly distempered; from whence it makes its way up the spermatic process into the abdomen, most frequently indurating and spoiling the inguinal glands. When arrived within the abdomen, it affects some of the viscera, and then very soon becomes painfully destructive.

"The fate of these people seems singularly hard; in their early infancy they are most frequently treated with great brutality, and almost starved with cold and hunger; they are thrust up narrow and sometimes hot chimnies, where they are bruised, burned and almost suffocated; and when they get to puberty, become peculiarly liable to a most noisome, painful and fatal disease.

"Of this last circumstance there is not the least doubt, though perhaps it may not have been sufficiently attended to, to make it generally known. Other people have cancers of the same parts; and so have others beside lead-workers the Poictou colic and the consequent paralysis; but it is nevertheless a disease to which they are peculiarly liable; and so are chimneysweepers to the cancer of the scrotum and testicles.

"If there be any chance of putting a stop to or preventing this mischief, it must be by the immediate removal of the part affected, — I mean that part of the scrotum where the sore is, — for if it be suffered to remain until the virus has seized the testicle, it is generally too late even for castration. I have many times made the experiment, but though the sores, after such operation, have, in some instances, healed kindly, and the patients have gone from the hospital seemingly well, yet in the space of a few months it has generally happened that they have returned either with the same disease in the other testicle, or in the glands of the groin, or with such wan complexions, such pale, leaden countenances, such a total loss of strength, and such frequent and acute internal pains, as have sufficiently proved a diseased state of some of the viscera, and which have soon been followed by a painful death.

"If extirpation ever bids fair for the cure of a cancer, it seems to be in this case; but then the operation should be immediate, and before the habit is tainted. The disease, in these people, seems to derive its origin from a lodgement of soot in the rugæ of the scrotum, and at first not to be a disease of the habit. In other cases of a

cancerous nature, in which the habit is too frequently concerned, we have not often so fair a prospect of success by the removal of the distempered part, and are obliged to be content with means which I wish I could say were truly palliative; but here the subjects are young; in general in good health, at least at first; the disease brought on them by their occupation, and in all probability local, which last circumstance may, I think, be fairly presumed from its always seizing the same part: all this makes it (at first) a very different case from a cancer which appears in an elderly man, whose fluids are become acrimonious from time as well as other causes; or from the same kind of complaint in women who have ceased to menstruate. But be all this as it may, the scrotum is no vital organ, nor can the loss of a part of it ever be attended with any, the smallest degree of inconvenience; and if a life can be preserved by the removal of all that portion that is distempered, it will be a very good and easy composition, for when the disease has got head, it is rapid in its progress, painful in all its attacks and most certainly destructive in its event."

This passage has become a classic description of the disease, as vivid as it is accurate. Even before Pott's time, cases, evidently cancer of the scrotum, had been reported, by Bassius in 1731, and by Treyling in 1740. But it remained for the great English surgeon to name the condition and discuss its character as an occupation-disease, which has so closely connected it with his own city, London, the home of chimneysweeps.

Following Pott's article, the disease was generally recognized, and cases of it began to be reported from time to time. Everywhere it was regarded as an English disease, and its etiologic connection with chimneysweeping was unquestioned. Thus in 1835, James Syme, of Edinburgh, writes:

"Though this disease would seem to be not uncommon in London and other large towns, it is never met with in Edinburgh, except in persons who have begun to suffer from it elsewhere; and it is accordingly so rare here that during the whole period of my connection with the Infirmary, as student and surgeon, I have not seen an instance of it either there or in private. This immunity of the trade in Edinburgh from a complaint which constitutes a serious scourge to it in other places, seems at first sight easily accounted for by the mode of sweeping chimneys here, which is effected not by climbing boys, except in the case of some very few particularly constructed vents, but by letting down from the top a broom, to which a weight is attached, and which, being then alternately drawn up and allowed to descend, completely attains the object in view. But boys seldom climb after the age of puberty, as they then become too large for the purpose; while, according to Mr. Pott and other practical writers, the disease is hardly ever observed at an earlier period of life, and usually occurs at a much later one. The theory of the men themselves is, that the body, from being saturated or poisoned, as they express it, by the large quantities of soot they are forced to swallow in their youth, acquires a predisposition to the disease, which, however, seldom actually appears until about the middle period of life." In the case which he reports, however, the patient, "from being of small stature, and extremely thin wiry make, has never abandoned the practice of climbing, boasting that an aperture twelve inches by nine inches is quite sufficient for his passage. He became an apprentice at five years of age in London, and remained there sixteen years, afterwards having no settled residence, but traveling about from place to place."

The attribution of the disease to the swallowing of soot was, of course, a popular fallacy, in which Syme doubtless did not share. A more reasonable theory of its causation had indeed already been stated in 1808 by Sir James Earle, in his second edition of "The Chirurgical Works of Percivall Pott." In a footnote to the article on cancer of the scrotum, he says:

"From the soot being collected and remaining in the moist rugæ of the scrotum, it is not difficult to conceive why the disease should generally begin in that part; but I have seen the true soot-wart in the face of a chimneysweeper, just under the left eye, who had never suffered from the disease in any other part, though he said he had sometimes felt little hardnesses in the scrotum, which, when they grew troublesome, he picked off; but he had never perceived any sore, ulceration or considerable hardness in that part." And in a later note, he continues: "This species of cancer, which Mr. Pott has so accurately described, appears to be produced by some peculiar acrimonious quality in soot, when incorporated and fermenting on the skin of some persons whose constitutions are disposed to undergo a certain change, or receive a new modification of their inherent properties. As chimneysweepers are in the constant habit of being in contact with soot, it follows that they must be most liable to a disease which is evidently caused by it; but, as was before observed, those only whose constitutions are disposed to receive the poison are infected, not one in many hundreds being injured by it. Mr. Pott seemed to suppose that this species of cancer was peculiar to chimneysweepers, but I have strong grounds for thinking that he was mistaken in that idea. There are instances, though I believe them to be very rare (as I know no one, either author or practitioner, who has noticed them), yet there are instances of other persons being infected by the contact or effluvia of soot; and as a caution for every one to be careful of handling it, or in any way being exposed to its action, I will relate the case of a man who was attacked with this dreadful disease to a most lamentable degree and was brought into the hospital. The scrotum and testes, with the spermatic cords, together with the glands in the groin, were included in a large phagedenic ulcer. The nature of the disease was so marked and evident that I took for granted that he was a chimneysweeper, and was much surprised to find that his business was quite of another kind. I could not, however, avoid repeatedly asking him if he had ever had any thing to do with sweeping chimneys; he



Fig. 1.

Cancer of the scrotum. (Case IV.)

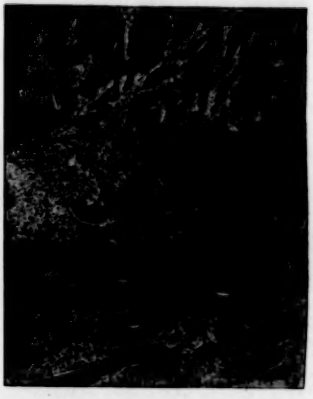


Fig. 2.

Cancer of the scrotum. *a*. Cancer tissue. *b*. Zone of fibrous thickening and round cell infiltration. *c*. Normal underlying tissue.



Fig. 3.

Cancer of the scrotum. (From specimen in the Warren Museum, Harvard Medical School.)

assured me not. Some time after he told me that, on considering the questions which I had so often urged, he recollected that not many years before he had lodged at the house of a chimneysweeper, in the apartments of which soot-bags and soot were deposited. He did not appear very accurate in his account, but thought on recollection that the complaint began in the scrotum soon after he left the chimneysweeper's house. This goes merely to prove that soot in substance, or perhaps the volatile parts of it, have the power of producing the disease; and not anything peculiar to the occupation or manner of life to which chimneysweepers are subject. Probably the man's body, or his linen, were liable to be daubed with soot, or the dust arising from it; and the scrotum was first affected, as it is among chimneysweepers, for the reason before given: that of the moist rugæ retaining the poison more readily than other parts."

Sir James Earle's son Henry, assistant surgeon to St. Bartholomew's, and surgeon to the Foundling Hospital, writes (Med-Chir. Trans., xii, 297):

"The disease . . . is invariably produced by the irritation of the soot applied to the rugæ of the skin. The characters of the complaint are peculiar, commencing in a warty excrescence which in some cases will remain nearly stationary for several months, or even years. After a time the excrescence discharges a thin acrimonious ichor, which excoriates the surrounding skin. Ulceration now takes place in the center, and the edges of the wound become everted and throw out a luxuriant growth, with schirrous hardness, which discharges a very fetid irritating matter. The most common situation for this complaint is the lower part of the scrotum; but this rule is not without exceptions. . . . As the disease advances, the parts immediately contiguous become affected; it spreads downwards to the perineum, and if not arrested will include the whole scrotum; at the same time it not infrequently extends itself to one or both testicles. When the testicle is first affected, it becomes firmly connected with the diseased scrotum; it enlarges and becomes greatly indurated; ulceration and sometimes sloughing then take place, leaving a deep excavated ulcer that penetrates into the body of the testis, which does not appear disposed to the formation of fungous growth, similar to what occurs when the scrotum is the seat of the disease. The same observation applies when the complaint has extended itself to the inguinal glands; its progress in glandular structures appears to be more rapidly destructive without the slightest effort at reparation. The disease, in every instance that I have seen, except one, extended itself to the parts immediately contiguous. The inguinal glands are often enlarged, but they will generally subside on the removal of the diseased scrotum, clearly proving that the disease is not commonly communicated in the course of the absorbents. This is a very important feature in the complaint and one which most materially influences the prognosis and treatment. . . . Even where the testicle is affected, the disease is confined, for a time, to that gland, but it subsequently extends itself up the spermatic cord into the cavity of the abdomen, where it proves rapidly destructive. Not only is the discharge from the sore very fetid, but the perspiration from the whole body, which is generally copious, has a very peculiar ammoniacal odor, which cannot be mistaken when once recognized. . . .

". . . The rare occurrence of this complaint may be referred to another cause, namely, there are strong reasons for presuming that a constitutional predisposition is required, which renders the individual susceptible to the action of the soot. If this was not the case, and if there was anything of a very acrimonious nature in soot, would it not more frequently affect the children, whose skins are far more delicate, and who are much more exposed to its constant application? Among those who have been affected, and who have fallen under my observation, several had been employed in the trade for above twenty years before they became affected, and it is more reasonable to conclude that some alteration had taken place in their constitutions which rendered them susceptible of the irritation than that it was the immediate result of any peculiar quality in the soot. This opinion is much confirmed by instances in which different branches of the same family have been subject to the disease at a particular period of their lives. In some instances, two or three generations have fallen victims to the ravages of this disease, for the business is so lucrative that they are unwilling to abandon it. . . .

". . . As far as my observation goes, no topical applications or internal remedies have the slightest influence over the disease. The scalpel is the only resource, and that may be resorted to with the most confident expectation of success provided the whole of the diseased mass can be removed. Even where the inguinal glands are enlarged, this ought to be attempted. . . . Where the testicle is affected, provided the spermatic cord has not participated, it will be right to give the patient the chance of recovery rather than abandon him to a miserable and painful death. . . .

". . . It may appear rather an anomaly to affirm that a certain state of constitution is required for the production of this disease, and at the same time to advocate its locality, yet such are the conclusions which numerous facts appear to warrant, and I feel quite confident of being able to eradicate the complaint by a complete removal of the diseased portion, and the subsequent abandonment of the occupation of a sweep. As the disease is sometimes rapid in its progress, no time should be lost in making useless trials of remedies, but the operation should be at once and extensively performed."

In 1832, Travers writes (in Med.-Chir. Trans., xvii, 344):

"I may here shortly notice the cancer scroti, or chimneysweepers' cancer, which is a peculiar form of malignant ulceration, more truly local than any in its origin. But although it is impossible

to disconnect the origin of this sore and the occupation of the patient, how seldom have we seen the boys so much employed in this trade the subjects of it; their wounds and excoriations show no tendency averse to healing. The soot irritates in the adult to the formation of a hard pimple, which passes slowly through the stages of suppuration and scabbing to ulceration. The edge is hard and gibbous and everted, the surface of an ochre-red hue. The disease resembles the lupus of the cheek and eyelids in destroying the skin and cellular texture, leaving the testicles and ligamentous covering of the crura penis, as that does the sclerotic, bare and wasted, but otherwise uninjured. This sore has no tendency to slough or penetrate deeply by ulceration. The lymphatic glands are rarely and seldom specifically affected. The disease returns after extensive removal. . . . The patient dies hertic, tabid and commonly exhibits pulmonary tubercles, or the small white tubercle of scrofula on the serous membrane, either of the chest or abdomen. I am very doubtful of its identity with scirrhous cancer. The natural secretion, confined by the soot, which obstructs the sebaceous follicles and exhalant orifices, becomes an irritant and gives occasion to the inflammation, but the age and perhaps the habits predispose to the malignant character, which renders it incurable and ultimately fatal. The disease is of very variable activity, sometimes occupying years in its progress."

Sir Astley Cooper, in his "Observations on the Structure and Diseases of the Testis," London, 1830, says of the chimneysweeper's cancer:

"This disease has always appeared to me to be one of the most curious to which the human body is liable. The person who is brought up as a chimneysweeper, besides being exposed in his childhood to the horrors and apprehension of climbing to dangerous and giddy heights, in his boyhood suffering great cruelty and severe deprivations, and in his manhood being almost an alien from society, is liable to a disease which is altogether the produce of the loathsome pursuit in which he is engaged.

"The soot, to the application of which he is constantly exposed, harboring in the wrinkles of the skin, where the cuticle is thin and the cutis is highly vascular, produces in many of these persons an irritation, followed by an ulceration, which bears so strong a resemblance to cancer as to have received that appellation, and it certainly strongly resembles cancer of the lip in several of its circumstances.

"This disease I have only seen in two parts of the body, viz., upon the scrotum and upon the cheek. On the former it is very frequent; in the latter I have only seen it in two instances. In the first, the sore was seated in the center of the cheek, in a very old man, whose face was wrinkled from age, and, therefore, liable to retain a quantity of soot, which irritated and wrinkled in the skin until it produced the symptoms I shall directly describe. In the second case, the disease began on the cheek, near the angle of the mouth, and it extended both to the upper and under lip. . . .

"The first appearance of the disease is in a wart upon the scrotum, which appears broken upon its surface. Upon this wart an incrustation forms, and continues to cover the surface. If this incrustation be rubbed away, or picked off, the papillæ on the surface of the wart appear excoriated, red and broken and issue a slight discharge upon the surface. An incrustation again appears upon the wart, which remains until accident or the progress of ulceration remove it, and then the surface appears highly vascular and discharges a bloody serum. Still the surface becomes encrusted, until at length an ulcer of some extent forms under it. When the sore is carefully examined, it will be found hard, its edges indurated and everted, and its surface unequally vascular, so that it is yellow in some parts, red and vascular in others. It discharges a bloody serum, the smell of which is often very offensive, but still a purulent discharge is sometimes observed.

"At first the person complains more of a troublesome itching than of pain, but as the disease advances, darting pinching pain, with heat, shoots through the part, as in most other diseases of specific nature. As the ulcer proceeds, it even reaches the tunica vaginalis, hardens it and affects the surface of the testis. After the disease has extensively ulcerated, the absorbent glands in the groin become affected, one or more being hard and swollen; it inflames, is poulticed and fomented, and it breaks, discharging a bloody serum with some pus. These glands proceed slowly, ulcerating with a hardened surface and with everted edges, discharging serum from some parts of the surface, and a curd-like matter, or white sloughs, from others. At length a deep chasm is formed in the groin by ulceration; in others, an extensive sore; in the former case, the femoral vessels, or a large branch of them, are exposed and ulcerated, so as to destroy by free and sudden hemorrhage; in the latter, the patient is slowly exhausted by irritation, restlessness and discharge. The scrotum is in some cases nearly destroyed by ulceration.

"Upon dissection of the parts removed in the operation . . . it will be found . . . that the surface of the cellular membrane surrounding the ulcer is filled with a white scirrhous substance very little vascular, affording very much the same appearance as a similar incision into a cancer of the lip. When the glands in the groin are examined, they are found to be altered from their natural appearance and are enlarged and hardened, containing a white solid in some parts, a soft, white, curd-like matter in others; high vascularity in some parts and entire absence of it in others. I have known this disease occur at various ages from twenty-six to eighty years.

"From the number of persons who pursue this occupation, and the comparatively few affected by the application of soot, it would appear that there is something, either in the constitution or the parts of some individuals, which disposes to its production. I am inclined to believe that it depends more upon local circumstances than upon

the constitution. . . . I believe that it is a thin cuticle and an irritable skin, which permit the soot to produce its peculiar irritation and effusion; and that it spreads both by simple extension of surface and by the irritation of the absorbent glands.

"Medicine has no power over this disease, at least not any that I have tried; and all local applications, used with a view directly to heal the part, are of no avail.

"It admits only of two modes of procedure — the one to destroy it by sloughing; the other to remove it by excision.

"A dram of the oxide of arsenic, well mixed with one ounce of the ceratum cetacii, is to be thickly spread upon lint and applied upon the sore, upon which it is to remain for twelve hours, and is to be succeeded by a poultice. A slough is produced by the arsenic, which separates in a few days and a healthy surface succeeds; but if at any part the old and malignant leaven appear, the arsenic must be again applied until an entirely new surface be produced. If the glands be enlarged or hardened, the above application will increase them, and it ought not to be used. If the disease be removed by the knife, the operation is a simple piece of dissection. Enlarged glands in the groin are not to positively forbid the operation as they are sometimes increased from simple irritation only; and as the removal of a portion of the scrotum is little painful, soon performed and unattended with danger, the patient should have this chance of recovery given him.

". . . After the removal of the diseased portion of the scrotum, the vessels are, although small, apt to bleed profusely and to be with difficulty stopped by pressure; it is, therefore, desirable to secure every small vessel which bleeds freely, and not to apply any dressing upon the part, or to suffer the patient to get into bed; but he should be kept cool, and in the recumbent posture, as the scrotum will be then contracted. When the bleeding has ceased, the edges of the wound may be brought together by sutures."

The use of arsenic in the treatment of epithelioma is well-known, for it is a principal ingredient of the common "cancer-pastes." Singularly enough, arsenic has been also supposed to produce a condition analogous to chimneysweeps' disease. In an interesting work entitled "Pharmacologia," published in New York in 1822, Paris writes as follows (p. 208) of the local irritant effects of arsenic:

"The poisonous effects of arsenious acid are so amply detailed in medical works that it would be superfluous to dwell upon them; it may, however, be interesting and useful to record an account of the pernicious influence of arsenical fumes upon organized beings, as I have been enabled to ascertain in the copper-smelting works of Cornwall and Wales; this influence is very apparent in the condition both of the animals and vegetables in the vicinity; horses and cows commonly lose their hoofs, and the latter are often to be seen in the neighboring pastures crawling on their knees and not infrequently suffering from a cancerous affection in their rumps. . . . It deserves notice that the smelters are occasionally affected with a cancerous disease in the scrotum similar to that which infests chimneysweepers, and it is singular that Stahl, in describing the putrescent tendency in the bodies of those who die from this poison, mentions in particular the gangrenous appearance of these parts. . . . As an external application, arsenic has long been extolled in the cure of cancers."

Bell, in an article on "Paraffin Epithelioma of the Scrotum," in *Edinburgh Medical Journal*, xxii, 135, says:

"The name, 'chimneysweep's cancer,' is an admissible one, from old associations and long usage. 'Scrotal soot cancer,' though it implies a theory, has never been so much adopted. By these names, surgeons describe a disease of the nature of epithelioma, attacking first, as a local disease, the scrotum, yet, if left, apt, by infecting the glands, to poison the system, though, at its outset, it is merely a result of a local specific irritation. *Local*, because its seat of election seems to depend simply on the difficulty of cleansing the soot stains from the rugæ of the pendulous and mobile scrotum. *Specific*, because it seems to result from the contact only of certain varieties of soot — coal, not wood, even of coal soot, from English rather than Scotch coal.

"Chimneysweep's cancer is now a disease of comparative rarity. This is explained by the legislation against climbing boys, and invariable use of brushes and other mechanical appliances.

"But, if chimneysweep's cancer is rare, and becoming rarer every year, I believe we are to find a successor for it in a malady affecting the laborers exposed to the fumes of paraffin in shale works. Of this disease, — epithelioma of the scrotum, ascribed by patients to paraffin fumes and contact with the oil, — I have seen two cases within the last eighteen months."

(To be continued.)

CLINICAL AND BACTERIOLOGICAL RESEARCHES ON MIKULICZ'S METHOD OF RENDERING THE PERITONEUM RESISTANT TO SURGICAL INFECTIONS.

BY PROF. E. DE PAOLI, M.D.,

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THE author believes that Mikulicz's method should be practised by surgeons who are about to perform celiotomy for lesions in which there has been an external cause as well as those in which the disease has originated within the peritoneal cavity, in both of which there is danger of infection of the peritoneum following abdominal section.

The author has practised this method in all cases in which celiotomy has been performed, and since the time when he first began to use it his results, which previously had not been perfectly satisfactory, have been much better. Septic

peritonitis has practically disappeared from his wards in spite of the fact that there is no isolation of septic cases, and also that his patients usually delay a long time before deciding to submit to an operation. The author has at present a series of 155 cases of celiotomy, in which a preventive injection had been given before operation, with but a single death from septic peritonitis. Such a series is quite exceptional in his experience, which has now extended over a period of many years. The immunizing injection of nucleinate of sodium offers, in addition, this advantage, in that it serves to measure with precision the natural powers of resistance of the patient who is about to be operated upon. If after the injection there is a satisfactory hyperleucocytosis this is the proof that the powers of resistance are sufficient; if, on the contrary, hyperleucocytosis does not follow injection of the drug, we know that the means of defense against infection are decidedly lowered. In the first case we may operate with confidence; in the second, we should abstain from operating, if possible, until the patient is in a better condition. In the first trials of the drug by Miyath and Renner disagreeable sequelæ followed the administration, such as local pain, often very severe, nausea and vomiting, general depression, chills, more or less fever, and sometimes toxic symptoms which gave rise to considerable anxiety. These effects were always transitory and invariably passed away at the end of a few hours, but they frightened surgeon and patient alike on the eve of a serious operation. It is probable that these disagreeable sequelæ have prevented the vulgarization of Mikulicz's method. These unfavorable symptoms can be rendered much less severe by substituting for the nucleinate of sodium employed by Mikulicz a preparation from which all the free albumen has been removed, that is to say, by using a salt of nucleinic acid which is neutral, anhydrous and perfectly pure. It is also preferable to give the injection thirty-six to forty-eight hours before the operation instead of ten hours before; in this way the disagreeable effects will have passed by and will not have an unfavorable influence on the intervention. One should not give the large doses advised by Renner when about to operate for appendicitis in either the acute or the chronic forms, cholecystitis, simple or calculous, and tuberculosis; in these diseases the general reaction after the injection is often intense, and there is also frequently in these conditions a spontaneous hyperleucocytosis.

Bacteriologic studies of the blood of patients before and after the injection of nucleinate of sodium have shown an increase in the bactericidal power of the blood serum with reference to the culture of the bacterium coli. This result is very remarkable because it serves to show how the drug must act in protecting the peritoneum against the germ very commonly found in septic peritonitis. This increase in the bactericidal power of the serum after the injection has not been observed with the staphylococcus pyogenes. Perhaps bacteriotropic substances are formed which are somewhat different from bactericidal substances. Future investigations must clear up this obscurity.

The blood of patients who have received the injection shows constantly a diminution in its viscidity which depends upon the fewer red blood globules and hemoglobine; the injection, therefore, immediately causes hemolysis. This must be borne in mind.

An ideal kemotatic substance should produce a good hyperleucocytosis and should tend to immunize the peritoneum against infection without detriment to the patient. Nucleinate of sodium freed of its albumen approaches this ideal without quite reaching it. We should, therefore, employ Mikulicz's method when there is danger of operatory infection, at the same time bearing in mind that it does not give absolute immunization, but that it merely strengthens the natural resisting powers of the peritoneum against infection.

Nucleinate of sodium without albumen is prepared by Boehringer & Son, of Mannheim. The dose is 1 gm. or 75 cgm. or 50 cgm., dissolved in artificial serum sterilized by boiling. The injection is given in the gluteal region or in the anterior part of the thorax in the subcutaneous tissue. There is no danger in its use.

The hyperleucocytosis usually does not exceed double the number of white corpuscles in the blood which were present before the injection was given. Sometimes the hyperleucocytosis is more marked, but this has no unfavorable significance.

The method finds its chief application in cases in which there is danger of post-operative sepsis, as in operations on the intestinal tract, and also in those cases in which the conditions for perfect asepsis are lacking, for instance, when one cannot operate in a well-appointed hospital. It is probable that the method will not prove of great advantage in those cases in which the abdominal lesion is not in the digestive tract, provided always that asepsis is perfect; in these cases, of course, sepsis is quite unusual in any event.

THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Continued from No. 19, p. 730.]

INFECTIOUS ARTHRITIS.

(Female cases.)

CASE 139. J. D., female, twenty, single. Atrophic arthritis. Operation, Aug. 10, 1904.

An incision made over inner side left knee. Capsule of yellowish-blue color and moderately tense. Periarticular tissue very vascular, as in the previous case. Considerable greenish, turbid fluid containing whitish flakes was evacuated. Synovia injected and covered numerous pedunculated outgrowths, one of which was much larger than the rest. Capsule covered with

papillomata. When knee was flexed, the inner, anterior surface of inner condyle showed thinned cartilage, the early stage of an erosion with a definite injection about the center of the area. Edge of cartilage sharp, differing from rest of same in appearance. Papillomata excised and small portion of eroded cartilage removed for pathological examination. Thorough irrigation.

Aug. 18. Stitches removed, wound clean. Fifty degrees of motion in flexion obtained without pain.

Aug. 22. Discharged.

Sept. 2. Knee well.

March 15, 1905. Peroneal spasm in addition to above deformity. General condition improved.

June 29, 1906. Considerable villous thickening of both hands. Left knee shows more thickening and crepitation elicited on motion.

March 26, 1907. Re-entered House.

March 29. Operation.

Incision 3 inches long over outer aspect of right knee, considerable soft material and small fringes removed. Cartilage eroded. No excess of fluid. Pannus over tibial condyle. Wound closed. Hamstrings of left knee were divided by open incision. Plaster from ankle to groin.

April 20. Cast split, to be worn only at night.

April 26. No flexion of knees. Motions are not improved. Discharged home.

Dec. 2, 1908. Joints have improved in function and physical condition.

The knees and all joints except the feet were restored to a condition of usefulness. The feet were lame and sore.

In type, this case was very like the one immediately preceding it, but the result has been very different. It seems to us that probably the explanation of this lies in the fact that the early arthrotomies in this case got rid of the eroding pannus and, therefore, more of the cartilage was preserved.

Case 140. L. T., female, thirty-three, single. Infectious arthritis, metatarso-phalangeal joint, second, left. Operation, Jan. 22, 1904.

Incision 2.5 cm. long over dorsal surface of second left metatarsophalangeal joint. A small purple mass size of pea found overlying articulation. It was boggy with smooth lobulated surface seeming to spring from periosteum on either side of joint. When removed the dorsal surface and sides of the two bones were bared. Periosteum stripped off leaving a rough, pitted bony surface. Tissue removed was evidently the chronic inflamed capsular ligament and synovial membrane. Articular cartilage showed some loss of luster, but no erosion or striation. Head of phalanx (5 cm. excised) and slightly larger portion of metatarsal removed. Plaster cast applied.

Jan. 29. Wound healed. No pain. Discharged.

Jan. 8, 1906. Patient has had similar condition in knee and other joints in same row with above metatarso-phalangeal articulation. Not operated.

Case 141. N. H., female, fifty-five. Operation, Nov. 24, 1909.

Left knee opened by linear incision over inner side. A large amount of thick, yellowish, organised fibrinous material taken out with gauze as curette, some of which was adherent and some loose in the joint. Tincture of iodine applied, then salt solution.

Nov. 28. Patient has been very comfortable since operation.

Dec. 8. Right knee opened on outer side. Material of same nature removed, but less in amount.

Dec. 19. Patient discharged. Motions normal in both knees.

Case 142. A. C., female, twenty-three, single. Operation, Aug. 4, 1909.

Right knee opened on inner side. Capsule of joint thickened and joint contained flocculent, thick fluid and large quantity of organized fibrin, which was broken up with fingers and washed out with salt solution. Entire joint surface curetted with gauze. Posterior wire splint applied.

Aug. 17. Patient has about 35° motion in knee.

Aug. 18. Under ether about 4 oz. of sterile oil was injected under patella and knee flexed to right angle.

Aug. 23. Discharged. Condition very much improved.

Sept. 22. Patella slightly movable. Leg in 15° permanent flexion. Advised baking and massage. Measured for light caliper splint with bend at knee and knee cap.

Case 143. T. H., female, nineteen, single. Operation, Aug. 6, 1909.

Incision made over both outer and inner sides of left knee. Large amount of flocculent material evacuated, also considerable amount of hemorrhagic substance. Joint flushed out with hot salt solution. Posterior wire splint.

Aug. 26. Discharged. Condition relieved.

Nov. 4. Re-admitted to House and oil injection followed by manipulation.

Dec. 17. Voluntary flexion to a right angle. Good operative result. Continue baking and massage. Patella fairly movable, slight capsular thickening only remains.

Case 144. T. T. M., male, twenty-two, single. Infectious arthritis. Operation, Nov. 14, 1904.

Right ankle-joint opened by linear incision 1.5 cm. below internal malleolus. Capsule thick. A small portion was excised and joint again opened by incision below external malleolus. Capsule was less thick on this surface of the joint. A deep-seated varicosity was found but not removed. Wounds closed and foot put up in plaster cast.

Nov. 23. Discharged.

March 15, 1905. Re-entered hospital and spur removed from neck of astragalus; similar exostosis removed from tip of malleolar process of fibula.

March 24. Discharged wearing plaster cast.

Case 145. J. D., female, twenty-three, single. Villous arthritis, wrist. Operation, Dec. 2, 1903.

Longitudinal incision 4 cm. over ulnar side of dorsum of left carpus, beginning opposite styloid process of ulna between tendons of flexor carpi ulnarius and the digital flexor tendons. Synovial sac in view when tendons were retracted contained moderate excess of clear serum. The synovial surface presented multiple tiny villous projections (0.1—0.5 cm. long). These were removed, followed by considerable oozing. Similar incision on radial side dorsum of carpus, inside flexor tendon of thumb. Similar condition of synovia found and treated as above.

Right hand operated upon as above except that radial side was not opened as less swelling was present, but all the synovial surface was curetted from one joint opening.

Wooden splints from elbow to finger tips.

Dec. 9. Stitches removed, wounds clean.

Dec. 12. Discharged. No pain on tentative motion.

Jan. 6, 1904. Flexion of right wrist one third normal; left, one half normal.

Aug. 4, 1904. Referred to Zander room.

Case 146. H. F., male, thirty-one, single. Villous arthritis. Charcot's arthropathy. Operation, Sept. 6, 1907.

Incision over outer upper quadrant of right knee. Capsule moderately vascular. Synovial capsule gray in color, thickened and villous on inner side. Large thick villi are present, especially in the upper outer

portion of the quadriceps pouch and along the margins of the femoral condyle. Excess of fluid, thin and turbid, containing few shredded fibrinous clots closely adherent to the villi. No erosion felt through incision. Wound closed.

Patient has other infectious lesions in spine and ankle.

Sept. 13. Discharged improved to Out-Patient Department.

Sept. 30. Less swelling in knee. Some serous discharge from site of seton left in at operation.

Oct. 23. Some lateral motion in knee. Signs of tabes dorsalis, and in the course of time the joint became completely disorganized after the usual manner in Charcot's joints.

Apparatus was worn for quite a time, and now (1910) the patient has sufficiently good function to tend a drawbridge.

CASE 147. M. C., female, twenty-eight, single. Villous arthritis of right ankle. Operation, July 12, 1905.

An inch and a half incision was made just below external malleolus parallel with the foot. Blunt dissection to astragalo-cuboid articulation. Dark red fringes were seen exuding from the joint. When removed an excess of fluid was evacuated. Another incision made over similar location on foot below internal malleolus, and a similar condition was found in the astragalo-scaphoid articulation.

July 20. Considerable swelling of ankle. Bier treatment instituted.

July 23. Discharged.

CASE 148. B. B., female, twenty-two, single. Tuberculosis, ulnar radial joint. Partial excision. Operation, Dec. 27, 1907.

Incision 8 cm. in length over external condyle right elbow. External portion of capsule protruded slightly. Rotation of radial head accompanied by coarse crepitus and head of bone enlarged and irregular in shape. When capsule was incised, bone was found to be carious. Olecranon process and portion of ulna shaft excised. Head of radius also removed. Condyles of humerus apparently normal and were not disturbed. Synovial membranes also removed as far as possible.

Arm put up in internal angular splint, with slight amount of traction.

Pathological report: "Chronic inflammatory" condition.

Jan. 19, 1908. Wound healed. Discharged.

CASE 149. T. C., male, forty-four. Infectious arthritis. Operation, Sept. 22, 1909.

Incision over inner aspect of left knee. When capsule was opened, a number of villi were found and removed. Few small slightly eroded areas found over surface to tibia and femur. Full extension of leg not obtained.

Sept. 24. Plaster cast applied ankle to groin with leg in as full extension as possible.

Oct. 12. Motion of knee not improved.

Oct. 20. New cast applied and about 10° extension gained.

Oct. 25. Discharged.

Nov. 22. Patient re-entered hospital.

Dec. 1. The usual incision made as for excision of joint. Patellar tendon cut across and knee flexed. Knee showed a large amount of villous growth, and some destruction of articular cartilage present. As little of head of tibia and femur removed as possible. Villi removed from lateral aspects of joint, also quadriceps pouch dissected out. Patellar ligament restored with catgut. Left knee forcibly extended and plaster applied.

Dec. 15. New cast applied.

CASE 150. T. L., male, thirty-nine, single. Operation, Feb. 16, 1906.

Incision 10 cm. long over inner aspect of left knee above patella. Muscles separated down to synovial membrane which was much thickened, and when opened a large amount of serous, straw-colored fluid escaped. Many subsynovial fat tabs found. These were excised, and through a counter incision on opposite side of joint a similar condition was found. These fat tabs were also removed as carefully as possible. Nothing abnormal seen or felt in the cartilaginous surface. Joint thoroughly irrigated with sterile water and wounds closed.

Feb. 18. Knee septic. Patient anesthetized and knee thoroughly prepared. All stitches removed and a bloody fluid containing flocculi with septic odor evacuated. Joint thoroughly irrigated with corrosive. Joint surface presented septic appearance. Drainage instituted and creolin poultice applied.

Culture, streptococcus and staphylococcus.

Feb. 21. Patient failed rapidly and died to-day.

CASE 151. T. M., male, twenty-six. Infectious arthritis. Intermittent hydrops. Operation, April, 1906.

Right knee-joint opened on inner side. Capsule thick and joint contained a quantity of flocculent straw-colored fluid. Many villous formations were found and removed as far as possible. Joint irrigated and closed. Measurements taken each day showed a marked fluctuation in amount of fluid present.

May 18. Left knee operated upon and practically the same conditions found. Several hypertrophic nodes which were situated along the joint line were removed.

June 12. Discharged. Less swelling and intermittency broken up. Joint function good.

CASE 152. J. H., male, thirty-five, single. Operation, Oct. 31, 1906.

Left knee-joint opened over inner side with curved incision. Capsule found greatly congested and infiltrated. Outer side of joint opened in similar manner. Slight excess of fluid, many adhesions broken up and small fatty tabs removed. Joint irrigated with sterile salt solution and wounds closed.

Nov. 7. Knee in 25° permanent flexion.

Nov. 21. Plaster cast ankle to groin; knee in position of 20° flexion.

Nov. 26. Split cast. Can extend leg to within 10° of straight; 45° flexion possible. Discharged.

Jan. 18, 1907. Motion in flexion to 10° of normal. Walks without limp. Continue massage and baking.

CASE 153 (a) J. F., male, thirty, married. Operation, Nov. 21, 1906.

Right knee-joint opened over inner aspect. About 2 oz. of turbid fluid evacuated, containing considerable yellowish, gelatinous material. Synovial membrane hyperemic. Joint thoroughly evacuated and irrigated with hot salt solution. Wound closed, silk seton remaining.

Dec. 5. Plaster, ankle to groin.

Dec. 8. Discharged.

CASE 153. J. C., male, sixty-four, married. Operation, Feb. 4, 1907.

In February, 1906, patient had cartilages removed from both knees without relief. Diagnosis, hypertrophic arthritis. X-ray shows bony thickening of condyles, spurs on femur and patella, some obliteration of epiphyseal markings. Right knee opened through old scar, x-ray interpretations verified. Two small pieces of bone removed from external condyles and wound closed. Plaster cast applied.

Feb. 13, 1907. Discharged improved.

Feb. 19, 1908. Patient died. Probable sarcoma of femur.

CASE 154. J. B., male, forty-three, single. Operation, March 15, 1907.

Right knee opened over inner side. Capsule thickened and vascular. Synovial membrane hypertrophied and

by its redundancy caused numerous folds in the interior of joint cavity. Three of these folds were excised. Joint opened over outer side, same synovial condition found and about the same amount excised. Capsule and bone apparently not diseased. Wounds closed leaving silk seton in lower angle of either wound.

March 25. Discharged. Subsequent return of symptoms similar to that before operation, followed by a gradual improvement at operation.

Case 155. J. S., male, thirty-five, married. Operation, May 5, 1909.

Patient was in hospital Jan. 3, 1908, with diagnosis of tubercular knee. Refused operation and was discharged. For a few months he was able to work without much trouble, but for the last few months he has been obliged to discontinue work owing to the severe pain. Re-entered hospital.

Left knee opened over inner and outer aspects. Slight excess of fluid present of a brownish color. Capsule thick and synovial membrane presented a sluggish inflammatory condition. Under patella a fibrous lipoma was found and excised. Fibrous tags of the same nature found in the quadriceps pouch and on outer side of joint surface. Entire surface curetted with gauze and cavity irrigated with sterile salt solution. Wound then closed.

May 19. Good motion to a right angle, no subjective symptoms.

Discharged.

Case 156. J. S., male, seventeen, single. Operation, Sept. 4, 1908.

Left knee-joint opened over inner aspect. When the thickened capsule was incised, about 2 oz. of straw-colored fluid was evacuated. A velvety pannus covered a portion of the tibial head. This and the interior of the capsule were curetted with gauze and wound closed.

Sept. 25. The same operation was performed on the right knee. Conditions similar to above, but less fluid found.

Oct. 8. Both wounds healed and knees will flex voluntarily to a right angle.

Case 157. T. F., male, forty, married. Operation, Sept. 14, 1908.

Right knee-joint opened over inner aspect. Several ounces of sero-purulent fluid containing fibrin flakes evacuated when thickened capsule was incised. Interior of joint curetted with gauze and wound closed.

Oct. 4. Same arc of motion as before operation.

Oct. 5. Discharged home.

Case 158. E. C., male, twenty-two. Operation, Sept. 16, 1908.

Left knee opened over inner aspect. Capsule thickened. Joint full of sero-purulent fluid containing fibrin, which was evacuated and joint wiped out with gauze and irrigated with sterile salt solution. Wound closed.

Sept. 30. Severe pain has continued. Plaster cast applied.

Oct. 19. Manipulation under anesthesia. Full flexion obtained by breaking up numerous adhesions. About 2 oz. of sterile olive oil injected under patella.

Nov. 4. Discharged home.

Feb. 7, 1909. Slight swelling. Extension limited a few degrees.

July 14. Manipulation under ether and 20° flexion gained beyond a right angle. Adhesions in quadriceps pouch broken up.

Case 159. H. M. M., male, thirty-one, married. Operation, July 7, 1909.

Left knee-joint opened over outer surface. When capsule was incised a quantity of yellowish fluid containing a large sanguinous clot was evacuated. No disease of bone or cartilage was discovered. Joint irrigated and wound closed.

July 15. Discharged. Convalescence uneventful.

Case 160. E. F., male, thirty, single. Operation, July 28, 1909.

Left knee-joint opened over inner aspect. Capsule very thick. Interior of joint covered with organized fibrinous exudate which was very tenacious and could be removed only with difficulty. Similar incision over outer side of joint and same conditions found. Joint wiped out and irrigated, wound closed and light cast applied.

Aug. 13. Discharged to care of his family physician.

Case 161. J. R., male, twenty, single. Infectious arthritis knee. Operation, Feb. 8, 1902.

Joint opened as for excision. A large amount of amber-colored serous fluid evacuated. Synovial tabs found throughout the joint were removed as completely as possible. Cavity then throughly irrigated with sterile water and wound closed.

Posterior wire splint applied.

Feb. 26. Slight amount of fluid in the joint. Motions good, no pain or tenderness. Discharged.

Case 162. I. M. C., male, thirty-nine, married. Osteo-arthritis. Operation, July 11, 1902.

Right knee opened by linear incision over inner aspect. Capsule thick and very vascular. Joint fluid not in excess. Ends of femur presented a squared appearance, due to a redundant growth of fibro-cartilage above it. On under surface of patella, especially near the inner margin, were several bony prominences with corresponding depressions due to osteophytic thickening of the patella. No evidence of inflamatory or maligant growth.

Wound closed and light plaster cast applied.

July 22. Discharged.

Oct. 22. Flexion to 20° beyond a right angle. Complete extension possible.

In this group there is one case of infection, and that had a fatal termination. The patient was not in very good condition and the original polyarthritis was of rather recent origin. In reviewing the case, however, it was impossible to account for the result in any way, though it seemed probable that it was due to some failure in the operative technic.

It will be observed that in this group there were several attempts to preserve motion after arthrotomies by the injection of sterile oil. The writers have been unable to satisfy themselves that the oil has exerted any strikingly helpful influence upon the preservation of motion.

A few cases have strayed into this group that do not belong here on a strictly pathologic classification, and some of the female cases have strayed over among the male group of infectious cases.

In this fourth group are included a number of arthrotomies performed for various reasons upon patients presenting a number of different pathological conditions, or else lesions which are identical to those described in the knee-joint have occurred in other hip-joints where the technic is different from that already described only as the anatomical region necessitated some slight modification.

The following operations were performed upon the hip-joint. In attempting the surgical treatment of lesions of the hip-joint, the problem may be attacked from various positions. Anterior, posterior, or lateral, straight incisions are best. For exploratory incisions the anterior route is

the better; also, for the treatment of acetabular overgrowths or the wiring or nailing of intracapsular fractures. Excisions are best accomplished through the Langenbeck posterior incision.

CASE 163. E. C., female, thirty-four, married. Osteomyelitis hip and stiff knee. Arthrotomy of hip and knee. Murphy's arthroplasty and oil injections. Operation, Dec. 20, 1907.

Linear incision over outer aspect of left thigh above the trochanter. Periosteum over trochanter very thick and adherent to bone. Latter incised and bone removed exposing cortex which was very thin. Cavity found underneath walled off with a hard bone. Contents removed and remaining bony surface thoroughly curetted.

Dec. 27. Wound septic but discharge slight. Sinus dilated and about 3 oz. of thick pus evacuated.

Jan. 29. Left knee flexed under anesthesia. During manipulation a great amount of crepitus could be felt.

Feb. 7. No improvement in knee motions.

Feb. 12. Knee manipulated and ½ oz. sterile olive oil injected into joint under patella. About 40° of flexion obtained without much force, but this could not be preserved.

Feb. 26. Operation. Arthrotomy.

Incision over inner side of knee. Adhesions broken up with finger. Quadriceps pouch obliterated by adhesion with few between patella and femoral condyle. Outer side of joint opened and incision over inner side extended upwards about three inches. Arthroplasty performed and flap sutured to joint capsule on outer side. After closing wounds, except for purse-string suture in outer wound, sterile oil was injected and wound closed.

Plaster bandage ankle to groin.

March 17. About 4 or 5° of motion in joint. Patella free.

April 1. Manipulation and 30° flexion obtained by using considerable force.

April 13. About 20° easily obtained.

April 25. Less motion in knee. Hip still shows slight discharging sinus.

June 1. Slight motion in knee, seems limited by cicatricial tissue. Patient about on crutches.

June 29. Discharged home. Knee very painful beyond 5° motion in flexion. Thin sero-purulent discharge from hip sinus.

Jan. 2, 1909. Re-entered hospital.

Hip has been painful since last operation. Two or more sinuses have been constantly discharging. Physical examination: Leg: flexed with slight adduction, 2¾ inches shortening with very slight atrophy. Probe can be passed down to bone through a sinus over lateral aspect of thigh.

Jan. 6. Incision made upward along track of sinus to posterior surface of the joint. An old fracture of femoral neck was found with lower fragment pushed back giving an abrupt off-set to bone. Firm union seemed to have taken place, but bone was roughened at this point without any evidence of disease. Posterior capsule divided and both head and neck of bone seemed to be normal. A small sequestrum was found, however, on the posterior surface of the acetabulum, which was removed by extending the incision across the buttocks. No bone sinuses found. Wound washed out with salt solution followed by bichloride solution and closed, leaving one large rubber drain.

Jan. 15. Patient has had considerable pain but little discharge until to-day. Reddened area about wound.

Jan. 18. Profuse discharge. Staphylococcus culture.

Feb. 7. Wound irrigated daily with ½ % of formalin solution. Less discharge, but area about the wound remains infiltrated and very tender.

Feb. 8. Condition same. Some infiltration extending up side of os innominatum.

April 12. Condition begins to show improvement.

May 8. Discharge ceased. Patient able to walk about ward with crutches.

May 10. Discharged home.

The injection of oil and manipulation of the knee-joint of this patient, as well as the attempt to procure motion by arthroplasty was a failure.

(To be continued.)

Clinical Department.

SOME CASES OF SUDDEN DEATH DURING PREGNANCY AND THE PUERPERIUM.*

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THIS subject has been a favorite one with French writers since the time of Philip Pew.[1] In his book, "La pratique des accouchements," published in Paris in 1694, he devotes some eight or ten pages to the prognosis of life in parturient and puerperal women. "When questioned as to the chances, no man ought to absolutely promise any favorable outcome, so difficult is experience. In point of fact, many women, however well attended, however happily delivered, nevertheless cannot escape death. An operator may have acquitted himself perfectly of his duty, his accouchement may have been conducted in the best possible manner, there is needed only one of those unhappy accidents, of which the life of man is full, to cause death, all at once, when least expected. God is master of the life of man; on our part, however qualified we may be, let us promise nothing definite." (Translation from original.)

Brouardel, in 1895, defines sudden death as the rapid and unforeseen termination of an acute or chronic illness which has most often developed in latent fashion. Tarnier considers as dying suddenly those who, suddenly afflicted, succumb a short time afterwards, as, for example, two hours later. Rudaux[2] would include all cases of death which have been preceded by symptoms of short duration.

Among the chief causes of sudden death among pregnant and puerperal women are cardiac disease, embolus, cerebral hemorrhage, grave intoxication, as eclampsia, and hemorrhage from various sources, placenta previa, rupture of the uterus, ectopic gestation or abortion.

The first case in this report is one of cardiac disease. On July 18, 1907, I was called to see Mrs. B., a primipara, aged thirty-four. Her last menstrual period had occurred on Nov. 20, of normal amount and character. Her condition during pregnancy had been good until three weeks previous, when her feet began to swell. Her urine had been examined on May 9 and reported free from albumen. The swelling of the feet had increased and extended up the legs and thighs. There was shortness of breath, pain in the back and inability

* Read at a meeting of the Norfolk District Medical Society, Jan. 25, 1910.

to lie down on account of the abdominal distention and pressure. There had been no headache, nausea or eye symptoms. For the past few days the urine had been decreasing in amount. The bowels had moved regularly. Physical examination showed a large, fleshy woman; abdomen very much distended and projecting far forward in the standing posture. Considerable gas in the bowels. Breasts very large and heavy, resting on abdomen. There was no edema of the face or upper extremities, but the feet, legs, thighs and lower half of abdomen were extremely edematous, hard and brawny. Pelvic measurements all slightly above normal. Breath sounds harsh in the upper part of the lungs, but no râles heard; backs not examined at this visit. On account of the large breasts the cardiac area could not be defined by percussion, but the apex beat was well heard nearly to the anterior axillary line; the second pulmonic was loudly accentuated; the second sound at the aortic area and at the apex reduplicated. No definite murmur heard.

Up to this time the patient had been on ordinary diet and received no medication as she had not considered her condition serious until the increasing swelling of the limbs made it difficult for her to get about. She had been sleeping very little; she coughed a little, but said that she had had chronic bronchitis since an attack of whooping-cough at five years of age. Later a somewhat indefinite history of rheumatism when a child was obtained.

A binder was applied to the abdomen to relieve the dragging and weight. Basham's mixture was ordered and a milk diet. A twenty-four-hour specimen of urine was examined and gave the following: Total quantity, 450 ccm.; dark amber, slightly turbid, heavy sediment; specific gravity, 1,020; reaction strongly acid; albumen, 1.125 gm.; urea, 9 gm.; total solids, 21. Many casts, hyaline and coarsely granular, nearly all with renal cells adherent. As soon as the twenty-four-hour urine had been collected the patient was given calomel followed by a saline.

On July 20 a diastolic murmur replaced the reduplication at the apex and was heard of maximum intensity along the left border of the sternum. The aortic second was still reduplicated. The patient was given pil. digitalis, squill and calomel aa gr. i twice daily.

On July 23 the patient felt better, breathing was easier, but there was no decrease in the edema. The heart sounds were stronger and the point of maximum impulse was easily detected 12 cm. from the mid-sternal line. The reduplication was entirely replaced by a murmur.

The urine on July 24 was 600 ccm.; specific gravity, 1,018, strongly acid; albumen, 0.75 gm.; urea, 11.4 gm.; solids, 25.16. There were a great number of coarsely granular casts with renal cells adherent and much renal epithelium. On July 25 the cardiac murmur was very loud along the left border of the sternum. Two murmurs were heard at the aortic area. The edema of the left leg seemed a little softer, but there was no marked improvement and the patient consented to go to the hospital.

She was admitted to the medical ward of the New England Hospital for Women and Children July 25, 1907, service of Dr. Marion Nute. The patient was much more comfortable in the hospital, enjoyed cabinet baths, and slept fairly well, propped up in a chair.

On July 27 at 11 P.M. the patient had a sudden attack of dyspnea, during which she became almost pulseless. The following morning she was much easier, but there was still considerable dyspnea and at a consultation between the medical and maternity departments it was decided that the patient's general condition was so desperate that there was no alternative but to take the risk of bringing on labor prematurely; a diagnosis of twins was made.

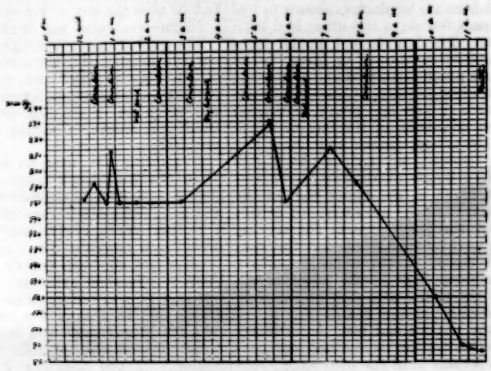
The patient had a good night and the following morning was transferred to the maternity ward on the service of Dr. Call as chief and myself as assistant. The patient was extremely nervous and apprehensive. She was given an enema and prepared for induction of labor, maintaining a sitting position throughout the preparation.

It was our intention to insert a bougie into the uterus to start labor pains. With the patient still sitting up I made a digital examination of the vagina and had just inserted a speculum when the patient had a violent attack of dyspnea; the speculum was withdrawn and measures for relief at once instituted, but the dyspnea increased rapidly, the pulse weakened and there was marked cyanosis. A small vein above the right elbow was opened, but no blood could be withdrawn and in a very few moments death occurred. As a fetal heart could still be heard, the abdomen was rapidly opened and two infants delivered by Cæsarean section, — a girl weighing 2,746 gm. and a boy of 2,022 gm. Both hearts beat for three quarters of an hour, but all efforts at resuscitation failed.

A complete autopsy was not performed, but examination of the viscera through the abdominal incision showed chronic mitral and aortic endocarditis with insufficiency, cardiac hypertrophy, effusion into the pericardium and pleuræ, and chronic passive congestion of liver, lungs, spleen and kidneys.

The second case is one of eclampsia. Mrs. W., primipara, aged twenty-five, was admitted to my service at the New England Hospital March 7, 1909, in an unconscious condition. A convulsion had occurred that evening at 10.15 P.M. and a second one in the carriage on the way to the hospital, which she reached at 11.30 P.M. Examination showed the cervix taken up and the os admitting one finger. Blood pressure, 180. The fetal heart could not be heard. Bromide and chloral were given per rectum and the patient put at once into a hot wet pack. Dilatation progressed rapidly, but eight more convulsions occurred between midnight and 6 A.M., the blood pressure varying from 180 to 230 mm. Morphine, gr. ¼, was given shortly after 6 A.M. and at 6.30 a macerated child was delivered by low forceps. There were no more convulsions till 8 A.M. The blood pressure at this time was 190 mm. A second injection of morphine was given and a hot blanket pack. The patient was very quiet in the pack and the blood pressure gradually fell. The breathing became quiet and natural, pulse good and the patient seemed much better. About 10.45 A.M. it was noticed that the left pupil was much larger than the right and the blood pressure began to fall rapidly (see chart). Other than this the general condition seemed quite satisfactory. A consultation was held as to the desirability of stimulation on account of the rapid fall of pressure, from 195 to 90 mm., but the pulse-rate was good and regular, breathing quiet and natural, and a favorable outcome seemed fairly to be expected. At 11.52 A.M. the patient suddenly became very cyanotic and death occurred in the course of a few moments.

No autopsy was permitted. Although in this case the patient had had eleven convulsions there had been none for nearly four hours before death, the stertorous breathing had been replaced by quiet and natural respiration and the whole appearance of the patient was such as to convince those who examined and watched her that her



Blood pressure chart, Mrs. W.

sudden death was due to either embolus or cerebral hemorrhage. Rudaux calls attention to this as a cause of death in certain cases of eclampsia, stating that the albuminuria causes alterations in the vessels, that labor and especially convulsions increase the vascular tension. Balika [4] also reports a case where after twelve convulsions the pulse was only 64–68, labor pains good and patient doing well; three hours later sudden death occurred. Autopsy revealed extensive cerebral hemorrhage.

My third case is one of cerebral hemorrhage. Mrs. C., aged twenty-one, para II, was admitted on my service at the New England Hospital May 19, 1909. Her first child was stillborn at seven months. The present pregnancy was within a few days of term, the last menstrual period having occurred on Aug. 22. She was not in labor on admission, but thought that the child was dead as she had not felt life for some time. The urine contained a small amount of albumen. Pains began soon after admission and the labor was uneventful, terminating in the birth of a stillborn child weighing 3,340 gm. For two days following delivery the patient felt nauseated and had some difficulty in voiding urine, but from the third day the puerperium was normal. On the tenth day the patient sat up for half an hour, and the following day for an hour in the morning; towards evening of this the eleventh day she complained of headache and her temperature reached 99.4°. Next morning the headache continued and the temperature was 100.6. At about 10 A.M. she was seized with a convulsion; the twitching was practically limited to the left side and especially the upper extremity; the tongue was bitten, but there was no twitching of the face muscles. This convulsion lasted six minutes. Two hours later there was a second attack lasting four minutes; twenty minutes later there was twitching of the left arm, but consciousness was retained. The blood pressure was only 100 mm. A catheterized specimen of urine showed a very slight amount of albumen. During the afternoon and evening the patient was quite comfortable and talked a good deal. In the early morning of the following day she became restless and at 5.05 A.M. twitching of the left side of the body occurred, especially the arm; the face muscles were not involved. The face was flushed, eyelids swollen, and the eyes seemed a little more prominent than previously. The convulsive twitching increased in intensity, with but momentary intermissions, and by 1.30 P.M. the muscles of the left side of the face and both eyes began to twitch; the head was drawn to the left. In spite of the violent movements the patient appeared to hear when spoken to. The temperature rose during the morning, reaching 105.6, where it remained through the afternoon. At 3.30 P.M., the convulsive movements of the left side still persisting, the right leg became paralyzed. At 8.35 P.M. the left arm stopped twitching for the first time in fifteen hours. At 9.45 the twitching of the left side of the face and left eye ceased. The lips and finger tips were cyanotic. The pulse could not be felt on either side, but the heart was beating eighty times per minute; the body was hot and moist, the right leg much mottled, respirations sighing. Death occurred at 10.24 P.M. The temperature shortly before death reached 108.6°.

Dr. James J. Putnam saw the case with me during the forenoon and thought it undoubtedly one of cerebral hemorrhage. No syphilitic history could be obtained, but the history of a previous pregnancy ending in the premature delivery of a stillborn child, together with the second stillbirth, is certainly suspicious. Dr. Putnam was inclined to think that the hemorrhage was caused by changes in the vessels due to pregnancy rather than to any specific influence. A history was obtained of partial paralysis of the right leg following an attack of fever at three years of age; the fever was said to have been scarlet fever, but on closer questioning of the patient's mother it seemed highly probable that it was really acute anterior poliomyelitis. A complete autopsy was permitted and the following condition within the brain was found (Dr. L. J. Rhea):

Dura strips easily from the pia. The great longitudinal sinus contains a friable, pale, grayish-red clot which in places is adherent to the vessel wall. The pial vessels are generally enlarged and contain a clot; in some this is definitely adherent to the vessel wall. Beneath the dura covering the left lateral hemisphere is a thin diffuse layer of blood clot; anteriorly this clot covers the brain completely; there is a similar lesion, though much less marked, over the right hemisphere. On section the brain surface on the left side shows no gross lesions. About the center of the brain substance of the right hemisphere, and situated just posterior to the fissure of Rolando, is a fairly well-circumscribed

dark-red blood clot about 6 cm. in diameter; the brain substance immediately around it is soft and generally light red with small bright points throughout. Vessels at the base of the brain and skull are normal. Anatomical diagnosis: Cerebral hemorrhage. Thrombosis of longitudinal sinus. Subdural hemorrhage.

The reported cases of cerebral hemorrhage during pregnancy and the puerperium are comparatively few. Jardine [4] reports one occurring in the eighth month of a third pregnancy; both other pregnancies had resulted in the birth of a stillborn infant at seven months. The patient during this third pregnancy had been exceedingly nervous and apprehensive lest this child should also be lost. The attack began with sudden loss of power in the right hand; the face twitched and was drawn to one side, and the patient became unconscious. On admission to the hospital ten hours later a large quantity of albumen was found in the urine. Death occurred during labor three days later. No evidence of syphilis could be found, but the history of the previous labors was suspicious. Rudaux also reports a case of death sixteen hours after delivery, the symptoms in this case lasting six hours. There was no actual hemiplegia, but shaking of the upper limbs, followed by contraction and finally relaxation. There was Cheyne-Stokes respiration, increasing coma and death. Autopsy revealed a large cerebral hemorrhage.

In connection with the first case in my series an interesting question arises whether the fatal attack of dyspnea was due to a culmination of the patient's extreme nervous apprehensions, or whether it was precipitated by reflex nervous action resulting from the vaginal examination. McClanahan,[5] in enumerating the causes of sudden death in pregnancy and the puerperium, says, "Among the rare causes of sudden death should be mentioned the reflex nervous shock resulting in some inexplicable way from vaginal examination or manipulation." Rudaux also refers to it as one of the causes of sudden death, and Mihalkovits,[6] Frigyesi [7] and Von Seuffert [8] report cases of death during or immediately following examination.

The question of performing post-mortem Cæsarian section in such cases is an open one. Some authors advise against it on the score of the shock to the patient's family and the doubtful chance of obtaining a living child. Weiswanger,[9] indeed, reports a living child delivered by Cæsarean section nineteen minutes after the death of the mother, but such cases are phenomenal. Many recommend rapid extraction per vaginam in the case of multipara, as the tissues are relaxed and easily dilated immediately after death. Von Seuffert has tabulated the reports of various writers to determine the number of living children delivered by post-mortem Cæsarean section. In his first table, out of 778 cases reported by five different writers, a living child was obtained only nine times. His second table, from more recent statistics, gives 81 cases reported by three different writers with 40 living children; the improved results he attributes to better methods of resuscitation. He gives three cases of his own; in the first the infant was resuscitated with some difficulty; in the second case, one of cerebral hemorrhage, the infant was dead and in the condition of rigor mortis. His third case was one of eclampsia and brain tumor, a twin pregnancy; the hearts beat for thirty and forty minutes after delivery, but neither infant could be resuscitated, a somewhat parallel case to the one I have reported.

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Medical Progress.

RECENT PROGRESS IN OPHTHALMOLOGY.

BY MYLES STANDISH, M.D., BOSTON,
AND
EDMUND W. CLAP, M.D., BOSTON.

TRAUMATIC RING-SHAPED OPACITY OF THE LENS.

Vossius, in 1903, first described two cases of ring-shaped opacity of the anterior surface of the lens following traumatism and disappearing in a few weeks. Now 17 cases are on record, 15 of contusion and 2 of perforation of the eyeball. The opacity is situated in or on the anterior surface of the lens at the center, and is about the size of a contracted pupil. It is usually annular, but may be incomplete, made up of dots or of fine lines, and the ring may be of varying width. In some cases the opacity was disk-shaped, of fine dots closely aggregated at the periphery, giving the effect of a ring at first sight. Gifford reports one with fine stippling all over the anterior surface of the lens both inside and outside the ring, and Löhlein speaks of disk-like opacity with ring-shaped accentuation. Hoeg's case showed very slight opacity within the ring and a few radial opacities towards the lower periphery of the lens. The opacity is of a light gray color, in some cases not visible by reflected light, but darker by transmitted light, and in some cases has a brownish color or the gray dots are mixed with brown ones, suggesting pigment left by posterior synechiæ. The ring is best seen by dilating the pupil. Hyphema was present in many but not in all the cases, and other results of contusion, as abrasions and infiltrations of the cornea, mydriasis, posterior synechiæ, chorioidal rupture and hemorrhage into the vitreous. The opacity clears up in from one to six weeks, usually in three weeks, without in itself affecting the vision. While usually circular, the opacity in one case with prolapse of iris was ovoid, corresponding to the pear-shaped pupil. The opacity probably occurs immediately at the time of the traumatism or within a very

short time, as it has been found within a few hours of the accident and has always gradually lessened, never increased, after it was first observed. In most cases the injury was caused by a slight or moderate blow. Vossius thought it was due to pressure of the pupillary edge on the anterior capsule of the lens, and the brown discoloration was iris pigment. He supposed the cornea to be suddenly forced in against the iris, pressing it on the lens round the edge of the pupil and causing some adhesion of pigment and a degeneration of the epithelium of the lens capsule, and this view was generally accepted till Hoeg called attention to the impossibility of the cornea coming into contact with a sufficiently large area of lens and iris to make the ring without rupture of the cornea or iris. Also the blow would have to be exactly in the center of the cornea and be due to a small body, and this would make more of an impression at the center of the anterior capsule and, therefore, not in the form of a ring. But these rings are caused by objects varying in size and striking the eye from different directions and usually without rupture of the cornea or iris. Gifford reports a typical case caused by a glancing blow of a small piece of copper at the inner periphery of the anterior chamber. Steiner's case was caused by a bullet wound in the orbit compressing the eye from behind without directly injuring it. Hoeg and Gifford agree that the appearance is undoubtedly due to degenerative changes in the anterior capsule with some pigment from the iris in some cases, but the cause is the sudden increase of pressure in the anterior chamber pushing the iris against the lens.

CATARACT EXTRACTION IN THE CAPSULE.

The past year has shown a great development of interest in the extraction of cataract in the capsule as practised by Major Henry Smith, Jullundar, India. Several surgeons have gone to India and done the operation under his personal instruction, doing one to four hundred extractions apiece, so that their reports and opinions are worthy of attention. The early hostility to this operation is passing away as we find that Smith's technic has not been used by other operators who have supposed they were doing his operation, and it appears now that Smith has made an important contribution to ophthalmology, even if his operation does not finally supplant the capsulotomy operation in all but certain cases. It will be admitted that removal of the lens in its capsule is a vastly better procedure than the leaving of the torn remains of capsule and fragments of lens substance so apt to cause delayed healing, iritis and infection. The question is, Can extraction in capsule be done safely without frequent loss of vitreous by an operator of average experience and ability? Smith has done 22,000 operations, 20,000 of them in the capsule by his method, and has acquired a high degree of skill in it. He has modified his procedure from time to time, trying various expedients through a large series of cases, and now for two years he has followed his present method without change. He extracts all sorts of senile cataracts, simple or complicated, but not juvenile or congenital, as here it is almost impossible to dislocate the lens. A trained assistant is necessary, and his skill is as important as that of the operator. He must know just what to do as each emergency arises, and the avoidance of loss of vitreous is chiefly due to his manipulations. The corneal section is made with a speculum in place and the eye held with fixation forceps. The knife starts well back in the sclerocornea and the counter-puncture is made in a corresponding position in such a way as to have the section include nearly one half of the circumference of the cornea. The cut should be made if possible with the one thrust across of the knife or certainly completed with the drawing back, no sawing, but a clean cut, bringing the knife out in the cornea nearly at a right angle to the surface so as to have no overriding which may cause unnecessary astigmatism. Iridectomy may or may not be done. Perhaps it is best for beginners to make a small one. After the iridectomy, the speculum is removed and the assistant takes charge of the lids, drawing down the lower lid by the thumb of the left hand and lifting the upper lid up away from the eye on a large strabismus hook held between the thumb and first two fingers while the third and fourth fingers press firmly on and draw back the brow, giving a complete control of the lids and preventing the patient from squeezing out vitreous. The eye is now relaxed at the bottom of a pit in which the operator must work, but where there is very little tendency for the vitreous to extrude. The eye may now roll up or into whatever position the patient chances to put it, though this is usually up. Smith does not give the patient any commands as to what he shall do, and operates with the eye in any position, not speaking to the patient at all and, indeed, the American operators who did so many operations in India report that they could not have made their patient understand even if they had wished to. Next the blunt point of a strabismus hook should make firm pressure over the lower edge of the lens, viz., on the lower part of the cornea, directed back towards the optic nerve and then steadily maintained. As the lens yields it must be followed up to keep it in the wound and prevent the escape of vitreous, so the hook folds the corneal flap up under the escaping lens, letting up as soon as the lens is out. Intumescent lenses may be made to turn over by pressing on the lower edge backwards and then down towards the patient's feet till the suspensory ligament ruptures, when the hook follows up as the lens turns over and comes out lower edge in advance and posterior surface upward. Should vitreous present, it may be held back with the spatula in the left hand and the lens be delivered sliding up and out on the concave surface of the spatula. The assistant still controlling the lids, the iris can be deliberately replaced and the eye closed and bandaged and not redressed till the eighth day, as iritis is not to be feared after this operation. Rupture of the capsule during expulsion of the lens is a serious accident as vitreous

usually is lost in attempting to pull out the remains of the capsule, and iritis and infection may follow leaving the capsule behind. Removal of the ruptured capsule should be tried, but if not accomplished a needling may be done later if necessary. Smith has less than 5% vitreous loss, and his pupils report about 5% of losses of vitreous, but this showing can be made by beginners only under skilled guidance. Numerous authors favor the operation especially for immature, slowly ripening cataracts, where our present methods mean a long wait for the patient. Savage has devised an instrument for tearing the suspensory ligament before trying to express the lens, and numerous modifications are described by English and American authors. The future of the operation in the hands of other operators than Smith and on other races than the Indian will be decided only by a large series of cases.

SYMPATHETIC OPHTHALMIA.

One of the many unsolved problems of sympathetic ophthalmia is to account for the cases, few but undoubted, which occur with sarcoma in the first or exciting eye, without any wound or perforation. Meller discusses this subject, and as our knowledge of sympathetic ophthalmia has made advances, especially along pathological lines, in the last few years, it is worth while to give a summary of what we know certainly about it. Sympathetic ophthalmia is a specific affection of the uvea, characteristic histologically. The uvea of the first eye forms a granulation tissue of lymphocytes, epithelioid cells and giant cells, as specific an infection as tubercular or syphilitic infiltration of the uvea, caused by a definite virus. Sympathetic ophthalmia is completely distinct from other forms of uveitis, whether they spontaneously arise or occur after injuries. Fuchs showed how we can distinguish a sympathizing or an exciting infiltration from endophthalmitis whether one is present alone or both are present at the same time. Sympathetic infiltration always starts in the uvea and especially in the choroid, which is never spared entirely. Though most authors assume the necessity of an external opening (operative, accidental, or from perforating ulcer), there is now no doubt that cases occur without trauma, and the infection might, of course, be endogenous even in the cases of external opening, which may change the resistance of the eye. Meller's present case is one of sarcoma leading to blindness of one eye seven years before the second eye was attacked by typical sympathetic inflammation. The sarcomatous eye from necrosis of the growth had had a severe plastic inflammation, but, so far as the uvea was not destroyed by the sarcoma, sympathetic infiltration was clearly present. As no signs of degeneration were present, the duration of the exciting infiltration could not have been long. The histological examination was very thorough, and a complete series of sections of the whole globe showed that there was no scar of any perforation, recent or old, viz., no communication of the eye with the outside. The sarcoma had recently started to grow again, and there was some necrosis, which possibly accounts for the starting of the sympathetic process. This case, with thirteen collected by Schirmer and three by Fuchs, comprise the authentic reported cases of sympathetic inflammation following intra-ocular sarcoma, and twelve of these cases had no perforation of the globe, viz., the sympathetic infection must have been endogenous. If the germ, then, may circulate in the blood, why do we not get this type of ophthalmia after infected wounds of other organs of the body? A previously sound eye is not subject to the exciting inflammation; always the uvea must have suffered some injury or infection in order to become the site of this specific infection. Too severe an endophthalmitis (especially a panophthalmitis), on the other hand, is unfavorable to the development of sympathetic. In these cases of sarcoma the uvea has been the seat of an inflammation not of sympathetic nature first, or there has been direct injury of the uvea from necrosis of the growth, showing that the ground must be prepared. All observers have been surprised that a very small proportion of all eyes enucleated as in danger of giving rise to sympathetic ophthalmia really have shown the characteristic infiltration of an exciting eye, but if the infection be an endogenous one, this fact is not surprising; the eye did not have the exciting infection, but had conditions favorable to it. It might not begin for years, but when it did, then the other eye shortly incurred the infection, but an enucleation short of the time of the endogenous primary infection would show nothing of the sort. This would explain the sympathetic ophthalmia coming on many years after the injury to the first eye, and, indeed, in these old eyes the exciting infiltration is always a fresh process. Fuchs has shown that the infiltration, even in the exciting eye, attacks mostly the posterior part of the uvea and in numerous separate foci, afterwards fusing, but not starting and infiltrating in continuity,— all this suggesting an endogenous origin, — the process beginning from the vessels of the choroid much in the way that miliary tubercles of the choroid arise when the infection is endogenous. Sympathetic ophthalmia following sarcoma of the exciting eye is a pure and uncomplicated experiment given us by nature and indicates that even in the usual cases following injury to the first eye the origin of the sympathetic may be endogenous.

S. Weigelin, in an exhaustive and able monograph, reports a complete histological examination of 41 eyes; 17 primary eyes in undoubted cases of sympathetic ophthalmia; 8 eyes in doubtful cases; 4 eyes causing sympathetic irritation in the other eye; 2 sympathizing eyes, and 10 eyes with traumatic iridocyclitis. Interesting is the author's collection from the literature of 1,150 cases of perforating injury, of which only 12 gave rise to sympathetic ophthalmia, — about 1%. His summary is worth quoting: "In every case of true sympathetic ophthalmia the characteristic typical exciting infiltration of Fuchs was found in the first eye." "In all cases of traumatic iridocye-

litis in which the second eye did not have sympathetic inflammation, there was found a different anatomical picture having only a distant resemblance to the exciting infiltration." "In cases of doubtful sympathetic inflammation the pathological examination was able to decide the question." "The examination of two sympathizing eyes showed anatomical conditions similar to those in the exciting eye." "In one case of spontaneous iridocyclitis of both eyes, in the first attacked was the typical picture of sympathetic infiltration." "Admitting that we have now a characteristic pathological picture to be certainly distinguished from that of traumatic iridocyclitis, there are a few cases of spontaneous iridocyclitis not to be distinguished from sympathetic ophthalmia except that they are not preceded by a perforation of the eyeball." Meller's theory of the endogenous origin of the sympathetic virus would account for these cases. Wagenmann gives a complete pathological report of a case of sympathetic ophthalmia following extraction of a dislocated lens. An insidious fibrinous inflammation followed and five weeks after the operation the second eye gave the first subjective symptoms. Two days later the first eye was enucleated, and three days after that the second eye clearly had sympathetic inflammation. Twenty-three days later the patient (forty-eight years old) died from cerebral hemorrhage and both eyes were examined and sectioned and an exactly similar type of infiltration was found in each eye corresponding to that found by Fuchs, Schirmer, etc., in every case of sympathetic ophthalmia, as well as the endophthalmitis of Fuchs in the first eye.

OPERATIONS FOR GLAUCOMA.

The last few years have seen several new or modified revivals of old operations for glaucoma. Iridectomy is satisfactory for acute cases and for those with persistent increase of tension, but not as useful in simple chronic cases and in those with the tension slightly elevated at times. Heine five years ago devised an operation that he called cyclodialysis which consisted in separating the ciliary body from the sclera for a short distance so as to break into the anterior chamber through the ligamentum pectinatum, making a communication between the anterior chamber and the suprachorioidal space. This operation seems to have made a place for itself. Elsching reports 110 operations in detail and prefers it to iridectomy in some cases, especially those without inflammatory symptoms. Drainage from the eye by a permeable scar has been the object of several old operations. De Wecker's sclerotomy aimed at a filtration scar without inclusion of the iris, and many varieties have been introduced, such as the operation of Herbert, who cuts a little tongue of sclera near the cornea, under a conjunctival flap, with the purpose of getting a filtering cicatrix. Then another series of sclerotomies have incarceration of iris in the wound as an essential part. Holth makes a flap incision in the sclera near the limbus, then an iridectomy is done and the iris left entangled in the subconjunctival scar. The dangers of sympathetic ophthalmia and infection loom over these operations. Lagrange's operation of sclerecto-iridectomy is done by cutting a scleral flap as near the root of the iris as possible and then cutting a sliver of sclera from the anterior lip of the wound so that an oval gap is left under a conjunctival flap. Iridectomy may be done at the same time. This operation may leave a fistulous cicatrix. Herbert also does a delicate operation consisting in cutting out a wedge-shaped piece of sclera attached only to conjunctiva so that when it is replaced it may shrink and leave a filtering space about it. A trephine operation for lowering tension was done by Argyll Robertson and others long ago, but several such procedures are recent. Fergus and Elliot each do a trephine operation to make a permanent opening for drainage; Fergus also adds what is practically a cyclodialysis. Verhoeff has devised an ingenious punch to cut out a piece of sclera with a minimum amount of traumatism, leaving a clean round hole 1 mm. in diameter. He does a small buttonhole of the iris under the hole to avoid prolapse or incarceration of the iris. Ballantyne, in reviewing these operations, concludes that it is clinically possible to produce a scar through which fluid within the eye will exude either by microscopic channels or by a small fistula. Histologically the material is too scanty as yet to decide with how much certainty we can get a permanent filtering scar in a given case, but clinically and histologically the filtering cicatrix is a reality. Further, he thinks that all these operations have a sphere of usefulness.

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Reports of Societies.

THE AMERICAN CLIMATOLOGICAL ASSOCIATION.

WASHINGTON, D. C., MAY 3, 4 AND 5, 1910.

[Concluded from No. 19, p. 739.]

DR. JAMES ALEXANDER MILLER, of New York, read a paper on

THE TUBERCULIN TREATMENT OF PULMONARY TUBERCULOSIS IN OFFICE AND DISPENSARY PRACTICE.

He classed present medical opinion as to tuberculin as follows: Those who are still influenced by early antipathy to tuberculin, caused by its misuse and

fostered by the denunciation of Virchow; second, those who view it as a short cut to diagnosis and treatment which will spare the necessity for more laborious and painstaking methods; and, last, those who believe strongly in the value of tuberculin, but have come to realize its limitations so that it is welcomed simply as one more valuable aid to be used in careful conjunction with other methods. The last class is growing rapidly. The chief value of tuberculin is that it causes a specific response in some of the vital reactions of the body which are closely associated with true immunity, e. g., opsonins, agglutinins and precipitins; and in the additional toxin tolerance which is also, perhaps, a real toxic immunity. There is also a slight local hyperemic reaction which seems to be important. But this method of toxic tolerance, or gradual habituation of a patient to the hypodermic administration of increasing doses of tuberculin, is the chief element in the cure. No one of the ordinary preparations of tuberculin seems to possess advantage over others. In its administration the aim should be to produce no general reactions. The time element in treatment is more important than the absolute dosage, the latter varying with every case, and the former never less than six and often more than eighteen months. The method is quite as applicable in dispensary and office treatment as to those in sanatoria.

Dr. Herbert Maxon King, of the Loomis Sanatorium, read a paper on

VACCINE THERAPY IN TUBERCULOSIS AS APPLIED IN INSTITUTIONAL PRACTICE.

This consists in (*a*) the treatment of the tuberculous infection itself by some one or more of the tuberculins, and (*b*) the treatment of the pyogenic infection by the specific bacterial product indicated by the character of the secondary infection. Autogenous tuberculins are not generally employed, as there is no special advantage in their use.

At the Loomis Sanatorium two classes of patients are advised to take tuberculin, viz., (*a*) the class of incipient cases which have been under observation for a sufficiently long time to justify the belief that they are not progressive and are without fever or other evidences of a marked general toxemia, and (*b*) that class of more advanced cases, presenting evidence of "arrested" activity, who have been for some time without material change in their condition, either local or constitutional, but who still have cough and a bacillary sputum. If given in febrile cases, the results have always been negative. The one demonstrable and constant result of the suitable use of tuberculin is tuberculin immunity; this is the first consideration and the line of pursuit throughout the whole course of treatment.

Dr. King believes that a suspension of B. E. in B. F. comes nearest to the ideal choice; but B. E. has the disadvantage of producing at times, and without premonition, rather disagreeable reactions and requires, perhaps, more care in dilution than some other varieties. Dr. King gave minute directions as to dose and interval and insists on individualization in treatment. He endeavored for a long time to utilise the opsonic index as a guide to tuberculin administration, but abandoned the method as impracticable. He insists on comparative rest on the day of the injection and strict rest for thirty-six hours afterward; the injections are given in the late afternoon. This is easily controlled in sanatorium practice. Remarkably good results were obtained in laryngeal lesions where focal, not general, reactions are frequent. A typical case was cited. Dr. King then took up the treatment of secondary pyogenic infections by autogenous vaccines. This method is applicable in cavity cases with high fever which do not yield to rest in bed. The technic was described. The emulsion is made and sterilised at 60° C. and standardised. The initial dose is from twenty to forty million, which, if no counter-indications arise, is first repeated and then increased at the rate of 100% until from one hundred to two hundred million is given at intervals of from two to ten days according to circumstances. No untoward effects have been noted. Subsequent temperatures have never been noted as being higher after the injections.

Dr. Walter A. Griffin read a paper on the

USE OF TUBERCULIN AT THE SHARON SANATORIUM.[1]

It has been in use there for diagnostic purposes for eight years, and as therapeutic measure for five years. One hundred and nineteen cases have been tested by it, and 36 have had it in the way of treatment. Of the tested cases, 4 are known to have died, but only one of these died of tuberculosis, and this was a nurse who left the sanatorium in good condition and worked as a nurse for eight years. She died of hemoptysis. The usual procedure was to give 2 mgm. the first time; followed, in case no reaction occurred, by 5 mgm. and 10 mgm. In all cases either old tuberculin or bouillon filtrate has been used. These products are probably safer than some of the others and the results seem as good as with any other tuberculin.

Dr. Randall said that the applications of opsonic treatment by vaccines to diseases of the ear have been too limited and carried on by too few investigators to have reached definite results. Hardly a hundred individual cases are recorded, and while these are encouraging, especially to enthusiasts, there are too many loopholes for any estimate of them to carry conviction to clear minds. The permanence or uniformity of success which should distinguish a monumental improvement in therapy cannot yet be considered established, while some of the reports are open to suspicion of being none too well posted, or else too pessimistic as to the older measures. Closer scrutiny of the instances of its employment will probably give greater confidence in the possibilities of the method, and it is hoped that this joint consideration of the subject will serve to crystallise into more available shape its practical applications, and that growing experience will show more frequent realisations of the hopes and claims of the enthusiasts.

DISCUSSION OF VACCINE THERAPY.

Dr. J. Solis Cohen, Philadelphia: I have had a very prolonged experience with tuberculin; for thirty years I was consulting physician for consumptives, and gave the first injection of tuberculin in Philadelphia before my class at the Jefferson Medical College upon a patient with advanced tuberculosis of the larynx in the early eighties. Ten years ago I heard that that man was well and was a successful ranchman in Wyoming. I have not heard from him since. Fifteen or sixteen years ago a man came to me from the South with extensive ulceration of the larynx. He was placed under treatment and after a number of months his disease was arrested. Two years afterward his life was insured for $100,000 in the Mutual Life Insurance Company of New York. In that case not only was the injection given hypodermically, but the tuberculin was rubbed over the laryngeal surfaces, and he took rectal injections himself every night. There is no doubt that in this case there was a great success. I know of several other patients still living at different periods

[1] See Journal for July 28, 1910.

of five to fifteen years or more, and doing well. The tuberculin that I have used has always been the old tuberculin of Koch, except when we were unable to get it, and then other forms were used, but did not appear to present any special advantages. These injections were used very much as the last two speakers have described, beginning with minute doses and gradually increasing them, and studying the patient rather than the disease.

I would like also to state something else. When I began the study of medicine some fifty-five years ago, I studied under a preceptor, as was customary at that time; and it was the custom then to apply fly blisters as near as possible over the site of the lesion of phthisis. We knew nothing of the bacillus tuberculosis at that time. Many of the cases improved, and since the tuberculin and serum treatment have been applied I have come to the conclusion that possibly the absorption of some of the serum raised by these blisters was beneficial in the same manner as the serum when injected under the skin, and, acting on that principle, it has been my custom with many of my patients to blister the chest below the clavicle, taking care that the blister shall not burst, so that the patient's own serum shall be absorbed on the same principle as the autogenous methods. I do not often attend these meetings, but would like to give my testimony as to the advantage of this treatment in properly selected cases and under proper precautions.

DR. V. Y. BOWDITCH, Boston: I can rank myself in the first class spoken of by Dr. Miller who tried it as soon as it was given to the public and after a few cases gave it up. I abandoned it after a few cases, largely influenced by the statement that there was danger of causing disseminated tuberculosis, and for many years I had a great repugnance against it. Finally I felt that I was doing injustice to many patients who might possibly be having treatment withheld which would do them good. Feeling with Dr. Griffin that certain cases had been going on under dietetic and hygienic treatment and making no progress, we agreed to give them the benefit of this treatment, and did so; the results were so startling that we felt justified in going on. To make a long story short, we now, in addition to beginning with cases which have not been doing well, begin on the incipient cases also. My position now is that of being greatly impressed with the tuberculin.

DR. WALTER A. GRIFFIN, Sharon, Mass: Taking up the consideration of Dr. Bowditch's last remarks, I would like to say something further about what we have been doing at the Sharon Sanitarium. We began with one case which had been to us before and under hygienic treatment for seven months, and had been discharged as an arrested case. In seven months she was back again, and although we kept her under hygienic treatment for five months she made no improvement beyond a certain point. It was this case which Dr. Bowditch said would be worth trying with tuberculin. We gave her treatment for five months, at the end of which time the tubercle bacillus had disappeared, and now she has been doing her laborious work in the kitchen. I saw her within a month past and went over her chest, and found her in very good condition.

The second case was similar in that the patient had been with us for several months and was not only not doing well, but was losing ground; the cough was increased and there were beginning objective signs in the larynx. She had tuberculin treatment for seven months, and it is her boast how that she has been out nearly five years and has not seen a doctor at any time within that period. We have now to report on 28 cases which have had tuberculin treatment at Sharon and have been discharged for more than a year. Of these 28 patients, 6 have died; 2 were really too far advanced to warrant advising tuberculin, but took it at their own request; 4 others were advanced cases and were given tuberculin because it did not seem possible that they could improve under ordinary hygienic treatment, and it seemed to be a forlorn chance for them. Four others are not doing particularly well. They were all advanced cases, but I am afraid they are going down hill. This makes 18 cases out of the 28 which are doing well, and this seems to be a comparatively good record when all of the cases with the exception of 3 were more than incipient, and all but the 3 had tubercle bacilli in the sputum. These 3 were given treatment for special reasons. It is known that the tuberculin will do no harm, and frequently will do good.

DR. NAGLE, Boston: I do not want to be too enthusiastic about vaccine therapy, but I believe it is a valuable adjunct in treatment. I wish, however, to emphasize the importance of the proper preparation of the vaccines and the method of giving them.

DR. C. L. MINOR, Asheville: The point is whether or not tuberculin should be used on every patient or only on selected cases. The tendency of some is to use it on every case. I have been slowly brought around from skepticism to belief in tuberculin, granted that it is a selective use. I do not believe that a patient should be put on tuberculin as long as he is making progressive and steady improvement, but for those who have done well up to a certain point and then reach a stage of chronicity when they go neither forward nor back, I believe that tuberculin is a valuable aid. When used in this way I have used it with wonderful effects. I think if the idea went out that it was applicable to all cases, much damage would be done by it. To show how dangerous it may be when used promiscuously, I would like to cite the case of a boy seen by a doctor after he had been in the hands of a quack. The boy had incipient tuberculosis, and the quack started at once on daily injections of tuberculin; the boy began to have reactions, and the quack continued the treatment until the boy became a hopeless case. Men with dangerous and uncontrolled enthusiasm might do something of the same kind with it.

I believe that it is valuable when used selectively, but all cases do not do well on it, and some cases with the greatest care are unable to take it. I would advise great care in the selection of cases for this treatment.

DR. W. B. JOHNSON, Paterson: The question is developing along the lines of tubercular disease and tuberculin. I would judge that tuberculin has been successful in a number of cases, but the important consideration to the otologist is what can be done with the autogenous or stock serum for the destruction of bacterial elements which enter into the diseases we are called upon to treat. I have followed serum and vaccine therapy for a number of years. One case of sarcoma of the pharynx I treated with the Coley serum with success — it was one of the few cases that were successful. I have also used the stock vaccines and serums, and while it seemed as if in some cases life was prolonged by the use of the serum and vaccine, it was not with me successful. It may have been that the preparations were poor. It has been stated lately that success has been attained by the use of stock vaccines, but in my experience, which has been limited to the use of autogenous vaccines prepared in Jersey City by Dr. McDowell, they also seemed to be unsuccessful. I do not wish to be understood as in any way depreciating the value of experiments in this direction, but I am still waiting and hoping that the results reported will make it desirable for all of us to use these

remedial agents for the destruction of bacteria which enter into the diseases we have to treat.

DR. CASSELBERRY, Chicago: I have been particularly impressed with the favorable statement which has been given by one of the essayists, Dr. King, who refers to the pronounced favorable effects of tuberculin on laryngeal conditions in pulmonary tuberculosis, since we have not had up to this time any judgment or verdict in this respect based on so large an experience as he has had in this complication of tuberculosis. When the larynx is involved it becomes almost the dominant factor in the case, and our results up to this time have been discouragingly bad. Therefore, if — as we have hoped for the last few years with the trend of the verdicts with respect to tuberculosis — we have a remedy in tuberculin which will have in any considerable percentage of cases such effect as he has stated, we have made an enormous advance. I have been impressed with the statement that in those cases in which he got very pronounced reactions from a larger dose than was meant, the effect was good. This I have noticed many times in making the tuberculin test when it was given for the purpose of producing a general reaction; I have noticed that weeks and even months afterward there has been marked improvement in the larynx. I noticed this, but did not trust to my own observation, but gave the credit to other circumstances, — but the two go together: he has attributed it to tuberculin, and I have no doubt that he is correct. I have also had a limited experience with respect to the effects of the present-day minute doses in laryngeal cases, in which recourse was made to all other medical and surgical treatment. Elsewhere, I have reported 40% of arrested cases in laryngeal tuberculosis, some of them being those in which tuberculin in small doses had been given as an element of the treatment. Many of the men who see large numbers of pulmonary cases fail to examine the larynx. If these men would take note of the condition of the larynx and the effects on conditions there produced by tuberculin treatment, much good would be done to humanity in the direction of laryngo-pulmonary tuberculosis.

DR. DUNN, Asheville, N. C.: There are only one or two points in these very excellent papers which I wish to comment upon. First, I want to say that it is just such good, conservative papers as these which help. The tuberculin cause has been damaged more by optimists than by anything else. The effect of tuberculin in laryngeal tuberculosis has interested me for many years. I always examine the larynx, and I have been particularly struck with the improvement taking place in distinct laryngeal involvement. It is not so very striking in the advanced cases where there are marked destructive changes. As to the improvement following the reaction, it has been my custom to watch for reactions, and I have in many instances seen the beginning of improvement in the laryngeal reaction; it has happened so frequently that I am convinced it had some association with the reaction. As to the different forms of tuberculin, I have used a number of them; I used the old tuberculin constantly and exclusively for nearly ten years; for the last few years I have used the human bacillus culture, and recently I have used the bouillon filtrate of Denis, and I have used other methods in vogue at times. I have used the B. E. and the B. F. mostly of late, but the immediate results have been practically the same; I cannot see that I have gotten any better results from bacillus emulsion or from B. F. than from the old tuberculin. Not enough time has yet elapsed to form a positive opinion as to the use of tuberculin. I am very conservative as to its value; on the other hand, I do not think our attitude should be that of giving a person the choice of taking it or not as he pleases. When I give tuberculin to a patient I expect him to take it, just as I expect him to obey when I tell him to go to bed, and if I am convinced of its usefulness, that is my privilege. As to waiting until the improvement under hygiene and diet have been tried, that is not fair; if we are convinced that it has a value in making results more permanent, it is our duty to our patients to do that which gives them not only the best immediate results, but the best permanent chance. The time element is a very important one. I have known of a number of patients who took it for only a few months and then discontinued it and were put into a state of instability. That has been my impression.

Another thing: The greatest disadvantage in tuberculin is that the doctor puts his faith in his hypodermic syringe and does not pay enough attention to the life of the patient. We should never lose sight of the fact that it is a more or less important adjunct. Sometimes the patient puts more faith in what he gets from the hypodermic syringe than from what he does for himself. We should make them believe that what they do is of more importance than what we can do, and that the hypodermic is an aid, and nothing more.

DR. I. H. HANCE, Lakewood: A few months ago I read a short abstract of an article written by a Frenchman, — only a few lines, but in line of what has been said about the auto-inoculation, — to the effect that in treating pleuritic effusions he drew 2 ccm., and then reinoculated his patient. He reported four or six cases of value treated in that way. In view of this, I asked Dr. Trudeau if anything had been done at Saranac Lake with auto-inoculation with the serum. It occurred to me that if that were drawn off as horses' serum is drawn it could be successfully used on the patient, — the serum being drawn from the body. This is in line with what Dr. Cohen said — leaving the serum under the blister for reabsorption and auto-inoculation that way.

H. S. BIRKETT, and J. C. MEAKINS, of Montreal, read a paper on

THE VALUE OF VACCINE TREATMENT OF CHRONIC INFLAMMATORY DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.

DISCUSSION.

F. C. COBB, M.D., Boston: The question is a most complicated one and the results thus far obtained are both discouraging and encouraging. In a series of twelve cases at the Massachusetts General Hospital, all of the patients treated with vaccine made from a bacillus found in all cases, a general improvement was shown, and yet no absolute cure can be reported.

DR. H. C. REIK, Baltimore: I think that if I had had the opportunity of drawing my conclusions after having heard these papers, I should not make them different. I regret that more was not said regarding the use of vaccines in relation to the nose and ears. The fact that the climatologists seem to have gotten away with the discussion may perhaps be explained by the well-known timidity of the rhinologists and the well-recognised modesty of the otologists. One point was brought out by Dr. Birkett, and confirmed by the negative reports of results found by both Dr. Cobb and Dr. Coakley, that one positive result is worth many negative findings. Then in his conclusion that treatment by vaccines will sterilize the accessory sinuses of the nose, — and there seems to be evidence to back up the statement, — he has given us something very important to think about. None of the essayists spoke of many positive results having been obtained in the treatment of the nose, — and if that be true, that we can bring about a state of sterility of the secretions, much can be

accomplished by the treatment, even though some remains. None of us are afraid of sterile secretions from the nose. We have good reason to be afraid of infectious secretions from the nose.

DR. R. G. CURTIN, of Philadelphia, read a paper entitled

A BRIEF STUDY OF THE CLIMATOLOGY OF CANCER.

DR. THOMAS DARLINGTON, New York, N. Y.: I think there is very little value in the statistics which are collected to-day. Some time ago, in investigating cases of meningitis and the statistics as reported in the city of New York, three out of every five cases were found not to be cerebrospinal meningitis, but two were meningitis, two were pneumonia and one was enteritis. Now if our statistics are of the same character, we cannot depend upon them, and I feel that our cancer statistics are in the same nature. The one trouble with statistics of this character is that a great many people feel that cancer, like tuberculosis, is hereditary, and if a person dies with any symptoms of pneumonia or Bright's disease, that is usually placed on the death certificate and the cancer not mentioned because of its bearing on the future life of the children. That is a very common affair. I feel that we need some other method of collecting vital statistics, possibly that every case should be visited by an inspector and the certificate granted by him, instead of the physician. So far as people in the cities being subject to cancer, there is no doubt that where people are gregarious they cannot expect the immunity of a disease that follows the forest. I feel that our statistics are so faulty that we really know nothing about it, and I have made many investigations along that line. I only wish that we could do something to secure better registration in the various cities and states.

DR. C. L. MINOR, of Asheville: Speaking for the South and those sections where the negro greatly predominates, I am satisfied that proper vital statistics are utterly impossible. As to whether there are many cancers among the negroes or not remains to be proven, but I am sure that if any there may be, only a minute fraction would be reported. A large majority of all negroes, and especially of country negroes, have no doctor, or such doctors as would never report. But leaving the negro aside, statistics of disease in the rural whites, living, as they often do, miles from the nearest doctor, and he miles from the registering office, are out of the question. In the thickly settled country, with many officials and people trained to carry out registry law, it is different. But for the portions of our country which are purely agricultural and where anything but villages are rare, we need not anticipate sta'istics which would be of any value.

DR. FREMONT-SMITH, of Washington, D. C., read a paper on

INFECTIVE ENDOCARDITIS IN THE YOUNG.

DR. HENRY L. ELSNER, of Syracuse, read a paper on

THE CONTROL AND TREATMENT OF HYPERTENSION AND ARTERIOSCLEROSIS.

He stated that cardiovascular, more particularly arterial, changes furnish the fundamental morbid processes in the largest number of deaths after the fortieth year. There is a physiologic hyperplasia invading the intima during early life. We must consider the separate artery as an organ whose task is multiple, and the performance of its daily undisturbed work is attended even during the earliest years of life with a compensatory deposit for the preservation of these organs and the continuity of the circulation. As soon as this physiologic hyperplastic change of the intima, because of age, overwork, strain, toxemia or any other cause, is forced into a stage of hypertrophy, we have the beginning of arteriosclerosis. Hypertension upon which we fail to make a favorable impression by rational treatment is already associated with changes in kidney, heart or within the splanchnic area.

Hypertension will often lead to a strong suspicion of renal invasion. Dr. Elsner took up the influence of tobacco and quoted Sir Lauder Brunton's experiments in which a rise of blood pressure is noted after the use of nicotine. This is greater than from any known drug except suprarenal extract. This is due chiefly to contraction of the arterioles. Coffee also raises the pressure, and Dr. Elsner advocated the "caffeine-free" coffee. The dietetic management of these patients is most important. Many patients with angina pectoris have promptly lost their lives because of a single dietetic indiscretion. Dr. Elsner advocated the use of the Zander movements and believes that the use of the apparatus has not been properly appreciated by the profession in the treatment of hypertension. High-frequency currents were also highly recommended. The preparations of iodine were discussed, especially the newer ones, including sajodin, tiodin and eustenin. The alcoholic solution of nitroglycerin was advised and sodium and amyl nitrite. Dr. Elsner has given fifteen drops of nitroglycerin solution in desperate cases with benefit.

DISCUSSION.

DR. CURTIN said that in his investigation of angina pectoris three years ago he studied its relation to the use of tobacco. He then reported 60 fatal cases; of these he personally knew 8 men who did not use tobacco and in addition there were 15 women who presumably did not smoke, making 23 of the total of 60 persons, or about one third in whom tobacco could not be ascribed as the cause. One was noted as a great user of tobacco, and that is the only one in which my notes mentioned tobacco at all. Men who smoke and are leading active lives die of angina pectoris, and females who live similar lives die of it, too, and we may suppose that they do not smoke. In Japan almost the whole population smokes, — the boys begin at nine and the girls at ten, and yet angina pectoris is said to be not a very common disease in Japan. "I should say that, as far as my observation goes, tobacco is not a strong factor in the cause of the disease, but when the disease appears it may be aggravated very much by tobacco, or any other mild cause, particularly in regard to taking of food and drink. Anything that distends the stomach, and particularly food, may bring on an attack of angina pectoris. A bishop told me that when he got behind a horse and that horse began to ascend a hill he got an attack of angina pectoris; and there was another person in Philadelphia who said that when he got to a certain point where he used to run to catch a car, and saw the car stop still, he got an attack, showing that the imagination has a great deal to do with bringing on a paroxysm."

DR. ELSNER said that Hag, of Bremen, several years ago brought to the notice of the German profession a caffeine-free coffee, from which all but about 10% of the caffeine had been eliminated. Dr. Elsner had considerable experience with this caffeine-freed coffee, and is very positive that it is not followed by the baneful effects on the heart following the use of ordinary coffee, and it is a coffee which may be given without fear to those who cannot take coffee at night without being kept awake. It is not a substitute for coffee, but a true coffee. No difference is apparent in the bean and there

is no difference in the taste when properly prepared. This coffee may be used by those who do not bear ordinary coffee well, those who have arteriosclerosis and irritable hearts.

Dr. Judson Daland and Dr. W. D. Robinson, of Philadelphia, read a paper on

ANGINA PECTORIS AND TOBACCO.

They stated that smoking by a novice causes a rise of blood pressure of 10–20 mm. Hg.; that in a moderate smoker the rise is about 10 mm. There is no sudden fall in pressure, but an increase in pulse-rate. Moderate smoking by one accustomed to its use shows no change in blood pressure or pulse-rate. These data were quoted from Emerson Lee. Experiments on rabbits by Adler were given. Osler, Krehl and Huchard were quoted as believing that angina pectoris may be induced by tobacco. Four cases were cited illustrating the relationship of tobacco to angina pectoris. Tobacco in excess induced the attacks, and its withdrawal diminished their number. Over-eating and the use of alcohol was a cause associated with tobacco, the latter being the chief cause. The result of exertion was noted. The conclusion was that long-continued excess of tobacco by smoking a large number of cigars daily produces that syndrome known as angina pectoris by causing degeneration or chronic inflammation of the terminal fibers of the vagus in the heart and a similar change in the middle coat of arteries. It is probable that other widespread and important pathologic changes are caused by chronic tobacco poisoning, many of which act as contributing factors in the production of angina pectoris.

DISCUSSION OF PAPERS OF DR. ELSNER AND DR. FREMONT-SMITH.

Dr. C. L. Minor, of Asheville, N. C.: Unlike some of my friends who have discussed the question, I am not a smoker, so that I am free of bias in the matter. Doubtless to the smoker these papers would recall the remark of the lady who said that, after all, in this world everything that was enjoyable was either expensive, unhealthy or wicked. What I wish to note in Dr. Elsner's paper is what he said of Dr. Rush's observations more than a century ago. We doctors have an opportunity to notice how terribly the nerve tension of the American people is increasing, and any one who will go to a picture gallery and compare the faces of the Americans of 1840, before railroads were everywhere, before the telegraph was known, or when the telephone did not keep our nerves on the *qui vive;* when the automobile and the airship were not dreamed of, and when we lived more slowly and more sanely, with those of the present era — when these and many other things are pushing us faster and faster forward — will notice the wonderful difference in the faces produced by these things and can well believe that there must also be a change in our bodies. There is a calmness and a quietness in the portraits of our grandparents, and, if we are not too young, of our parents, which we do not often see in these days when life is lived at lightning speed and calmness and meditation are strange.

I believe, therefore, that our profession can do much by warning their patients against this overtension and overworry and teaching them that such conditions of mind are bound to react on their body.

Dr. Hall, of Denver, Colo.: The case I wish to speak of is so much more impressive to me than any case of clinical reports would be. I saw some six years ago a physician then thirty-four years of age who had a suddenly developed attack of asthma following hypertension. He had been treated in Chicago, Liverpool and London for his asthma and finally returned to Colorado. He came to Colorado hoping for relief, but the climate gave him no help. I suggested that he try a hypodermic of adrenalin solution. He did not want to try it, but finally did. It gave him the first ten minutes of absolute relief from asthma that he had had for years. Since that time he has used 200 oz. in the course of 1:1,000 solution of adrenalin. The man would never go down town without two hypodermics in his pocket for fear of one breaking. He has at times taken sixty hypodermics in twenty-four hours. I had occasion to examine him a month ago and went over his arteries. His arteries are soft, his blood-tension was 132, entirely within the normal limits. I asked one or two other clinics to examine his arteries and they found them absolutely normal. I asked Dr. Stevens, who is one of our noted clinicians, to examine his arteries to see if there are any indications of the use of adrenalin. There was no indication of it. He has recovered from his asthma and gained 77½ lb. over his lowest weight, weighs 190 lb. now, and is ready for his practice of medicine.

I wish to say very briefly that I certainly agree with the doctor, in examining the heart, that tobacco has an influence upon it. I think I can tell the time of the year when May comes because of the number of teachers who come in all tired out. In the same way I can tell when a financial panic is pending by the number of men who are in heavy business who get anxious about the situation and smoke, — the kind of men who smoke fifteen or twenty cigars in a day and then wonder why the heart is affected. One man whom I knew lost two million dollars, and his heart dilated until it was two inches to the left of the left nipple. By cutting off his tobacco, and the closing up of the panic, and his final resignation to the loss he had suffered, and a treatment at Carlsbad, he was finally restored. I think Osler says that angina pectoris is common among doctors; I have not yet known any doctor to have it over the loss of two million dollars in the panic.

Dr. J. M. Anders, of Philadelphia, Pa.: Dr. F. Fremont-Smith included under the title of infective endocarditis only ulcerative endocarditis. On the other hand, certain writers are in the habit of including under the same caption both forms of acute endocarditis. It seems to me that we are in need of a classification that should be universally adopted. During childhood ulcerative endocarditis is more often associated with acute articular rheumatism than any of the other infective diseases of early life. There is a surgical group of cases due to bone diseases, to skin infections and particularly osteomyelitis, which group is not uncommon in young subjects, and I am sure frequently overlooked. Dr. Smith's cases belong to that group known as "recurrent ulcerative endocarditis," perhaps the least difficult of all forms to diagnosticate. Again, in a case of chronic endocarditis, the development of a septic condition, even in the absence of a septic focus elsewhere in the body, justifies the clinician in making a clinical diagnosis of ulcerative endocarditis. The cases in which the cardiac signs are unusually prominent are most readily recognized, but in my experience these cardiac signs are most indefinite as a rule, and, while we hear much about the change in the character of the murmurs due to chronic endocarditis, I have been struck by the fact that more commonly than a noticeable change in the character of the murmur there is present a moderate degree of secondary dilatation of the left ventricle. I think this is a point that is probably often overlooked. I was glad to hear Dr. Elsner lay down that important clinical truth that hypertension is not the sole cause of angina pectoris, but, on the other hand, cases of hypertension may manifest this

dangerous condition. He spoke of the case of hypertension that could not be readily relieved by treatment, and that cases of that sort were to be regarded as instances of hypertension due to arteriosclerosis. This is true provided that the treatment employed is entirely appropriate, but as he so well said, unless one gives massive doses of nitroglycerine or other arterial relaxants, in many of these cases the arterial spasm is not relieved and then we are apt to confuse an arterial spasm with high tension due to arterial changes. Of this I have seen a number of illustrations.

A word with reference to the influence of tobacco as a cause of angina pectoris. I quite agree that it may be, although rarely, the principal factor in bringing about this grave condition. But without exception in my experience the cases in which it has seemed to stand in an etiologic relation, other causative agencies have been at work and easily recognizable. For example, a man suffering from aortic incompetency developed angina pectoris after smoking strong cigars, and quite recently a case of arteriosclerosis of moderate degree associated with marked arterial spasm fell under my observation, and in that case the use of strong cigars seemed to excite an attack of angina pectoris; at all events, treatment by rest, removal of the weed and by small doses of nitroglycerine led to a practical cure. We all know, as has been said by Dr. Elsner, that tobacco rapidly raises the arterial tension. It does so by inducing spasm of the arteries, and as the result of my observation for many years I believe that this is the most important influence of tobacco. I am aware that certain writers contend that nicotine produces widespread degeneration of the aorta in animals and that it causes arteriosclerosis of the coronaries. I have never seen a case of coronary disease that I could attribute solely to the use of tobacco. I have, however, as Dr. Curtin has so well said, seen many cases of rather marked arrythmia with accelerated action of the heart due to smoking, but this is an entirely different condition from true coronary disease, because the removal of the tobacco in these cases is invariably followed by a normal pulse-rate and the disappearance of the arrhythmia.

DR. H. L. ELSNER, of Syracuse, N. Y.: I think it is particularly those cases in which there is an hereditary tendency that are influenced by tobacco. It is pretty difficult to say that tobacco is provocative of angina, but we do know that many of these cases get better when we drop the tobacco.

In regard to the x-ray, I am glad to see this demonstration which Dr. Daland made. I think we use the x-ray too little.

With regard to the frequency of angina pectoris, women have it more rarely than men. For instance, in our statistics from Central New York, in the 44 cases of angina that were included, there were only three or four women. They bear angina pectoris long because they can relax better than men; they have less weighty responsibilities; they know how to rest; that is the reason why they have it less and live longer.

Now with regard to the good bishop's experience, there is a large psychic element. I know of a miller who never had an attack in his mill, but the moment he walked outside the mill against the wind he had an attack. I know a physician who recently consulted me, and said: "I may go to a medical meeting and walk home with my colleagues and I never have it, but if I go alone I have the pang." Angina may exist without the fear of death.

With regard to the aortic second accentuation there are a very few cases of hypertension which have existed for a very long period of time in which, as Sir Lauder Brunton says, the door is not slammed. This is likely to be the case when the aortic cusps are closed after the heart has made the attempt to overcome the obstruction in the periphery.

DR. JUDSON DALAND, of Philadelphia, Pa.: As angina pectoris is merely a syndrome; it naturally has many causes, and the object of this paper is to point out that Case 1 clinically seems to demonstrate that tobacco was the chief cause; and that in Cases 2, 3 and 4, all relatives, presented multiple causes but that tobacco was the chief cause, Cases 2, 3 and 4 all being brothers, and the sister, fifty-two years of age, was without and did not use tobacco.

I desire also to make clear the fact that tobacco was perfectly able to produce neuralgic effects. That is known to all of us, I am sure. I also agree with Dr. Elsner regarding the therapeutic importance of sleep in hypertension and arteriosclerosis; the inability of possible control of hypertension by any of the ordinary methods except those directed to the removal of the poison by measures such as the hot-air bath, etc. In these toxic cases nitroglycerine and the nitrites have not in my own hands been successful in attempting to lower high blood pressure.

At the last business meeting the following officers were elected for the ensuing year: President, Dr. John Winters Brannan, of New York; vice presidents, Dr. Will Howard Swan, of Colorado Springs, and Dr. John H. Lowman, of Cleveland; secretary and treasurer, Dr. Guy Hinsdale, of Hot Springs, Va.; representative on the executive committee of the ninth Congress of American Physicians and Surgeons, Dr. Roland G. Curtin, of Philadelphia.

It was decided to hold the next annual meeting in June, 1911, at Montreal, Canada.

Book Review.

Ionic Surgery in the Treatment of Cancer. With a Chapter on Ionization in Surgical Tuberculosis and in Hemorrhoids. By G. BETTON MASSEY, M.D., Attending Surgeon to the American Oncologic Hospital; author, "Conservative Gynecology and Electro-Therapeutics"; Fellow and former President of the Electro-Therapeutic Association; Member of the American Medical Association, etc. New York: The A. L. Chatterton Company. 1910.

Here is a book of two hundred and forty-three pages, written in all earnestness and simplicity by an author who remarks in the fifth line of his preface that his method "was first presented to the medical world in a paper read before the Philadelphia County Medical Society Jan. 9, 1895." Ionic surgery is a method of electrolysis. It has its limitations and its advantages; it appears to cure small superficial malignant growths; it is little effective in the case of extensive, deep-seated disease. Those surgeons and patients who dread the knife, who cannot afford radium and are skeptical of the x-rays may turn for relief to the promises of ionic surgery.

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THE SUPERHEATED AMERICAN HOUSE.

The season of superheated houses has again arrived. As soon as the bracing crispness of the autumn air begins to exert its normal stimulus on the heat-producing power of the human body, the average American householder lights his furnace fire, raises the thermometer in his rooms to 76° or more, sits in those rooms all the evening, with the additional heat of a fiery kerosene lamp baking on his head, and then wonders why he shivers when he goes outdoors to his work in the morning and why in a few days he develops a typical "fall cold." Not only are most private houses made thus uninhabitable, but nearly all public buildings and institutions are similarly superheated by steam or hot air.

Nor is the temperature the whole or even a major part of this evil. Thanks to the heating devices which American ingenuity has invented, the atmosphere in such buildings is usually about twice as dry as that in the desert of Sahara. And this is literally true, for the mean humidity in the desert is 30, and that in a steam- or furnace-heated house often runs as low as 16. Any one who has had experience with potted plants indoors knows the rapidity with which water evaporates from their saucers. With like avidity the parched air of our houses absorbs moisture from our skins and from the mucous membrane of our respiratory tract, with consequent drying and congestion, which prepare the way for the entrance of infection.

The human organism is a cunning machine, with possibility of adaptation to a wide range of conditions, but it will not stand such treatment. It does its best for a time, but sooner or later comes a series of "colds" and the establishment of the chronic American nasopharyngeal catarrh. Superheated houses and dry air are responsible for these ailments far more than the much-maligned east wind, which is really one of the mitigating factors that make our climate endurable, because it brings moisture "from the caves of the misty Atlantic."

In noteworthy contrast to our methods is the English fashion of doing. In England the furnace is almost unknown. Houses are heated by open fires, or occasionally by stoves, and seldom heated above 60° at that. The English air is so much moister than ours — thanks to the Gulf Stream which we furnish — that it oozes perennially, with the result that verdure is greener and more luxuriant, flowers brighter and complexions far clearer and ruddier than in our country. The people are not afraid of cool moist air, and they take it into their houses without robbing it of its humidity by steam-heat.

Let this diatribe not be interpreted as inexorable anathema or unqualified praise. Doubtless there should be a desirable middle course between the American and the English custom. The English habit perhaps predisposes to the rheumatoid diseases; ours certainly leads to colds, catarrh and bronchitis. The heat of our houses upsets our temperature-regulating mechanism so that it fails to work when we go out; and the dryness robs our superficial tissues of their juices. The cells of man's body are aquatic by heredity, and thrive better in contact with normal saline than in any other medium. To treat them as we often do is to deprive them of their birthright, and they are avenged upon us accordingly. It were a genuine advance in preventive medicine to provide for the cooling and humidifying of our houses as well as for their ventilation. The superheated American house is a medical barbarism and an anachronism in enlightened progress.

PULMONARY HEMORRHAGE AT HIGH ALTITUDE.

In a recent reprint from the reports of the United States Public Health and Marine-Hospital Service, Dr. F. C. Smith presents a statistical study of "pulmonary hemorrhage in the tuberculous at high altitude." This study is based on a series of 56 deaths from such hemorrhage during the past ten years at the Marine-Hospital sanatorium at Fort Stanton, N. Mex., which is situated at a height of 6,200 feet above the sea level. Tabulation and examination of these cases seem

to indicate that pulmonary hemorrhage directly causes about 10% of the total mortality from phthisis; that such death is not proportionately more common in one decade of life than in another; that syphilis and chronic alcoholism increase slightly the liability to fatal hemorrhage, but probably only in proportion to the usual lesser vitality of such individuals; that massive hemorrhages are often and small hemorrhages seldom suddenly fatal; that recurrence of hemorrhage rarely or never occurs after bronchopneumonia develops; that fatal hemorrhage is seldom due to exertion, but commonly supervenes during sleep, in which case death is due more often to suffocation than to loss of blood.

Most commonly associated with such cases was organic cardiac disease, of one sort or another, which Dr. Smith regards as a frequent cause of the fatal issue, though not as a predisposing cause of hemorrhage. *A priori*, high altitudes should increase such deaths from cardiac failure during hemorrhage, since by diminishing blood-pressure they still further embarrass already imperfect heart-action. Actually, however, they do not seem to lead to more frequent pulmonary hemorrhage, since, in Dr. Smith's cases, hemorrhage was not more common immediately after arrival from sea-level.

Chronic types of phthisis are most liable to fatal hemorrhage; and hence negroes, in whom the disease usually runs a rapid course, showed a lower mortality from hemorrhage than whites.

Dr. Smith's conclusions seem in the main to bear out the general supposition that high altitudes are on the whole favorable for the care of hemorrhagic cases of pulmonary tuberculosis. When they are not so, it is because of their untoward effect on a pre-existent cardiac lesion. In cases with such condition, physicians should be particularly careful in recommending a high altitude, on account of its depressing action on the heart.

AN ISOLATION PAVILION AT AIX-LES-BAINS.

MR. J. PIERPONT MORGAN has given $40,000 for an isolation pavilion in connection with the Municipal Hospital at Aix-les-Bains, France, and Dr. Paul Guyenot, head of the Zander Institute in that place, and one of the best-known authorities in Europe on physiotherapy, is now in this country, on Mr. Morgan's invitation, for the purpose of making a study of hospital construction and methods here. The plans for the pavilion have been drawn by T. Markoe Robertson, a grandson of the eminent New York surgeon, the late Dr. Thomas M. Markoe, who was the architect of the isolation wards on the roof of the New York Lying-In Hospital, whose admirably equipped new building was rendered possible through Mr. Morgan's generosity.

Incidentally, Dr. Guyenot has been requested by the French government to make an official report on the management of tuberculosis in America. In speaking of his mission here he recently said: "Mr. Morgan has been coming to Aix-les-Bains for treatment for fifteen years, and has been very generous to the little community of 8,000 people who live there. Ten years ago he gave $40,000 toward the fund for the new Municipal Hospital, and two years ago he gave an additional $8,000 for the equipment of a department for administering x-ray and electrical treatment. Now he is paying the total cost of the projected isolation pavilion, which is to accommodate twenty-two persons, and will be modeled after the isolation wards at the Lying-In Hospital here. It is not intended to be used as a sanitarium, and will be entirely free. This country is very much in advance of Europe in its measures to prevent the spread of tuberculosis. The hospitals I have seen in New York impressed me as exceedingly progressive and thorough in interior arrangements. Of course, in Europe there are not as a rule such large sums of money available for such institutions, though the Effendorf Hospital in Hamburg, which was erected regardless of cost, is a splendid monument externally. The interior, however, is not in accordance with the most approved modern ideas, and cannot be compared with either the New York Lying-In Hospital or the Rockefeller Institute Hospital, which I consider the two finest institutions of their kind in the world. The latter hospital is simply magnificent in its arrangements for studying special diseases and observing different methods of treatment. The arrangement of the isolation building there is remarkable. Physicians and nurses going to one room to attend a patient pass through corridors enclosed in glass, separating it from other rooms, and before leaving the building they take a bath and change their clothing, so that there is no risk of infection by the carrying of germs."

MEDICAL NOTES.

A SPECIAL CLINIC. — The New York and New England Association of Railway Surgeons were given a special clinic at the New York Post-Graduate Medical School and Hospital, Nov. 4, 1910.

Subsidence of Cholera in Italy. — During the week ending Nov. 12, only 13 new cases and 5 deaths of Asiatic cholera were reported from Italy. The subsidence of the epidemic there seems now to be well marked.

Typhoid Fever at Annapolis. — Ten cases of typhoid fever are reported to have developed recently among naval cadets at Annapolis, Md. No source for the epidemic has been as yet determined.

Poliomyelitis at Cornell. — Report from Ithaca, N. Y., states that two cases of acute poliomyelitis, the first to occur in that city this year, have recently developed among the students at Cornell University.

Award of the Davy Medal. — Report from England states that the Davy Medal has been awarded this year by the Royal Society of London to Theodore William Richards, Ph.D., Sc.D., professor of chemistry in Harvard College, for his researches on the determination of atomic weights.

Prevention of Water Pollution by Trains. — It is reported from Albany, N. Y., that, as a measure of protection to the water supply of New York City, the State Health Commission has ordered the closure of all washrooms on railroad trains during their passage through the limits of the Croton watershed.

United States Government Food Charts. — The United States Department of Agriculture has recently issued a series of food charts presenting in graphic form the composition and caloric value of various foodstuffs, with suggestions for the proper arrangement of dietaries. These charts, for use in schools, may be obtained from the Superintendent of Documents, in the government printing office, at a cost of $1 a set.

Two Living Centenarians. — Mr. Ransom Young, of Drums, in the township of Butler, near Hazleton, Pa., is said to have been born on Nov. 8, 1810. He is now very feeble, but on the recent anniversary of his birthday was taken to the polls and cast his vote in the state election.

Mr. Samuel Putnam, of New Salem, Mass., who is locally reputed to have been born on Nov. 9, 1806, is said to be in excellent physical health, though now failing mentally. He has never used alcohol or tobacco, and has always been an advocate of total abstinence and of universal peace. He has one surviving son, one grandson, and three great-grandchildren.

Association for Prevention of Infant Mortality. — The annual convention of the American Association for the Study and Prevention of Infant Mortality, which was held on Nov. 9, 10 and 11 at Baltimore, Md., was attended by representative physicians, sanitarians, sociologists and political economists from many states. At the opening session, addresses on "The Duty of a Nation to Its Potential Citizens" were made by Dr. William H. Welch, of Johns Hopkins Medical School; by Dr. Abraham Jacobi, of New York; by M. Jusserand, the French ambassador; and by Prof. Irving Fisher, of Yale College, president of the committee of one hundred on national health.

Copies of the "Medical Libraries" as a Gift. — Dr. C. D. Spivak, Denver, Colo., formerly editor of *Medical Libraries*, a bi-monthly publication devoted to the interests of medical librarians, which closed its somewhat irregular and spasmodic career in 1902, offers to send to all medical librarians and to all who are interested in medical journalism complete sets of Vols. 2, 3 and 4, and incomplete sets of Vols. 1 and 5, of that periodical for the asking. "All the sad editor desires in return is that these his dear departed ones be reverently laid out, decently shrouded, adequately coffined, properly epitaphed, securely inhumed and unostentatiously gathered unto their fathers."

Damages for Death under Chloroform. — On Nov. 11 a jury of the Supreme Court in New York City awarded a verdict for $3,000 damages in a suit brought against a physician by the mother of a patient who died under chloroform anesthesia. The doctor is alleged to have administered the drug to abate the boy's resistance to the application of leeches to an injured knee. Such use of a general anesthetic would, of course, be entirely unjustifiable. Whatever the facts in this case, the known dangers of chloroform are sufficient to warrant the cautious in the utmost reluctance from its exhibition under any circumstances.

Medical Addresses to School Superintendents. — At the opening session of the eighty-seventh meeting of the New England Association of School Superintendents, held in Boston last week, addresses were made by a number of physicians on problems connected with

the health of school children. Dr. Eugene A. Darling, of Cambridge, Mass., assistant professor of physiology in Harvard College, discussed the desirability and methods of anti-tuberculosis teaching in the public schools; Dr. Jay Perkins, of Providence, R. I., described the proper instruction of the open-air school; and Dr. Cleaveland Floyd, of Boston, emphasized the value of such schools and the improvement in mental as well as in physical vigor of pupils sent to them. Dr. H. Lincoln Chase, of Brookline, Mass.; Dr. Lewis H. Palmer, of South Framingham, Mass.; and Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, spoke on the topic of "The Serious Consequences of Ignorance of Sexual Hygiene." It was voted to appoint a committee to investigate the methods of teaching this branch of hygiene in the public schools.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON.— For the week ending at noon, Nov. 8, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 50, scarlatina 26, typhoid fever 29, measles 8, smallpox 0, tuberculosis 54.

The death-rate of the reported deaths for the week ending Nov. 8, 1910, was 13.90.

BOSTON MORTALITY STATISTICS.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 5, 1910, was 193, against 215 the corresponding week of last year, showing a decrease of 22 deaths, and making the death-rate for the week, 14.94. Of this number 96 were males and 97 were females; 188 were white and 5 colored; 111 were born in the United States, 78 in foreign countries and 4 unknown; 41 were of American parentage, 129 of foreign parentage and 23 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 39 cases and 1 death; scarlatina, 38 cases and 1 death; typhoid fever, 28 cases and 8 deaths; measles, 8 cases and 1 death; tuberculosis, 60 cases and 17 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 20, whooping cough 0, heart disease 33, bronchitis 5. There were 12 deaths from violent causes. The number of children who died under one year was 32; the number under five years, 43. The number of persons who died over sixty years of age was 59. The deaths in public institutions were 76. Cerebrospinal meningitis, 2 cases and 1 death. Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following were non-residents: Consumption, 1 case and 1 death. Scarlet fever, 5 cases. Typhoid fever, 3 cases.

Deducting deaths of non-residents, the total is 176 and the death-rate is then 13.62.

NOMINATION FOR MEDICAL EXAMINER. — Dr. Henry J. Walcott, of Concord, Mass., was last week nominated by the governor as medical examiner for the sixth Middlesex district.

LEGACY TO THE NEW ENGLAND HOSPITAL. — The will of the late Lucretia Gore French, of Boston, filed in probate last week, contains a bequest of $2,000 to the New England Hospital for Women and Children.

SEIZURE OF COCAINE BY THE POLICE. — At a raid made last week by the police on a den in Roxbury, $500 worth of cocaine was seized, with a number of pipes and other utensils employed by habitués, of whom seven were arrested on the premises. The prisoners will be arraigned on the charge of keeping cocaine for illegal sale and of unlawfully disposing of the drug. It is stated that in the district where the seizure was made there are numerous similar resorts which will probably be raided within a short time. It is both surprising and discouraging to find how difficult is the eradication of so repulsive a vice from our community.

FAIRS FOR CHARITABLE INSTITUTIONS. — During the past week several sales or fairs for the benefit of charitable institutions in or near Boston, which we announced in the latest issue of the JOURNAL, were successfully held, and substantial sums of money were made for the Cullis Consumptives' Home, Dorchester; for St. Monica's Home, Roxbury; for the Somerville (Mass.) Hospital, and for the Day Nursery, Brookline, Mass. The work of these institutions was also inspected by patrons of the fairs. On Tuesday of this week, Nov. 15, was also held by the Board of Directors of the Blind Babies' Aid Society a Thanksgiving sale for the benefit of the Boston Nursery for Blind Babies, now installed in its new building in Jamaica Plain. This building is free from debt, but the institution is dependent for its maintenance on voluntary private contributions.

MILK AND PURE FOOD CONVICTIONS. — In the Boston Municipal Court last week, ten local milk dealers were fined sums varying from $10 to $60 each for having in their possession for sale skimmed milk or milk not up to the minimum

standard required. Before the same court another dealer was fined $15 for offering for sale oleomargarine without displaying a notice to that effect; and still another was fined the same amount for selling molasses vinegar as cider vinegar.

In the Malden (Mass.) District Court, a Maine contractor was accused of shipping for sale milk below the required standard. In defense his counsel alleged that the milk as shipped was not intended for sale until after being mixed with other and stronger milk. This plea was not allowed by the court, and the defendant was fined $15, from which he appealed.

Meeting of the Improvement Society. — A meeting of the Boston Society for Medical Improvement was held in Sprague Hall, Boston Medical Library, on Nov. 14. Dr. M. G. Seelig, of St. Louis, read a paper on "The Doctrine of Vitalism in Medicine," which will be published in a later issue of the Journal. This paper was discussed by Dr. James J. Putnam. Memorial addresses on the life, work and character of the late Dr. Herbert Leslie Burrell were then made by Dr. E. H. Bradford, Dr. G. H. Monks, Dr. F. S. Watson, Dr. J. B. Blake, Dr. M. H. Richardson and Dr. Paul Thorndike. Dr. Monks showed some particularly interesting photographs of the hospital ship *Bay State*, which Dr. Burrell equipped and commanded during the war between the United States and Spain in 1898, and with which he rendered valuable and efficient service not only to the troops cared for in Cuba, but to the cause and reputation of American military and naval surgery.

Typhoid Fever at Austin Farm. — There has recently been a small epidemic of typhoid fever among attendants at the Insane Hospital at Austin Farm. Fourteen cases have occurred in nurses and employees, of whom eight are now at the Boston City Hospital. There has been none among the 840 inmates of the institution. All the cases are mild and there have been no deaths. No new cases have been reported within the past ten days, and it is believed that the spread of the disease is now under control. The original source of the infection has not yet been discovered, and in the absence of evidence pointing to the food or water supply, it is believed that the epidemic may have had origin in a typhoid carrier recently come to the hospital. Investigations are in progress to determine if possible the identity of this suspected carrier. Such an episode reemphasizes the desirability of protecting the attendants of an institution, where opportunity is rife for spread of infection from such transient source, by means of antityphoid inoculation.

The Cost of Pure Milk. — On Nov. 10 and 11 was held in Boston a conference between the mayors and heads of departments of many of the cities of New England. This conference, which was called to promote uniformity of purpose and co-operation of method in the prosecution of various civic improvements in the several municipalities, was addressed on the subject of "The City's Inspection of its Milk Supply" by Prof. W. T. Sedgwick, of the Massachusetts Institute of Technology, who pointed out that adequate enforcement of laws for insuring the safety and cleanliness of milk is bound to raise the price of milk for the consumer. In view of the importance and high food value of milk, however, he believed such increase of cost to be worth paying. Dr. Thomas E. Maloney, of the Fall River (Mass.) Board of Health, described the system of milk-supply in his city, and declared that within a few years the number of tuberculous cattle in the vicinity were reduced from 37½ to 4%. Addresses on the same topic were made also by Dr. Durgin, of the Boston Board of Health, and by Mr. Jordan, of the city inspection bureau.

NEW YORK.

Increase in Minimum Rates for Medical Attendance. — At a recent meeting of the Suffolk County (Long Island) Medical Society, it was decided, in view of the increased cost of living, to advance the minimum rates for medical attendance. In some parts of the schedule of charges the increase is 25% and in others, 50%.

Yellow Fever One Hundred Years Ago. — The centennial of the founding of St. James' Protestant Episcopal Church, on Madison Avenue, at the corner of Seventy-first Street, which was celebrated on Nov. 13, brings to mind the great yellow fever epidemic of a hundred years ago. In consequence of the prevalence of the disease, many residents of the city were led to build country homes on the shores of the East and Hudson rivers, and as a considerable number of them were parishioners of Trinity Church, the latter gave substantial aid to the building and endowment of two rural churches, St. James' on the East Side, and St. Michael's on the West.

Decline in Birth-Rate. — In a recent report F. D. Beagle, director of the Division of Vital Statistics of the State Department of Health,

states that while, with the constant decrease in the death-rate, it would be natural to expect an increasing birth-rate, it appears that the slight increase from year to year shown by the returns filed in New York state is due to the improvement in the registration, as undoubtedly there is a tendency to a decline in the birth-rate. During the first six months of the present year there was over 10% increase in the registration of births over the corresponding period of 1909. Thirty-seven cities in the state show an increase, and twelve report fewer births than last year. The registration in the latter is at present being investigated by representatives of the department. It is most gratifying to be able to say, he remarks in conclusion, that at the present time there is the most complete registration of births in the state since the establishment of the State Department of Health in 1880.

ENLARGEMENT OF MONTEFIORE HOME. — At the annual meeting of the board of trustees of the Montefiore Home and Hospital for Chronic Invalids, held on Nov. 6, it was announced by the president, Jacob H. Schiff, that $850,000 had already been subscribed for the new buildings which it is purposed to erect for the institution. As the present property of the home, at Broadway and 138th Street, has been sold for $525,000, this leaves but $125,000 to make up the $1,500,000 which it is estimated will be needed for land, erection and equipment at the new location, and the required amount, it is believed, will be raised at an early date. Four blocks, comprising an area equivalent to 162 city lots, have been purchased in the Borough of the Bronx, and, in view of the benefit to the community conferred by the Montefiore Home in the past, the municipal authorities have consented to the closing of the streets between two of the blocks. The new buildings will accommodate some six hundred patients, and will probably be completed within two years. In the meanwhile the work of the institution will be carried on as usual in its present quarters, as it has been stipulated that the purchasers shall not take possession until the new buildings are ready for occupancy. In order to have incorporated in these the most approved modern features, Dr. Wachsmann, the medical superintendent of the home, has recently made a study of similar institutions in Berlin and other European cities, and in making the plans he and the building committee will have the valued assistance of Dr. S. S. Goldwater, the superintendent of the fine new Mount Sinai Hospital.

THE TUBERCULOSIS PREVENTORIUM FOR CHILDREN. — Contributing to the development of the Tuberculosis Preventorium for Children, which last April was removed from Lakewood to Farmingdale, N. J., the estate of Albert Brisbane, through Arthur Brisbane, has presented to the institution 64 acres of land and a free lease for twenty-five years of the Windsor stock farm adjoining, which comprises 240 acres under cultivation. As the physicians and architects of the preventorium found it necessary to have twenty acres more to obtain an ideal site, Mr. Brisbane has just bought an adjoining farm of 104 acres, to be able to provide the twenty additional acres desired. The total gift, therefore, comprises 84 acres in fee simple and 240 acres on a free lease for twenty-five years. He has also presented to the preventorium cows, wagons, furniture and other accessories. Nathan Strauss has already contributed $50,000 for model buildings to be constructed on the farm, while the Board of Health Auxiliary connected with the Association of Tuberculosis Clinics has subscribed $4,500 to build an additional open shack, for which it will select the children. The auxiliary has also subscribed for the support of the shack. To complete the plans to care for 400 children at a time, the preventorium will require $50,000 more for buildings and additional memberships yielding $85,000 a year. This institution, which, it will be remembered, takes only children who have not yet contracted tuberculosis, but whose condition indicates that they would readily fall victims to the disease, has already been successful in 212 children, aged from four to fourteen years, the average stay being about three months and the gain in weight from four to sixteen pounds.

Current Literature.

MEDICAL RECORD.

Nov. 5, 1910.

1. *STEIN, J. B. *The Ehrlich-Hata (606) Preparation (Therapia Sterilisans Magna). A Review of Some of the Reports made by German and French Physicians upon the Treatment of Syphilis by this Preparation.*
2. ABBE, R. *Custodianship of the Watch and Bible of Dr. Benjamin Rush, with Biographical Notes.*
3. BUGBEE, H. G. *Complete Subparietal Rupture of the Kidney, with Report of a Case.*
4. BARNES, G. E. *The Nonentity of Acute Dilatation of the Stomach.*
5. SCOTT, C. D. *Report of Two Cases of Tetanus following Vaccination.*
6. ABRAMS, A. *Asthma and the Lung Reflexes of Abrams.*

1. Stein reviews the reports of a number of German and French clinicians on the treatment of syphilis with "606." The reaction following injection varies greatly in severity; its important characteristics are pain radiating to the back and legs, local inflammation at the site of injection, fever (as high as 102.°5), headache, nausea and vomiting, tormenting thirst, diarrhea (not constant) and skin eruptions, especially a reddening and swelling of the luetic macules and papules (the so-called Herxheimer reaction).

Siesskind found that the spirochetes usually disappeared from lesions in from twenty-four to thirty-six hours after injection, but occasionally persisted for six or seven days. Before disappearance their vitality is greatly compromised, as indicated by their swollen appearance, diminished motility and loss of characteristic refringence. Evidence on the behavior of the Wassermann reaction under "606" is not convincing. Emery says that it slowly and progressively disappears without the oscillation encountered in mercurial cures. Hoppe and Schreiber observed that after fifty days 84.6% of their cases previously positive had become negative. The earliest the reaction was negative was after four days, the latest after seventy days.

Alt treated a number of primary lesions with a single injection (0.3 gm.) with immediate and astonishing results. The initial chancre with its induration showed marked retrogression after a few days. Mucous patches, eroding syphilides and other secondary manifestations disappeared in from twelve to thirty-six hours. An enormous gummatous ulcer of the leg was more than half healed five days after injection (Ehrlich). Remarkable results are reported in visceral lues and in hereditary syphilis, also in syphilis of the nervous system (Ehrlich forbids the use of the drug in the latter).

Blaschko gives the following indications for "606": (1) Lesions refractory to mercury; (2) relapse immediately following mercury "cure"; (3) continual relapses; (4) idiosyncrasy toward mercury; (5) malignant syphilis with destructive and dangerous lesions; (6) the appearance of a chancre in a first attack of syphilis. Contra-indications are old age, affections other than syphilis of the kidney, heart, liver, spleen or lung, advanced aneuryam, optic neuritis, grave cerebral lues. [L. D. C.]

New York Medical Journal.

Nov. 5, 1910.

1. Fordyce, J. A. *Further Observations on the Use of the Ehrlich-Hata Preparation "606" in the Treatment of Syphilis.*
2. Guilfoy, W. H. *Vital Statistics in the Promotion of Public Health.*
3. Brown, E. M. *Tuberculosis of Bones and Joints.*
4. Swett, P. P. *The Diagnosis and Treatment of Tuberculous Joints.*
5. Pettey, G. E. *A Rational Basis for the Treatment of Narcotic Drug Addiction.*
6. Wholey, C. C. *The Kind of Inebriate who needs State Care and the Kind who needs the Private Sanatorium.*
7. Nascher, I. L. *Tissue Cell Evolution.*
8. Williams, T. A. *Modern Neurology of Spiritualism and Possession.*
9. Sallom, A. K. *A Blood Pressure Record.*
10. *Hough, W. H., and Lafora, G. R. *The Cerebrospinal Fluid in Acute Anterior Poliomyelitis.*

10. Hough and Lafora give out a preliminary report of their findings in the cerebrospinal fluid of eleven cases of acute anterior poliomyelitis occurring in Washington, D. C., last summer. In all the cases the fluid was perfectly clear, in most of them the pressure was slightly increased, the protein content was increased and there was a moderate pleocytosis. In three cases examined during the first stages of the disease there was observed the highest proportion of polymorphonuclears (18% in one of them). The polynuclears disappeared after the fifth or sixth day of the disease through the phagocytic activity of the macrophages, which latter sometimes contained twenty or more chromatin bodies, probably the remains of the leucocytes. These chromatin bodies resembled morphologically the bodies described in certain protozoan diseases affecting the nervous system, e. g., the Leishman-Donovan bodies of kala-azar and the Mott bodies of Jinga trypanosomiasis. Late in the disease there were observed many lymphocytes, some plasma cells, a few macrophages and occasionally mast cells. The writers consider the similarity in histopathology of the spinal cord and fluid of anterior poliomyelitis and some protozoan diseases affecting the nervous system an argument in favor of the protozoan nature of the virus of poliomyelitis. [L. D. C.]

The Journal of the American Medical Association.

Nov. 5, 1910.

1. Mayo, C. H. *The Prophylaxis of Cancer.*
2. Loeb, L. *Etiology of Cancer of the Skin.*
3. *Pusey, W. A. *Treatment of Malignant Growth of the Skin from a Dermatologic Standpoint.*
4. Bloodgood, J. C. *Surgical Treatment of Cutaneous Malignant Growths.*
5. Mallory, F. B. *Pathology of Malignant Diseases of Non-Epithelial Formation.*
6. Fordyce, J. A. *The Pathology of Malignant Epithelial Growths of the Skin.*
7. *Baar, G. *Preliminary Report on the Clinical Significance of Indicanuria.*
8. *Post, W. E., and Nicoll, H. K. *The Comparative Efficiency of Some Common Germicides.*
9. McCrae, T. *The Principles of Hydrotherapy.*
10. Friedenwald, H. *Teaching the Student the Operation of Paracentesis of the Drum Head.*
11. Coffee, A. J. *Tetanus Successfully Treated with Large Quantities of Antitoxin.*
12. Brown, S. *The Muffled Room in the Treatment of Acute Insanity.*

3. Pusey thinks that of all the remedies used internally for cancer, arsenic is the only one of possible benefit. He believes that all early cases are by no means suitable for excision. The chief danger of the knife is incomplete removal. The superficial caustics, such as phenol and silver nitrate, are dangerous because they really do not destroy deeply. Pyoktamin favors epidermisation and is often harmful. He also advises against curettage, electrolysis and liquid air as suitable only in a very limited type of case. He is a firm believer in the beneficial action of arsenious acid in 50 or 75% mixture with 50 or 25% powdered acacia and water. Radium he considers no more efficient than well-applied x-ray, which, however, he advocates for certain types of superficial cases.

7. Baar found that ether narcosis had no influence on the excretion of indican, but in all operations in which there was cutting or rough handling of the intestines, as in entero-enterostomies, there was excessive excretion of indican in the urine for a week or more following the injury. Moderate handling of the intestines during the course of an ordinary abdominal operation had no influence. He explains this by stating that trauma impairs the absorptive powers of the mucosa and thereby increasing intestinal putrefaction. An analogous condition exists often in colitis and in extensive enteroptosis in which we find increased indicanuria.

8. Post and Nicoll carried on a series of extensive experiments to determine the efficiency of the various germicides, and conclude as follows: Argyrol and protargol are not so active in concentrated solutions as ordinary silver nitrate in 1 to 5,000 or even 1 to 10,000 solution. Corrosive sublimate is slow of action, — over thirty minutes, — but is effective even in high dilutions. Creolin, lysol and phenol are very ineffective under thirty minutes. Five per cent phenol is, however, very effective in less than one minute. Iodine is effective in less than one minute. Formaldehyde is slow of action in 1 or 2% solution. Alcohol is effective in solutions of 50% or higher. Boric acid in saturated solution is non-effective even after twenty hours, also potassium chlorate. Glycerine has almost no germicidal power. The same is true of distilled water. [E. H. R.]

The Journal of Infectious Diseases.

Vol. 7. No. 5.

1. Bel, G. S., and Couret, M. *Balantidium Coli Infections in Man.*

2. LOEB, L., AND FLEISHER, M. S. *The Influence of Extracts of Anchylostoma Caninum on the Coagulation of the Blood and on Hemolysis.*
3. PRESCOTT, S. C., AND BREED, R. S. *The Determination of the Number of Body Cells in Milk by a Direct Method.*
4. *HOLM, M. L., AND GARDNER, E. A. *Formaldehyde Disinfection with Special Reference to the Comparative Value of Some of the Proprietary Products.*
5. FULLER, C. A. *The Bacterial Integrity of Collodion Sacs.*
6. STEINHARDT, E. *The Value of Collodion Membranes as Filters.*
7. BUCHANAN, R. E., AND TRUAX, R. *Non-Inheritance of Impressed Variations in Streptococcus Lacticus.*
8. *TUNNICLIFF, R. *Observations on the Anti-infectious Power of the Blood of Infants.*

4. Holm and Gardner have investigated certain proprietary disinfection outfits in regard to their loss of formaldehyde, their power to penetrate, and their efficiency as disinfectants. They found that most of the products they examined were ineffective bactericides when used as recommended, and that in many of them there was considerable loss of formaldehyde.

8. The writer estimated the opsonic indices and phagocytic activity of a series of babies, and contrasted these with similar estimations in adults. She concludes that although at birth babies' resistance to infection as measured in these two ways is only a little below that of adults, the anti-infectious power rapidly falls and does not approach that of adults until the third year is reached. [G. G. S.]

THE LANCET.

OCT. 8, 1910.

1. MOTT, T. W. *The Huxley Lecture on the Hereditary Aspects of Nervous and Mental Disease.*
2. MORISON, A. *On the Meaning of the Audible Signs in Mitral Stenosis.*
3. *PASTEUR, W. *Active Lobar Collapse of the Lung after Abdominal Operations. A Contribution to the Study of Post-operative Lung Complications.*
4. HORNE, W. E. *Ehrlich-Hata "606."*

3. Pasteur describes a condition which he calls "active lobar collapse of the lung." This, which frequently occurs in fatal cases of diphtheria, when there is death from paralysis of respiration, according to the writer is a not uncommon sequel to severe abdominal operations where there is paralysis of the diaphragm and lower muscles of respiration. The collapse is usually of the lower lobes. The onset of an attack of this sort is usually sudden, but not always so. There is sudden dyspnea and cyanosis, pain, diminished breath sounds over the affected side and exaggerated breathing over the sound side. One of the most striking signs is the shifting of the apex beat toward the affected side. Another feature of some importance is the rapid disappearance of the symptoms and the return of the chest to normal. He cites several illustrative cases. [J. B. H.]

OCT. 15, 1910.

1. MARSH, H. *An Address on the Education of the Student of Medicine.*
2. *LISTER, T. D. *Industrial Tuberculosis.*
3. FLEIG, C. *Mineral Waters as Artificial Sera. A Short Account of Investigations on the Question of Mineral Waters as Artificial Sera and of Injections of Mineral Waters into the Tissues both from a Physiological and a Therapeutic Point of View.*
4. CARTER, M. *Ulcerating Granuloma of the Pudenda a Protozoal Disease.*
5. BOYD, W. *A Case of Tumor of the Pituitary Body.*
6. MALCOLM, J. D. *A Case of Carcinoma of the Cecum Removed after a Preliminary Evacuation of a Fecal Abcess and an Ileosigmoidostomy; Patient Well a Year Later.*
7. SAVILL, A. F. *Treatment of a Uterine Fibroid by X-Rays.*
8. PARKER, G. *A Case of Uremia with Facial Paralysis and Intestinal Ulceration.*
9. GUYENOT. *Radium and Radio-Activity.*

2. Lister presents an elaborate series of tables giving the mortality from tuberculosis in the various occupations, dusty, sedentary and otherwise, and draws conclusions from them. Of more interest, however, are his remarks upon the anti-tuberculosis campaign in general. The treatment of early cases and isolation of advanced cases is, in his opinion, only a small part of what must be done. A regular and systematic inspection of all employees and of school children is essential. Teaching as regards health among the poor and the regulation and supervision of dangerous occupations are all-important. A knowledge of sanatorium methods must be spread broadcast. The lessons of the sanatorium must be taught and enforced in the home and in the work shop. [J. B. H.]

BRITISH MEDICAL JOURNAL.

OCT. 15, 1910.

1. MARSH, H. *An Address on the Education of the Student of Medicine.*
2. ROLLESTON, H. D. *Remarks on Acute Arthritis of Doubtful Origin.*
3. CODD, J. A. *Experiment and Observation in Medicine.*
4. *WAKELING, T. G. *On the Fever Caused by the Bite of the Sand Fly.*
5. RHYS, O. L. *Skiagrams of Multiple Renal Calculi and of Fractures due to Muscular Violence.*

THE BRITISH MEDICAL ASSOCIATION.

Section on Diseases of Children.

6. GARROD, A. E. *Introductory Remarks.*
7. COUTTS, J. A., *et al. Discussion on the Diagnosis and Treatment of Non-Tuberculous Joint Diseases in Children.*
8. *GAUVAIN, H. J. *The Conservative Treatment of Tuberculous Cripples.*
9. PARSONS, W. B. *Spinal Caries and Hip Disease: A Point in Differential Diagnosis.*
10. *BOX, C. R., *et al. Discussion on Infections of the Urinary Tract by Bacillus Coli in Infancy and Childhood.*
11. ZANGGER, T. *A Combined Quinine and Hydropathic Treatment of Whooping Cough.*
12. *D'ESPINE, A. *The Early Diagnosis of Tuberculous Bronchial Adenopathy in the Child.*
13. MCCAW, J. *Acetonemia: An Account of an Acute Attack in a Young Child.*
14. ELGOOD, O. M. *Human Milk and Breast Feeding.*
15. GRAY, H. T. *Lesions of the Isolated Appendix Vermiformis in the Hernial Sac.*
16. PRITCHARD, E. *Banana Flour as a Food for Infants.*
17. MURPHY, J. K. *The Radical Treatment of Tuberculous Disease of the Tarsus and Ankle-Joint.*

Section of Anatomy.

18. KEITH, A. *Introductory Remarks.*
19. SYMINGTON, J. *The Pharyngeal Tonsil.*
20. FRAZER, J. E. *The Early Development of the Eustachian Tube and Nasopharynx.*
21. GEDDES, A. C. *The Size of the Antrum and the Position of the Permanent Teeth.*
22. GEDDES, A. C. *Six Abnormalities from the Dissecting Room.*
23. WRIGHT, W., AND BENIANS, T. C. *The Anatomy of the Trigonum Vesicæ.*
24. RAMSTROM, M. *Emanuel Swedenborg as an Anatomist.*
25. GLADSTONE, R. J. *An Anencephalic Fetus, with a Meningocele and Facial Cleft.*
26. CRYMBLE, P. T. *The Muscle of Treitz and the Plica Duodeno-jejunalis.*
27. GLADSTONE, R. J. *A Cyclops and Agnathous Lamb.*
28. RUTHERFORD, N. C. *A Case of Congenital Absence of the Transverse Mesocolon.*
29. MCKENZIE, I., AND ROBERTSON, J. I. *Recent Researches on the Anatomy of the Bird's Heart.*

4. Wakeling describes "sand-fly fever" as a non-fatal three-days' fever with a week's convalescence due to the bite of the fly, Phlebotomus papatarii. It exists in

Egypt, part of Austria, Malta and in Italy. The symptoms, aside from the bite itself, are tiredness, loss of appetite, malaise, headache, aching, temperature up to 104° F., and later well-marked anemia and loss of sight. There is a tendency to inflammation of sigmoid and joint cavities. The treatment is purely preventive.

8. Gauvain, in addition to describing the ordinary methods and his own of treating tuberculous caries of the spine, urges the need of medical attention to the child itself; he emphasizes the frequent neglect in educating such cripples and urges that this go hand in hand with treatment. This can be done better by especially selected and trained nurses than by any one else.

10. Box summarizes his ideas as to the treatment of colon infections of the urinary tract in children as follows: (1) Sufficient potassium citrate to make and keep the urine alkaline; (2) treatment by urinary antiseptics; and (3) treatment by serums and vaccines. Acute cases can be satisfactorily treated with potassum citrate alone. Chronic cases he finds very obstinate and resistent to all forms of treatment.

Pardoe, discussing this subject, believes that colon vaccines and other vaccines are of the greatest value in chronic infections.

12. D'Espine describes a sign which he considers of the greatest value in the early diagnosis of tuberculous bronchial glands. This sign is based on auscultation of changes in the breath and voice sounds at the level of the seventh cervical or first dorsal vertebra. When the child speaks in a low voice, the voice is accompanied by an added whispering sound localized to one or two vertebræ. There is also a bronchial quality of the respiration over this area. There may be dullness at this area associated with dullness at the level of the manubrium. The absence of râles and the presence of normal sounds at the apices will help to confirm the diagnosis. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 41.

Oct. 13, 1910.

This whole number of the journal is given up to papers on the treatment of syphilis with Ehrlich's preparation 606. These papers were presented at the eighty-second congress of German scientists and physicians which was held at Königsberg on Sept. 20, 1910.

The papers were by Drs. Neisser, Ehrlich, K. Alt, Schreiber, Iversen, Wechselmann, Orth, Miekley, Uhlenmuth, M. Margulies, C. Stern, W. Scholtz, A. J. Grünfeld, L. Michaelis, R. Volk and B. Lipschütz, Dohi, Grouven and others.

The papers by Neisser and Ehrlich cover the whole subject of the treatment of syphilis with this new preparation both from a practical and theoretical point of view. Ehrlich concludes by stating that the foundations are now safely laid; it remains for experience to decide on the value of the preparation. The other papers are on points of technic or personal experience with the drug. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 36.

Sept. 6, 1910.

1. *Enderlen and Borst. *Surgery of Vessels and Transplantation of Organs.*
2. Finkelnburg. *Puncture of the Brain for Chronic Hydrocephalus.*
3. Neu, M. *A Method of Narcosis with Nitrous Oxide.*
4. Achelis, W. *X-Ray Diagnosis of Miliary Tuberculosis of the Lungs.*
5. Schwabe, K. *Effects of Arsenobenzol on Psoriasis and Lichen Ruber Planus.*
6. Riebold, G. *Use of a Few of the Newer Remedies in Cardiac Insufficiency.*
7. Mather, P. *Coagulation Time of the Blood in Pregnancy.*
8. Tanaka, Y. *General Amyloid Degeneration in Japan.*
9. Holmgren, J. *Technic of the Compression Treatment in Pulmonary Tuberculosis.*
10. Schümann, E. *Injuries to the Hand from Machinery.*
11. Bodenstein, H. *Case of Peritonitis in Gonorrhea in a Man.*
12. Wilke, A. *Hematoma of the Small Intestines after Tapping for Ascites.*
13. Schoenborn, S. *A New Algesimeter for Practice.*
14. Perlmann, A. *A New Apparatus for Steaming the Face.*
15. Friedrichsen, F. *A Urine Measure for Diabetics.*
16. Weber, E. *Plethysmographic Studies under Bodily Work.*
17. Teske, H. *Paradoxical Movement of the Diaphragm.*
18. Köhler, F. *Diagnosis of Pulmonay Tuberculosis.* (Concluded.)

1. Enderlen discusses the technic of vessel surgery and then sets forth his indications for transfusion. He recommends it in severe losses of blood following injury, operation, childbirth and gastric ulcer, and for poisoning with illuminating gas. He advises against it in severe infections, tuberculosis, leukemia, and pernicious anemia, but does not give his reasons in detail.

Borst repeats the laws of organ transplantation established by others: that the transplanted organ must be fastened as soon as possible on to its source of nourishment and that if it is to survive long it must also receive early the stimulus to function. To these laws he adds that biochemical similarity of the individuals is of great importance. [G. C. S.]

No. 37. Sept. 13, 1910.

1. Payr, E. *Operative Mobilization of Anchylosed Joints.*
2. *Steinert, H. *Acute and Chronic Streptococcus Sepsis and its Relation to Acute Arthritis.*
3. Hering, H. E. *Function of the Cardiac Vagi in Humans.*
4. Schwartz, W., and Flemming, P. *Relation of Arsenolphenylglycin Pot. Iodide and Sublimate to the Wassermann Reaction.*
5. v. Herff, O. *Sophol for Ophthalmoblenorrhea Neonatorum.*
6. Harnack, E. *Phenol and Camphor as Prototypes of the Symptomatic Antipyretics.*
7. Straub, W. *Physiological Standardization of Drugs, especially Folia Digitalis.*
8. Dunger, R. *A Simple Method of Counting Eosinophilic Leucocytes and its Practical Value.*
9. Brückner, E. L. *Causal Relation of Syphilis to Idiocy.*
10. Riedel. *Course and Outcome of Strumitis Chronica.*
11. Werner, R. *Biological Effect of Radium Rays.*
12. Kuhn, F. *Resuscitation by Ventilating the Air Passages through the Natural Channels.*
13. Koch, W. *Dangerous Accidents from the Use of Menthol in Infancy.*
14. Durlacher. *Phlegmon of the Thigh in Childbed.*
15. Geuer, F. *The Cigarette Drain.*

2. Steinert reports important observations bearing on the etiology of endocarditis, and especially of the subacute forms. He disagrees with Schottmüller on several clinical points. In summarising he says that endocarditis lenta (subacute endocarditis, Schottmüller) may be caused not only by strepto. viridans, but also, under certain circumstances, by non-hemolytic streptococci; that these organisms, including viridans, may cause acute septic infections; that the chronic septic endocarditis occurs only in rheumatic patients, most of whom have an old endocarditis; and that the subjects of acute endocarditis have no rheumatic history. The writer then raises the question whether in a person once attacked by rheumatism an allergy may arise toward streptococci. [G. C. S.]

Berliner Klinische Wochenschrift. No. 42.

Oct. 17, 1910.

1. His, W. *In Memory of Ernst von Leyden.*
2. *Von Noorden, C. *The New Preparation of Albumin "Riba."*
3. Michaelis, G. *The Theory of Opsonins, their Importance in Practice.*
4. Friedberger, E. *Further Communications concerning the Relation between Hypersensitiveness and Infection.*
5. Hoffmann, R. *Anaphylaxis and Internal Secretion.*
6. Scherezschewsky, J. *Recognition of the Syphilitic Stimulants in the Course of Cultivation of the Spirochete Pallida.*

7. BRUCK, C. *Further Examination Csoncerning the Nature of Drug Eruptions.*
8. LIEFMANN, H., AND STUTZER, M. *Brief Communication Concerning the Bacteriolytic Complement.*
9. POEPPELMANN, W. *Treatment of Tuberculosis by Means of Inoculation of the Skin with Tuberculin.*
10. DEYCKE, G., AND MUCH, H. *Concerning a Few Debatable Points in the Biology of the Tubercle Bacillus.*
11. MEYER, E. *A New Preparation of Iodide of Iron applied to Rhino-laryngology.*
12. ALEXANDER, A. *The X-Ray in Dermatology, its Indication and Technic.*
13. EWALD, C. A. *Supplement to my Contribution Concerning Sahli's "Pantopon," in No. 35 of this Journal.*

2. Von Noorden reports that a new preparation has been put on the market after years of experiment. This is made from fish. It is composed of the following ingredients: Albumin (very little) and hemi-albumose, 22.5%; primary albumose, 62.5%; deutero-albumose (B. and C.), 15%; pure peptone, quantity not ascertainable. Not only has the author found it of great value in the feeding of stomach cases by mouth, but also of very great value in nutrient enemata because of its freedom from irritating qualities and because it is so readily absorbed. [J. L. H.]

ARCHIV FÜR KLINISCHE CHIRURGIE.

VOL. 93. PART 1.

1. *ROTTER, J. *The Treatment of Diffuse Peritonitis.*
2. v. MUTACH, A. *Experimental Investigation into the Condition of Striated Muscle-tissue following Myoplastic Operations.*
3. NEUBER, G. *The Treatment of Tubercular Coxitis.*
4. v. SAAR, G. F. *Experimental and Clinical Investigations of Duraplasty.*
5. *ESCHENBACH. *Ileocecal Tuberculosis.*
6. HESSE, F. *Neisser-Pollack's Puncture of the Brain for Diagnostic and Therapeutic Purposes.*
7. GEBELE. *Persistency of the Thymus Gland in Basedow's Disease.*
8. POKOTILO, W. *The Fate of Living Bones which have been transplanted in the Soft Tissues.*
9. HOHMEIER, F., AND KÖNIG, F. *Résumé of Lumbar Anesthesia during the Year 1909.*
10. NOETZEL, W. *Experimental Research upon the Subject of Peritonitis following Perforation of the Gall Bladder.*
11. FRANGENHEIM, P. *Late Results of Osteoplasties in Animals.*
12. GULEKE, N. *Experimentation on Suture of the Aorta.*
13. ROSENBACH. *Experimental Investigations on the Effect of Trypsins on the Blood Vessels.*
14. Minor Communications:
    LOTSCH, F. *An Apparatus for Forced Pressure Narcosis.*
    RIESE, H. *Actinomycosis of the Abdominl Wall due to a Splinter of Wood.*

1. Rotter's article presents a number of statistics concerning the mortality of peritonitis, both from his own experience and from that of others, and endeavors to find the cause for a higher mortality in certain series of cases. He concludes that neither the conditions of intra-abdominal pressure nor the kinds of drainage used influence the results, but that the difference in mortality is due to a difference in the type of cases from which a certain clinic draws its statistics.

An interesting point in Rotter's paper is the good results which he reports following closure of the abdominal wound, without drainage, in operations upon the gall bladder, even when pus has been spilled about the neighborhood of the liver.

3. Neuber reviews briefly the views which have been held as to the proper treatment of tuberculosis of the hip, and says that opinion has swung again to favor operative treatment. He then gives his technic for excision of the head of the femur, claiming for cases treated in that way an excellent result. Briefly, his procedure is as follows: A skin incision is made from anterior inferior spine of ilium downwards and inwards. Sartorius and long head of rectus femoris are cut near their origin; iliacus and anterior crural nerve are retracted inwards, thus exposing the anterior aspect of the capsule. This is opened, the head of the femur cut off with a Gigli saw, and the stump rotated forwards so it may be trimmed into the rough semblance of a head. The acetabulum is then cleared out, the stump replaced and the wound thoroughly irrigated with 5% formalin soap. Then the joint cavity is filled with 5% iodoform emulsion, a wick of vioform gauze led to the opening in the capsule, which has been sutured, and the wound closed to the wick. The leg is put up in strong abduction, with pressure over the hip.

5. In his article on ileocecal tuberculosis Eschenbach states that, excepting only the peritoneum, the cecum is the most frequently attacked viscus in the abdominal cavity. His experience covered 27 cases, of which 15 were in patients less than twenty years old. In 8 of these cases, the process seemed certainly to be primary in the intestine, for neither before nor after operation were signs of disease found in the lungs. Of the main symptoms of intestinal tuberculosis, i. e., tumor, mucus and blood in the stools, and stenosis, tumor was the only constant sign. Three had stenosis; 9, diarrhea. No case without lung involvement had fever. The treatment of these cases by excision of the affected part, followed by end-to-side or side-to-side anastomosis, was followed by a mortality of about 30%, due mostly to diffuse peritonitis. Eschenbach attributes much of this to the custom of leading gauze wicks to the site of suture; he now attempts to reinforce all such weak spots with a peritoneal flap, and sew the abdomen up tight. [G. G. S.]

BULLETTINO DELLE SCIENZE MEDICHE.

MAY, 1910.

1. *RUATA, G. O. *The So-Called Ozonifacient Compounds.*
2. BELLEI, G. *Some Notes on the Importance of Industrial Hygiene.*

1. From a chemical study and analysis of various essential oils and "ozonized" commercial products, Ruata concludes that such preparations never really liberate ozone, and that therefore their supposed hygienic value as germicides and deodorants is purely illusory. [R. M. C.]

JUNE, 1910.

1. RUATA, G. O. *The Luminosity of Certain Glasses.*
2. LUSSANA, F. *Action of Alanin on the Heart.*
3. *PUNTONI, V. *The Biologic Diagnosis of Echinococcus Cysts.*

3. From an extensive comparative study of the blood of cattle and of human beings with echinococcus cysts, Puntoni concludes that it affords excellent means for confirming the diagnosis of hydatid disease. The alexin reaction of Bordet and Gengou he believes is the most reliable, though technically very difficult. Next in value are eosinophilia and the precipitin reaction, which in his hands gave 78.4% of positive results. Anaphylaxis he does not consider practically available at present for diagnostic purposes. He believes that the biologic diagnosis of echinococcus should not be based on any one of these procedures, but that they should all be used to elucidate cases clinically obscure. [R. M. G.]

JULY, 1910.

1. BOSELLINI, P. L. *Lymphodermia and Mycosis Fungoides.* (To be continued.)
2. DEVECCHI, B. *A Case of Bilateral Cysts of the Suprarenal Capsules.*

AUGUST, 1910.

1. BOSELLI, A. *On the Death of Marcellus Putti.*
2. *CANTELLI, O. *A Methodical Study of Certain Substances in the Urine, of the So-Called Oxyglycoproteid Group, and their Importance as Indication of Renal Lesion.*
3. *RUATA, M. *Ozone as a Gaseous Disinfectant.*
4. BOSELLINI, P. L. *Lymphodermia and Mycosis Fungoides.* (To be continued.)
5. AVONI, A. *The Disinfection of the Hands in Surgery.*
6. MODONESI, F. *Traumatic Psychoneurosis.*

2. Cantelli reports four cases, from an examination of the urine in which he concludes that the presence of para-, hypo- and glyco-xanthin in the urine indicates renal lesions, even in cases in which albumin is constantly absent.

3. The writer reports her experimental researches on ozone as a bactericide of the following organisms: Eberth's bacillus, colon bacillus, staphylococcus, B. fluorescens, B. prodigiosus, B. proteus vulgaris, diphtheria bacillus, cholera vibrio, and concludes it to be of relatively little value. [R. M. G.]

Miscellany.

"PNEUMONIC PLAGUE" IN ENGLAND.

During the past three weeks the daily press has contained occasional rather startling accounts of a so-called "pneumonic plague," said to be prevalent in the county of Suffolk, England. The disease, which is stated, though evidently without obvious authority, to be identical with the Black Death of 1348, is described as a fulminating pneumonia, causing death in a few days. Four cases appeared in September in the village of Freston, four miles from Ipswich, and all died. Since then no more human infections have been reported, but it was observed that rats, cats and rabbits were dying in large numbers in the vicinity with similar symptoms. From the fear of further spread of the disease through their agency has resulted an extensive popular campaign of extermination against small animals. Professional ratcatchers are said to have flocked to the county from all parts of England and to be reaping rich rewards from householders and proprietors of landed estates for destruction of thousands of cats, hares, rats and small rodents. Notices have been posted warning all persons not to touch any dead animal or to use the flesh of rabbits for food. The county of Suffolk includes the Orwell Peninsula, between the rivers Orwell and Stour, which is a great shipping district. Its chief city and seaport, Ipswich, which contains forty acres of dockyards, abounding in rats, is believed to have been the point of entry of the infection, through rats on grain-vessels from Odessa. Whatever the truth of the case, which in the absence of official medical statement and bacteriologic verification must for the present remain *sub judice*, the exterminative zeal of the inhabitants will at least have the advantage of ridding Suffolk of many undesirable vermin.

Correspondence.

"SUCCESS IN ATHLETIC SPORTS."

Cambridge, Mass., Nov. 12, 1910.

Mr. Editor: An editorial in the Journal of Nov. 3 relating to physical training seems to me to be a most unusual combination of broad physiologic wisdom and of (certainly unintended) injustice to the leader of American physical education. The algebraic sum of the editorial we need not try to specify!

It surely is a satisfaction to every physiologist (however the Harvard Athletic Association trainers and "rooters" may feel about it) to have an editor of the influential Journal pronounce the male trained athlete "an artefact, a man unnaturally developed to make an abnormal physical exertion"; to have an editor emphasize that "discipline of temperament is worth more than specific physical training"; and to have him remind his Journal readers of the importance of the mental factor in training for general vital efficiency. Certainly it were hard to imagine a *worse* condition of athletics than one in which a small minority are over-trained and thereby weakened for life, while the great essential majority who need it most get no efficient exercise or none plus nervous excitement, which makes matters worse by far. When the athletic associations in some of the universities begin to realize this thing and employ scientists rather than lawyers and ticket agents to manage their affairs, the mass of the students for whom they (nominally) exist will reap a surpassing benefit. At present sometimes luxury and extravagance leave no inclination for any utilitarian benefit to the student-body, which serves none the less as the scapegoat year after year.

But the high tone of the wisdom in this latter part of the editorial in question makes all the more unfortunate in a way the injustice done Dr. Dudley Sargent in the statement that he ascribes the "usual superiority of women over men in swimming" to "their better conservation of heat, owing to their usual greater proportion of adipose in proportion to the body-weight and bulk." However conspicuous this fat-factor may be in the case of Rose Pitonoff (and the present writer can testify to its unusual nature), Dr. Sargent never dreamed, we may be sure, of suggesting it as a cause of her extraordinary swimming feat of last summer (twelve miles in water that in places was as cold as 49° F.) and without fatigue. Indeed, in his address last fall before the Academy he expressly thus summarized the "factors that made it possible for Miss Pitonoff to accomplish this remarkable athletic performance": "The quick metabolism of youth; less body surface for radiation in proportion to weight than most girls of her age; muscles covered with a layer of fat; favorable anatomic structure; slow returning circulation; peculiar stroke; prolonged practice in swimming; unemotional nature; good habits of living supplemented by high moral courage, steadfastness of purpose and a determination to accomplish the object in view. All these desirable qualities were greatly aided by favorable circumstances, good training and skillful piloting." Here explicitly are *thirteen* highly instructive reasons for her success, of which the "layer of fat" is but *one*. Thus it is that the good sense and learning of an expert has received unintentional depreciation at your hands. If anything, he has underestimated this fat factor rather than overestimated it, as any one experienced in such matters who had seen Miss Pitonoff would be apt indeed to think. At any rate, the first part of the editorial in question misrepresents the facts and I write "in the interests of fair play," however little Dr. Sargent's reputation for good judgment might suffer from such editorial mistakes.

With great respect,

George V. N. Dearborn, M.D.

Post-scriptum. Since the above was written and mailed a letter has been received from Charles B. Durborow, one of the contestants in last summer's swim to Boston Light. He is a clerk in the First National Bank of Philadelphia, but "during the present year has swum 490 miles, rowed 1,967, and canoed 837," while last summer he swam from Philadelphia to Chester, about 33 miles, in twelve hours and forty-four minutes. He writes: "I tried the Boston swim late in August; in fact, I was determined to go to the Light and back, but I was not prepared for that awful cold. . . . I swam to abreast of Deer Light in 3.38 when the cold forced me to stop. I was under weight and over trained and not prepared. . . . I feel sure I could not stand the cold long enough for a round trip."

The somewhat striking coincidence of this unexpected letter with the ideas expressed in the above letter is obvious. Surely there are more factors in athletic (as in vital) efficiency than the majority of trainers and of physiologists are apt to realize. Not only in water but on land, the body heat relations have much to teach us.

G. V. N. D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 5, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,172	324	Waltham	1	0
Chicago	573	168	Pittsfield	13	4
Philadelphia	—	—	Brookline	7	—
St. Louis	—	—	Gloucester	10	2
Baltimore	—	—	North Adams	6	1
Cleveland	—	—	Northampton	3	0
Buffalo	—	—	Chicopee	6	4
Pittsburg	—	—	Medford	5	1
Cincinnati	—	—	Beverly	1	—
Milwaukee	—	—	Leominster	1	1
Washington	—	—	Hyde Park	9	1
Providence	—	—	Melrose	—	—
Boston	198	48	Newburyport	5	1
Worcester	44	5	Revere	—	—
Fall River	33	10	Westfield	2	1
Cambridge	33	10	Woburn	4	2
Lowell	43	15	Peabody	—	—
New Bedford	22	10	Marlboro	2	0
Lynn	20	2	Attleboro	2	1
Springfield	21	7	Adams	6	4
Lawrence	30	9	Clinton	—	—
Somerville	19	5	Gardner	4	1
Brockton	11	1	Milford	1	0
Holyoke	14	6	Watertown	1	0
Malden	8	1	Plymouth	—	—
Chelsea	12	0	Southbridge	2	1
Newton	8	2	Weymouth	—	—
Salem	5	1	Framingham	3	1
Haverhill	13	4	Wakefield	—	—
Fitchburg	—	—	Webster	4	2
Everett	7	1	Arlington	—	—
Quincy	—	—	Greenfield	2	1
Taunton	9	1			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED NOV. 2, 1910.

GLENNAN, A. H., assistant surgeon-general. Granted thirty days' leave of absence from Oct. 1, 1910, on account of sickness.

PETTUS, W. J., assistant surgeon-general. Leave of absence granted for one month and fifteen days from Aug. 29, 1910, amended to read one month and five days from Aug. 29, 1910.

WHITE, J. H., surgeon. Detailed to represent the Service at the next meeting of the Southern Medical Association, to be held in Nashville, Tenn., Nov. 8–10, 1910. Oct. 27, 1910.

YOUNG, G. B., surgeon. Bureau order of Oct. 9, 1910, relative to detail to represent Service at the annual meeting of military surgeons, revoked. Oct. 27, 1910.

LAVINDER, C. H., passed assistant surgeon. Detailed to represent the Service at the annual meeting of the Ohio Valley Medical Association, to be held in Evansville, Ind., Nov. 9–10, 1910. Oct. 27, 1910.

MCLAUGHLIN, A. J., passed assistant surgeon. Detailed to attend the annual meeting of the Association of Military Surgeons, to be held in Richmond, Va., Nov. 1–4, 1910. Oct. 28, 1910.

RUCKER, W. C., passed assistant surgeon. Detailed to attend the annual meeting of the Association of Military Surgeons, to be held in Richmond, Va., Nov. 1–4, 1910. Oct. 28, 1910.

CREEL, R. H., passed assistant surgeon. Relieved from duty on United States Revenue Cutter "Tahoma," and directed to proceed to Chicago, Ill., and report to the medical officer in command for duty. Oct. 25, 1910.

TURNIPSEED, D. C., assistant surgeon. Relieved from duty on United States Revenue Cutter "Perry," and directed to proceed to San Francisco, Cal., and report to Passed Assistant Surgeon M. W. Glover for duty. Oct. 25, 1910.

BELL, CHARLES, acting assistant surgeon. Granted thirty days' leave of absence from Nov. 26, 1910.

CLYBORNE, A. B., acting assistant surgeon. Granted seven days' leave of absence from Oct. 25, 1910, under paragraph 210, Service Regulations.

HOUGHTON, M. W., acting assistant surgeon. Granted five days' leave of absence from Oct. 31, 1910.

NAULTY, C. W., JR., acting assistant surgeon. Granted one day's leave of absence, Nov. 1, 1910.

SAFFORD, M. V., acting assistant surgeon. Granted three days' leave of absence from Oct. 28, 1910, under paragraph 210, Service Regulations.

STEVENSON, J. W., acting assistant surgeon. Granted two months' leave of absence without pay from Nov. 1, 1910.

THURSTON, E. J., pharmacist. Granted three days' leave of absence from Oct. 24, 1910, under paragraph 210, Service Regulations.

WOLFE, J. A., pharmacist. Granted one day's leave of absence, Oct. 22, 1910, under paragraph 210, Service Regulations.

BOARDS CONVENED.

Board of medical officers convened to meet at the call of the chairman at Port Townsend, Wash., for the purpose of conducting a physical examination of an officer of the Revenue Cutter Service. Detail for the board: Surgeon J. B. Stoner, chairman; Surgeon J. H. Oakley, recorder. Oct. 26, 1910.

Board of medical officers convened to meet at the Quarantine Office, Honolulu, Hawaii, Nov. 21, 1910, for the purpose of conducting a physical examination of an officer of the Revenue Cutter Service. Detail for the board: Passed Assistant Surgeon Carl Ramus, chairman; Assistant Surgeon E. R. Marshall, recorder. Oct. 27, 1910.

Board of medical officers convened to meet at the Marine Hospital, Baltimore, Md., Nov. 21, 1910, for the purpose of conducting a physical examination of an officer of the Revenue Cutter Service. Detail for the board: Surgeon W. P. McIntosh, chairman; Passed Assistant Surgeon Dunlop Moore, recorder. Oct. 27, 1910.

RECENT DEATHS.

HENRY WURTZ, A.B., Ph.D., who died last week in Brooklyn, N. Y., was at one time professor of chemistry in the National Medical College in Washington. He was born at Easton, Pa., on June 5, 1826, graduated from Princeton College, and later received an honorary doctorate in philosophy from the Stevens Institute of Technology at Hoboken, N. J. He served for a time as chemical examiner in the United States Patent Office, and was author of numerous chemical writings. He discovered and described *huntilite*, "a silver arsenide occurring with metallic silver at Silver Islet in Lake Superior, Michigan," and for him was named the mineral *wurtzilite*, "a solid bitumen found in the Vintah Mountains, Utah. He is survived by a daughter and four sons.

DR. FRANK NEWELL LEWIS, a well-known ophthalmologist of New York, died on Nov. 13, after a brief illness. He was born in Burlington, Vt., in 1857, of Welsh parentage, his father being Dr. James Lewis. He was graduated from the academic department of the University of Vermont in 1875, and from the medical department of the University in 1882. After additional study in Europe he served as interne at the Mary Fletcher Hospital in Burlington, and then began practice in New York. He later became professor of diseases of the eye at the New York Post-Graduate Medical School and afterwards executive surgeon at the Manhattan Eye, Ear and Throat Hospital. For a number of years he was associated with the late Dr. D. B. St. John Roosa.

BOOKS AND PAMPHLETS RECEIVED.

From Biometrika. A Journal for the Statistical Study of Biological Problems. Vol. VII, No. 3, April, 1910. A Statistical Study in Cancer Death-Rates. By G. D. Maynard, Cambridge, England.

Massage in Sprains, Bruises and Dislocations. By Douglas Graham, M.D. Reprint.

Asiatic Cholera, Its Prevention and Treatment. By Charles S. Braddock, Ph.G., M.D. Reprint.

Causes of Tuberculosis. By W. H. Hutt, M.D. Reprint.

Treasury Department, Hygienic Laboratory. Bulletin No. 62. The Taxonomic Value of the Microscopic Structure of the Stigmal Plates in the Tick Genus Dermacentor. By Ch. Wardell Stiles. 1910.

Elasto-Massage. By Dr. Adolf Schnee. Berlin. Reprint.

Notes on Hospital Planning. By S. S. Goldwater.

Year Book of the Medical Association of the Greater City of New York, January, 1910.

Cases Illustrating the Origin of Hysterical and Pseudo-Hysterical Symptoms. By Tom A. Williams. Reprint.

Transactions of the American Otological Society, Forty-Third Annual Meeting, Washington, D. C., May 3 and 4, 1910.

Thérapeutique Usuelle du Praticien. By Albert Robin. Paris, 1910.

Transactions of the Thirty-Second Annual Meeting of the American Laryngological Association, Washington, D. C., May 5, 4 and 5, 1910.

Original Articles.

REMARKS ON THE TECHNIC OF OPERATIONS FOR STONE IN THE URETER.*

BY HUGH CABOT, M.D., BOSTON,

Surgeon in Charge, Genito-Urinary Out-Patient Department, Massachusetts General Hospital.

It is not my intention to burden you with a general discussion of the technic of operations for stone in the ureter, but as the position of the operation in surgery has changed rapidly within the last few years on account of the great accuracy of diagnosis, there are certain points of technic to which I wish to invite your attention.

INCISIONS FOR THE EXPOSURE OF THE URETER.

With recent advances in the technic of ureteral catheterization and radiography, it is possible in the vast majority of cases to know beforehand in what portion of the ureter a stone is situated and plan the operation to reach this portion of the ureter, rather than to expose a large portion of the ureter for exploratory purposes. A great majority of stones lodge at one of three points.

1. The physiological constriction just below the pelvis of the kidney, about on a level of the lower pole of the kidney.

2. At the brim of the true pelvis where the ureter crosses the iliac vessels.

3. In the lower two inches of the ureter, near its point of entrance into the bladder wall.

The ureter in the first situation is, I believe, best reached by an oblique muscle-splitting incision, starting at about the tip of the twelfth rib and running downward and forward to a point about midway between the anterior superior spine of the ilium and the umbilicus. The fibers of the external oblique are separated in line of the incision, those of the internal oblique and transversalis practically at right angles to the incision. If the separation of the muscles is freely made, good access is obtained to the upper half of the ureter. After the muscles have been separated, the peritoneum is pushed back and the ureter readily found lying upon the psoas muscle, though its tendency to be turned up with the peritoneum should not be forgotten.

Stones situated at the brim of the pelvis may be conveniently reached by an incision in the same line as the one above described, but beginning where the other stopped at a point nearly midway between the anterior superior spine of the ilium and umbilicus and continued downward to the junction of the inner and middle thirds of Poupart's ligament. Here again the peritoneum may be pushed back and the ureter readily found at the point where it crosses the bifurcation of the common iliac artery.

For stones in the lowest portion of the ureter, the incision advised by Gibson is particularly suitable. This incision starts in the middle line about a finger's breadth above the pubes, running horizontally outward nearly parallel to Poupart's ligament at first and curving rather sharply upward at its mid-point to end about opposite to the anterior superior spine of the ilium. The aponeurosis of the external oblique and internal oblique is divided in the line of the incision, and at the outer portion of the incision a few fibers of the internal oblique may have to be cut across. The upper flap is then retracted, the external border of the rectus muscle identified and the fascia of the transveralis divided by a vertical incision, close to and parallel to the rectus, that is, at right angles to the original incision. The peritoneum is then stripped back, and with good retraction, and the patient in the Trendelenburg position, an excellent exposure of the base of the bladder and lower portion of the ureter is obtained.

The incision seems to me much superior to the curved incision commonly used, and in practice I have found the exposure all that could be asked for.

REMOVAL OF THE CALCULUS.

Most writers upon this question, and notably Albarran and Jeanbrau, whose recent contributions are of the greatest value, advise incising the ureter upon the stone. The point to be gained is, of course, the removal of the calculus with the least damage to the ureter and to leave the tissues in such a condition that subsequent suture of the ureter may be done without danger of leakage. They point out that the attempt to draw the stone up the ureter is likely to subject it to trauma, which will lower its resistance and result in sloughing, with the possible production of stricture. Their reasoning on this point does not seem to me sound. The point at which the stone is arrested is usually a physiological narrowing; the presence of the stone has generally resulted in inflammation, frequently in ulceration of the ureter. The ureter below the stone is of normal, or less than normal, caliber, while above the stone it is practically always dilated. I believe that incision on the stone in the ulcerated tissue is almost certain to result in some sloughing of the tissue, and that the already existing tendency to stricture is increased by the fact that suture further narrows the ureter and that the sutures are likely to cut through with further sloughing. In a word, I believe that this technic in difficult cases, particularly with an infected kidney, is likely to cause rather than prevent leakage and stricture of the ureter. As has already been noted, the ureter above the stone is generally dilated. It is safer to incise the ureter one or two inches above the stone, then with suitable forceps passed into this opening withdraw the stone and extract it through the incision. In my experience this has not resulted in notable trauma of the ureter, and though in two of the cases, the reports of which are subjoined, the stone was considerably impacted, no difficulty was experienced in dislodging it. The chief advantage of this method seems to me to lie in the greater security from subsequent leakage or stricture, whether or not sutures are employed. The dilatation of the ureter makes the application of the suture not only easier, but free from danger of narrowing the ureter. It is frequently possible

* Read at the meeting of the American Urological Association, June 6 and 7, 1910, at St. Louis, Mo.

to apply two layers of sutures without reducing the ureter even to its normal caliber.

THE PERMEABILITY OF THE URETER.

The failure to ascertain the permeability of the ureter at this time, and its freedom from other calculi, or from strictures, has been a potent source of unsatisfactory results. As Albarran has wisely pointed out, freedom of the ureter from obstruction is essential to success. This permeability may be ascertained by the use of bougies, or, better, by a small bougie-à-boule, which should be passed downward to the bladder and upward to the kidney. If stricture of the ureter is found, it must be relieved before the operation is finished, either by the internal ureterotomy of Albarran, or by some other method.

TREATMENT OF THE URETER AFTER EXTRACTION OF THE CALCULUS.

Until recent times, the only question here at issue was that of suture of the incision. Recently, however, Albarran and others of the French school have advocated the placing of an inlying catheter which would drain the kidney pelvis direct, and thus, in their opinion, favor wound healing. Albarran advises, though does not insist upon, its use in aseptic cases, but strongly urges its use in septic cases. Jeanbrau, in a recent monograph, advises its use only in septic cases. I believe the method to be largely without merit for the following reasons: The catheters which can be used without doing damage to the vesical orifice of the ureter are necessarily small, not larger than a 12 or 13 F. It is to be remembered that the ureter is almost habitually dilated, sometimes to considerable size. It is almost inconceivable that a catheter of this caliber, especially in septic cases, could drain the kidney pelvis so satisfactorily as to prevent the collection of pus and urine in the ureter outside of the catheter. More especially is this likely to occur where there is active suppuration and pus formation in the kidney. Our experience with inlying catheters in the urethra does not encourage the belief that their presence is not objectionable, as they undoubtedly favor infection. Should the catheter fail to drain completely, and the urine enter the ureter along the side of the catheter, great pressure will be brought to bear upon the incision in the ureter, which is likely to leak if no sutures have been used, and certain to produce strain upon the suture and sloughing if they have been employed. A catheter of this caliber fits very snugly in the vesical orifice of the ureter and considerable pressure must be exerted before the urine can be forced by the catheter. Should the catheter fail to drain, and leakage occur, all advantage of the catheter is lost and increased sloughing about the incision in the ureter is likely to result. Stress has been laid upon the value of the inlying ureteral catheter in cases of stricture of the ureter below the calculus. If its use is confined to these cases it may be of advantage, but our experience with stricture of the urethra does not encourage the belief that permanent results will be thus obtained.

DRAINAGE OF THE ABDOMINAL WOUND.

It has been the almost universal custom to put some drainage in the abdominal wound down to the point of suture in the ureter. It has been regarded as a form of insurance which could do little harm and might save troublesome complications should leakage occur. With this view one cannot but sympathize; on the other hand, it is not inconceivable that the use of drainage even in this way may favor leakage, as it undoubtedly does in cases of suture of the intestine, though it is admitted that the cases are not parallel.

In three recent cases, two of which were aseptic and one markedly infected, no drainage of any kind has been used and the wound has been closed in layers including the skin. While I am not prepared to advise this as a routine procedure, I would ask for it your consideration.

The following cases are submitted as tending to support my contention.

Mrs. A. K., thirty-four. First seen Jan. 9, 1909. Eight years ago had an attack of what was apparently renal colic in the left side, followed by the passage of a stone. No further trouble until six months ago when she had another attack of left-sided pain with nausea and vomiting. Pain, never very severe, lasted for a few days and disappeared. Two months ago another attack of similar character. Since that time has had more or less left-sided pain coming in attacks, but not enough to lay her up. Moderate frequency of micturition, amounting to twice at night. No known hematuria.

Examination negative except as below described. There was slight general abdominal tenderness, most marked on the left side along the course of the ureter and in the left costo-vertebral angle. By vagina there was marked tenderness to the left of the cervix, and it was thought that a mass could be felt in the region of the ureter. X-ray showed a stone in the left ureter about two inches above the bladder. Urine was normal, acid, 1,022, albumen slightest possible trace. Moderate sediment, consisting of pus and a few red blood corpuscles. At the time of entrance there was almost constant vomiting and considerable pain in the left groin. Operation was done about six hours after admission. An attempt was made to reach the stone through a vaginal incision, but it was so movable in the ureter that it could not be reached by this route. A six-inch incision was, therefore, made from the anterior superior spine on the left downward and inward parallel to Poupart's ligament, muscles separated and divided and ureter exposed near the brim of the pelvis. It was found dilated to the size of the finger and much thickened. Following it downward the stone could be felt. It was readily dislodged and pushed up the ureter to a point near the brim where the ureter was incised and the stone removed. The incision in the ureter was then closed with interrupted catgut sutures. A small cigarette drain placed to the point of suture. Wound closed about it in layers. Wound healed kindly without leakage. At the time of discharge from the hospital urine was normal, acid, 1,031. No albumen or sediment.

Feb. 1, 1910. The scar is firm, has had no symptoms from kidney or ureter, and urine is normal.

Mr. M. M. D., twenty-four. Entered hospital Feb. 16, 1910. Six years ago had an attack of painless hematuria lasting two days. Two years ago another attack of hematuria, also painless, but followed by the passage of three small calculi. Two months ago colicky pain in the right lower quadrant of the abdomen.

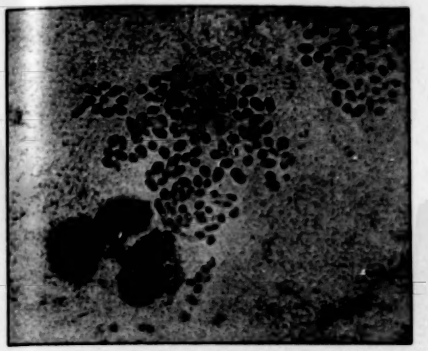


FIG. 1. Pneumococci. Pericardial exudate. 1500

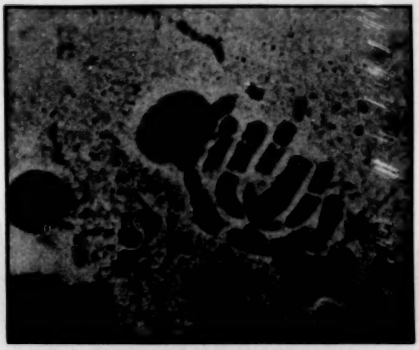


FIG. 4. Bacillus mucosus capsulatus, sputum, bronchitis. 1500.

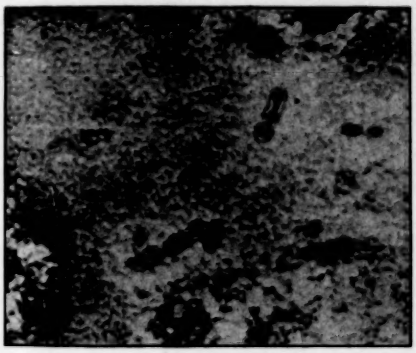


FIG. 2. Pneumococci smear from lung exudate, pneumonia. 2800.

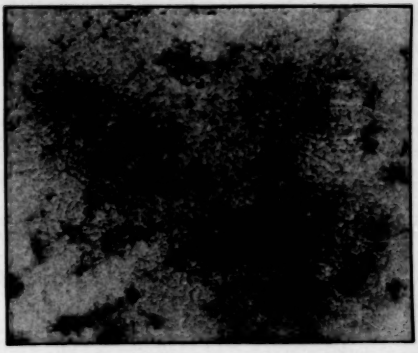


FIG. 5. Bacillus aerogenes capsulatus. Smear from spleen. Septicemia. 1500.

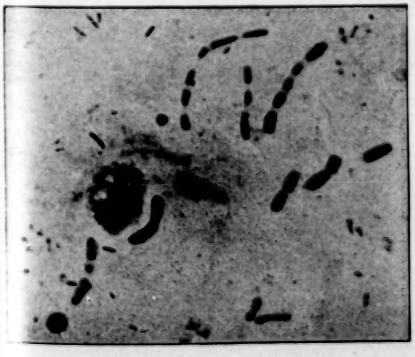


FIG. 3. Streptococcus mucosus capsulatus (pseudo-pneumococcus), sputum, bronchitis. 1500.



FIG. 6. Bacillus of anthrax. Smear from pustule. 1800.

Pain shooting to the right testis and penis. Since that time has had several such attacks, but no marked hematuria, though the urine has been smoky. Two weeks ago was laid up in bed for several days with a dull pain in the region of the cecum and was thought to have appendicitis.

Examination showed tenderness with some muscular spasm in the right lower quadrant of the abdomen, but was otherwise negative.

Cystoscopy showed a normal bladder with the orifice of the right ureter slightly larger than the left, but not otherwise abnormal. Normal urine from the left side, none from the right. Ureter catheter entered right ureter for 9½ cm., but could be passed no further. Several x-ray plates were negative. At operation the ureter was exposed at the brim of the pelvis by an oblique incision starting about two inches inside of the anterior superior spine and running downward and inward for about five inches. The peritoneum was pushed back, the ureter located and the stone felt just below the iliac vessels. A Crile clamp was placed upon the ureter to prevent urinary leakage, and the ureter incised at a point just above where it crossed the vessels and about 1½ inches above the stone. A pair of narrow-bladed forceps was then passed into the ureter, the stone grasped and readily removed. The wound in the ureter was closed with a single layer of interrupted 0 catgut sutures. The abdominal wound was closed in layers without drainage.

Patient last seen in May, 1910, when he was in good condition and had a normal urine.

Mr. C. C. B., forty-two. Entered hospital Feb. 25, 1910. Seven years ago had an attack of pain in the right loin and side. Hematuria for several days, followed by the passage of several small stones. Well until ten days ago, when he began to have pain in the right side similar to but not so severe as the previous attack. This was accompanied by moderate frequency of micturition, amounting to three to five times at night. No hematuria. Pain lasted two days and then disappeared, but the frequency of urination continued and the urine contained pus. It was for this he applied for treatment.

General physical examination negative. Series of good x-ray pictures was negative. The urine was pale, cloudy, alkaline, 1,013, albumen slightest possible trace, sediment, mostly pus with rare red blood corpuscles.

Cystoscopy showed bladder generally normal. Right ureteral orifice slightly thickened and slightly ulcerated. Ureter catheter enters the right ureter for 7 cm. A smaller catheter was then tried and passed 10 cm., but would go on further. Catheter passes up the left ureter freely and draws normal urine. Indigo-carmine excreted in nine minutes by left kidney, not at all by the right in an hour.

The position of the stone in this case was then demonstrated by taking an x-ray picture with the tube placed in an oblique position as described in a paper by Cabot and Dodd (Boston Medical and Surgical Journal). This patient was operated upon by the same method as that employed in the last case. The stone was much larger, and was found tightly impacted in the ureter at the point where it crosses the iliac vessels. There was moderate dilatation of the ureter above the stone. The ureter was occluded with a Crile clamp and opened about two inches above the stone. This was then grasped with forceps, dislodged without difficulty and removed. The wound in the ureter was closed with two layers of interrupted 0 catgut sutures. In spite of the infected condition of the kidney, the closure of the wound in the ureter seemed so secure that no drainage was used. The abdominal wound was closed in layers without drainage. Convalescence was entirely uneventful.

Patient was seen in May, 1910, and is now free from symptoms, though the urine is still slightly cloudy with pus, and it is not improbable that the damage to the kidney has been so great that its ultimate removal may be wise.

Mr. F. C. N., thirty-four.

Previous history unimportant except for a severe crushing accident involving the left hip four years ago. From this he recovered with a good deal of stiffness and some shortening of the leg. Three years ago passed a stone from his bladder which troubled him only in its passage through the urethra. There was no renal colic and no hematuria. Six months ago had an attack of renal colic with hematuria, no stone passed.

April 12, 1910. A severe attack of renal colic with hematuria. It was so severe that he was taken to the Emergency Hospital, where he remained over night. Since that time has had some grumbling pain in the left lower quadrant of the abdomen. No pain on urination.

Physical examination is totally negative. Urine shows slightest possible trace of albumen, moderate sediment, pus, round cells, moderate number of red blood corpuscles.

April 20. Cystoscopy shows a normal bladder and normal ureteral orifices. Ureter catheter enters 2 cm. in the left but will go no further. X-ray plates by Dr. Dodd negative for kidney region. On the left side about 1½ inches from the symphysis pubis is a definite shadow, probably in the left ureter. Operation advised.

April 25, operation. Anesthol and ether.

Curved incision from about one inch to the right of the symphysis pubis, about one inch above Poupart's ligament, following that line upward and outward to the region of the anterior superior spine on the left. External oblique fascia separated, fibers of the internal oblique divided. The fascia was then divided vertically at the outer border of the right rectus, thus forming a triangular flap (Gibson's incision). Peritoneum freed from iliac fossa and ureter exposed from the iliac vessels downward with some difficulty. Peritoneum torn just in front of the ureter. Ureter freed, held up by a loop of catgut, Crile clamp placed near the brim and the ureter opened about two inches above the bladder, where it was dilated to the size of a lead pencil. Probe passed into the opening could feel the stone about 1½ inches below. Stone picked up with some difficulty by means of a small straight clamp and extracted. Bougie passed to bladder without obstruction. Wound in ureter closed with two layers of 0 catgut. Abdominal wound closed in layers without drainage.

June, 1910. Patient has made an uneventful recovery.

A METHOD OF STAINING CAPSULATED BACTERIA IN BODY FLUIDS.

BY WILLIAM H. SMITH, M.D.

(From the Pathological Laboratory of the Massachusetts General Hospital.)

The following method of staining capsulated bacteria in body fluids is published in order that its real value may be determined. It has been found, during the past two years, in my hands, to bring more uniform results than any other method with which I am familiar.

In looking over some preparations of pneumonic exudate due to the Bacillus mucosus capsulatus, stained by Mallory's connective tissue stain, the well-marked staining of the capsule about the bacilli in the exudate was noted. Pre-

vious experience in staining the capsule about these micro-organisms in the exudate in other preparations, and its difficulty, led me to investigate why in this particular preparation, stained with Mallory's stain, the capsule should be so much clearer than in any of my other specimens.

The capsules about the micro-organisms were stained blue in the preparation above referred to, specimens of sputum, lung exudate, pleural and pericardial effusions were stained with Grübler's aniline blue in varying strength, but the capsules about the pneumococcus or streptococcus mucosus capsulatus present in the preparation did not stain. The same smears when stained by the aniline blue, orange G. phosphomolybdic acid combination did show capsules. It was then considered that the phosphomolybdic acid might be a factor, and, after repeated trials with phosphomolybdic acid of different strength, more uniform results were obtained. As a result of this investigation, the following method is recommended for staining capsulated bacteria in body fluids.

1. Make a thin smear from fresh sputum, lung, pleural or pericardial exudate.
2. Pass through flame.
3. Cover with 10% (ten per cent) aqueous solution of phosphomolybdic acid (Merck) four to five seconds.
4. Wash in water.

If the micro-organism is Gram-staining like the pneumococcus or streptococcus mucosus capsulatus, stain with,

5. Aniline oil gential violet, steaming one-quarter to one-half minute.
6. Wash in water.
7. Treat with Gram's solution of iodine, steam one-quarter to one-half minute.
8. Decolorize with 95% alcohol.
9. Wash in water.
10. Stain with 6% (six per cent) aqueous solution of eosin (Grübler's w. g.) one-half to one minute, warming gently.
11. Wash in water.
12. Wash in absolute alcohol.
13. Clear in xylol and mount in Canada balsam. The capsule will be found to be distinct, clear cut, eosin stained, about the Gram-stained micro-organism.

If the micro-organism is Gram-decolorizing, after covering the smear with phosphomolybdic acid and washing,

1. Stain with 6% (six per cent) aqueous solution of eosin one-half to one minute, warming gently.
2. Wash in water.
3. Counter stain with Loeffler's methylene blue one-quarter to one-half minute, warming gently.
4. Wash in absolute alcohol.
5. Clear in xylol and mount in Canada balsam. The capsule will appear eosin stained about the blue-stained micro-organism.

I am indebted to Dr. James Homer Wright for his frequent advice during the progress of the work, and to Mr. L. S. Brown for the photomicrographs which accompany the article.

CANCER OF THE SCROTUM.

BY ROBERT M. GREEN, M.D., BOSTON.

(Concluded from No. 20, p. 759.)

OGSTON, in an article on the "Local Effects of Crude Paraffin," in the *Edinburgh Medical Journal*, 1871, xvii, 544, says:

"The workmen engaged in this manufacture [of paraffin] have the skin over portions of their bodies, more especially of the hands and arms, but also of the feet and legs, brought daily for many hours at a time into contact with the paraffin shale, and with the oily matters mixed up with it, the result being an eruption of nodules and pimples on the skin so exposed, speedily breaking out on those who are for the first time engaged in it, lasting for a few weeks or months, and then generally diminishing or disappearing. In a few exceptional individuals the eruption does not disappear, but, assuming a chronic character, produces so marked and prolonged an affection of the skin that the general health becomes impaired and the cessation of this employment becomes a necessity. The appearances differ in the two classes of cases, acute and chronic, and, while the essential alterations in the skin remain the same, the presence of inflammatory action in the acute, and its absence in the chronic, forms leads to a marked distinction between the two, and admits of their being separately described.

"In the *acute* form of the eruption, which soon appears in those exposed to the influences of crude paraffin, the skin of the hands, wrists, arms, feet and legs becomes covered with a rash of bright red nodules, closely approximate to each other, and usually largest and most numerous on the wrists or wherever the dress tightly embraces the skin, the dorsal aspects of the parts being most severely affected, and the palms of the hands and soles of the feet enjoying a complete immunity. Similar nodules arise, though to a less extent, on the face, neck and other parts of the body to which the oily matters find access.

"On examining minutely the skin of those affected in this way, the following are the leading peculiarities of the eruption: The bright red nodules, hard to the touch, tender on pressure, varying little in size, which is about equal to that of a grain of barley, are of a rounded form and consist each of a single hair-follicle with the parts immediately surrounding it, which are inflamed, indurated and reddened. The hair emerges from the very summit of the nodule, and the orifice of the hair-follicle is much enlarged and easily visible to the naked eye as an aperture of a magnitude similar to that of a pinhole in a card. The dilatation extends to the deeper part of the follicle, which forms the kernel of the inflamed knot, the retention of its contents evidently contributing to the inflammatory induration around. The gaping mouth of the follicle exhibits masses of cast-off epithelial scales, dry and friable instead of greasy and tenacious; the nodule has little of the tendency to run on to suppuration observable in an ordinary *comedo*, and its contents cannot be

squeezed out. On the contrary, the redness and induration, after remaining for some little time, gradually diminish and finally disappear, leaving the hair-follicle enlarged and its mouth gaping so as to exhibit the retained epithelial masses, these latter being rendered more distinct by continued retention and accumulation of dirt. In fact, the *acute* form of the eruption consists of successive crops of these nodules, which are thus at the same time seen in all stages of their growth, full development and subsidence, while the skin between them, studded with the black gaping mouths of such follicles as have already passed through or are about to undergo the process, retains, contrary to what is observed in the chronic form of the malady, its natural pliancy and elasticity.

"In all paraffin-workers, patency and enlargement of the hair-follicles continue to some extent so long as they are engaged in this manufacture, and the black dots in the skin of their hands and face strike the eye of the observer at once, men with dark complexions and strong hair being especially deformed in this way, while fair complexions and light or reddish hair escape comparatively unaffected.

"A few exceptional individuals, with swarthy complexions and hairy skins, suffer so much from an exaggerated patency of the follicles that they are compelled to quit their occupation and seek a more suitable calling. When the disease assumes this *chronic* form it exhibits the following characteristics: The backs of the feet and toes, the dorsum of the hand and the backs of the fingers between but not over the joints exhibit a peculiar honeycombed appearance of the skin, which is elevated, thickened and inelastic, so as to prevent or render difficult and painful the flexion of the fingers and hand. These elevated honeycombed patches are of natural color and not inflamed (except where an isolated papule exhibits the appearance described under the acute form), but consist of densely-grouped arrays of hair-follicles, with the indurated cutis between and around them, the follicles packed with dry, brittle accumulations of epithelial scales so extensive as to be easily visible through the dilated mouths of the follicles, these latter being large enough to admit the extremity of an ordinary probe. The hairs themselves have disappeared from these patches, having probably become atrophic from the pressure of the epidermic masses, while cracks and bleeding fissures traverse the indurated parts, and in rare instances a follicular abscess gives variety to the picture. The knuckles of the fingers and toes, the palms of the hands and the soles of the feet remain unaffected by the disease. In the subject of the chronic malady the complexion is pale and the tongue foul, while the loss of flesh betrays the effects of the sleepless nights caused by the constant irritation and pain of the skin of the affected extremities.

"The *modus operandi* of the crude paraffin in producing these results seems to be as follows: The only matters in the shale, called 'blue oil,' when separated, are both penetrating in their properties and irritating to the skin; and, coming continually in contact with the epidermis, soak into the hair-follicles, where they create an irritation soon leading to induration and increased exfoliation of epithelial scales. This exfoliation is not counterbalanced by increased expulsion of the scales, owing doubtless partly to the large quantities cast off and partly to the usual fatty and lubricating substances mixed up with them, being dissolved out and removed by the 'blue oil,' thus leaving the brittle epidermic masses plugging the follicles and increasing the inflammatory irritation. (The palms of the hands, soles of the feet and knuckles of the fingers and toes — places supplied with sweat-glands but no hair-follicles — escape the irritation from the watery contents of the sudoriparous pores presenting an obstacle to the ingress of the oil.) After a time the hairs on the most exposed parts become atrophic and fall out, but the continued retention of the epithelial masses keeps up the process in the follicles and the induration of the surrounding skin.

"The workmen are in the habit of employing 'shale spirit' to wash the affected parts, whether with any beneficial effect is, I think, doubtful."

The pathology of scrotal cancer is brief; it is epithelioma of the squamous-celled type. In the section on tar and paraffin cancer in his "Surgical Pathology and Therapeutics," Warren says:

"An histological study of the irritated skin shows a growth of the lower layers of the epidermis and of the rete mucosum. The hair-follicles are frequently distended with masses of epidermic cells, and in the deep layers of the rete are found spots of brown pigment. Near the carcinomatous nodules the dividing-line between epidermis and the cutis becomes very irregular, and the interpapillary masses of cells are enlarged and irregular in shape. The skin shows also a small cell infiltration. When the zone of the cancer is reached, there are found enormous numbers of epidermic balls and a polymorphous-cell growth into the deep layers of the cutis. It is evident that we have to do here with a chronic irritation of the skin affecting its epithelial structures for a long time, producing at first hypertrophy of some of these structures, and finally a tendency to indefinite growth, as in cancer."

Bransby Cooper, in his course of surgical lectures at Guy's Hospital, in 1846–7, says:

"I cannot believe that the term 'cancer' is strictly appropriate to this disease; for although it is true that a patient who is the subject of this local affection must have a predisposition to its development, still few cases are recorded in which it has arisen from any other exciting cause than that produced by the irritation of soot. It may, however, be fairly conjectured that when a malignant diathesis prevails, the continued irritative influence of such a substance as soot may produce a malignant local development. Still, however, a mystery is involved in such a view; for as the whole surface of the body is more or less subjected to this source of irritation, it is difficult to understand why the scrotum more than any other part should so invariably become the seat

of the disease; to this, however, the answer may be that the rugous and delicate character of the skin, the size and number of the follicles with which it is furnished, and perhaps its pendulous position, and, being usually in a moist state, may tend to render it more than any part of the body susceptible to diseased action as the result of continued irritation. A very similar disease is prevalent in the West Indies, under the name of 'sun-wart'; this disease attacks the face in old people, and usually makes its appearance in the wrinkles and furrows which naturally harbor perspiration, and in which the follicles are larger and more numerous than in other parts. Chimney-sweepers' cancer is a very rare disease and is but seldom met with even in the class to whom it may be almost considered peculiar; soot, therefore, must be looked upon not as possessing any particular property of producing this carcinomatous affection, but as merely determining or exciting the action in individuals in whom there exists a malignant constitutional tendency."

In 1866, Curling, in his "Practical Treatise on the Diseases of the Testis and of the Spermatic Cord and Scrotum," page 592, says:

"The ulcer spreads towards its circumference widely and superficially, whilst in the center it burrows deeply, until in many instances it reaches the great vessels of the thigh, destroys their coats and causes death by hemorrhage."

On page 596, he cites a case of Sir William Fergusson's of scrotal epithelial cancer in a man who for many years had worked amongst guano.

On page 598 he reports the case of a sailor of forty-five who had been a chimneysweep as a boy, but for twenty-two years had followed the sea. He had a scrotal cancer of three years' duration.

On page 602, he cites a case of Paget's, a chimneysweep of sixty-six, who had a "cancer-wart" on each hand, and had had a scrotal cancer removed thirty-five years before.

At page 599 Curling further says:

"Chimneysweeper's cancer is a disease almost peculiar to this country. . . . Pit-coal, from which soot is produced, is only sparingly employed as fuel abroad, whilst in this country it is in almost universal use by all classes, and until recently our chimneys were cleansed by climbing-boys, who were consequently exposed from an early period of life to continued contact with soot. But these circumstances seem scarcely sufficient to account for the prevalence of epithelial cancer of the scrotum in England in comparison with other countries, without admitting the existence of a greater predisposition to the disease in the constitution of natives of this country."

He gives as further references:

Paget: Pathology. Richerand: Nosographie Chirurgicale, t. iv, p. 300. Russell: Observations on the Testicles, p. 98, Edinburgh, 1833.

Russell says: "Cases of the chimneysweeper's cancer occur frequently in the London hospitals though very seldom at the Royal Infirmary of Edinburgh.

Warren refers to Volkmann; Charles W. Allen to Andrews.

Richerand in his "Nosographie Chirurgicale," Paris, 1812, t. iv, p. 500.

"Pott parle de certains ulcères qui affectent le scrotum, chez les ramoneurs de Londres. Cette maladie, qu'il décrit sous le nom de cancer des ramoneurs, paroît endémique; on ne l'a point observée en France; et Rammazini, qui écrevoit en Italie sur les maladies des artisans, n'en fait mention dans aucun endroit de son estimable ouvrage. Sans doute que la nature particulière de la suie, dans un pays où l'on ne brûle guère que du charbon minéral, est la cause de ce genre d'affections."

Paget, in his "Surgical Pathology," Philadelphia, 1865, page 629, says:

"A . . . drily scaled or incrusted warty change of the cutis often . . . precedes the chimney-sweep's cancer; and I suspect that the true influence of the soot in this disease is not that its continued contact determines the growth of cancers, but . . . that it produces a state of skin which provides an apt locality for epithelial cancer in persons of a cancerous diathesis. How it does this I cannot imagine, but this is only one of many things unexplained in this strange disease; for the whole of the peculiarities of the chimney-sweep's cancer — its dependence on soot, while coal-dust is wholly inoperative (for the disease is unknown among colliers); its comparative frequency in England, especially in the large towns, while in other countries where soot is abundant it is hardly seen; its selection of the scrotum for its most frequent seat, — all these and many like facts in its history appear completely inexplicable. Still, it is certain that scaly or incrusted small warts . . . are very common in chimneysweeps. . . . Nor are such warts confined to the scrotum; they may exist on every part of the trunk and limbs; and I have seen sweeps so thickset with them that a hundred or more might have been counted."

In modern days, chimneysweeps' cancer has, of course, come to be regarded merely as a form of epithelioma, to which the irritating qualities of soot and the uncleanly habits of chimney-sweeps afforded predisposing local conditions. With increase of popular habits of cleanliness and the extensive employment of mechanical devices for sweeping chimneys, the disease has practically disappeared. Only sporadic cases now occur, usually without determinable cause of local irritation. The history of the disease, however, presents a curious and interesting chapter of medical literature.

I have collected, abstracted, and arranged chronologically, without attempt to enumerate, a series of illustrative cases that have been reported for the most part by English authors. In instances in which the original article was not accessible for verification, I have merely quoted the reference without comment.

CHRONOLOGIC SERIES OF CASES FROM LITERATURE.

1731. *Bassius:* Obs. anat., 8°, Halae Magdeb., 193–197. Scrotum sphacelo consumtum et renatum.

1740. *Treyling:* Acta Acad. nat. curios., Norimb., v, 440. Scrotum immaniter auctum scirrhoso-scrophuloso.

1790. *James Earle:* Chirurgical Works of Percivall Pott, iii, 258.

In a footnote to the article on cancer of the scrotum in his first edition of Pott's works, he says:

"Since Mr. Pott published this tract, I saw the disease which is described in an infant under eight years of age who was brought into St. Bartholomew's Hospital and was an apprentice to a chimneysweeper. I shewed it to Mr. Pott, who acknowledged it to be the true disease, and that he had not before seen it in so young a subject. It had infected all the lower part of the scrotum, but as the testes had not imbibed the poison, the diseased part being removed, the wound healed and the boy was discharged perfectly well."

Of course, in the absence of microscopic verification, this case lies under strong suspicion of being, not carcinoma, but more probably some form of phlegmon.

1808. *Sir James Earle:* Ed. Chir. Works of P. Pott, p. 182.

A gardener of forty-nine who for five years had had "a large cancerous sore, which reached from the bend of the wrist to the knuckles, occupying almost the whole of the back of the left hand," and which first appeared while he was employed "to strew soot on the ground round the young and tender plants, to preserve them from the slugs. . . . He carried the soot in an old garden pot, which hung on his left hand by a handle over the top, while he strewed it with the right. . . . It is to be remarked that the right hand which strewed the soot was unaffected. Probably from that action it got rid of the effluvia, but the left, being . . . exposed to the vapors or dust arising from the soot, as it was continually stirred up, a lodgment of it was probably made on the thin skin at the back of the hand."

No treatment was of any avail till the patient consented to amputation, which was apparently curative.

1821. *Travers:* Med.-Chir. Trans. (1832), xvii, 346.

A chimneysweep of forty-three, who for three years had had on the scrotum a pimple, which finally became excoriated and ulcerated. The disease was twice removed, but recurred and the patient "died exhausted after some months of severe suffering. His emaciation was extreme. It was remarkable that the testicles, though exposed and shrunk, were not affected by ulceration; on inspection, the entire peritoneal surface was found studded with the small white tubercle of scrofula."

1824. *Henry Earle:* Med.-Chir. Trans., xii, 302.

A chimneysweep of thirty, who for seven years had had on his scrotum a wart which finally began to ulcerate and fungate. He was treated for a time by local applications, but finally submitted to operation, "at which time there was a large fungous excrescence, with hard thickened edges, which nearly covered the whole scrotum, and extended the entire length of the perineum to the verge of the anus. This discharged a profuse, bloody sanies, which excoriated the surrounding skin." The testes were not involved; the glands were enlarged, but later subsided, the patient was discharged well, quitted his occupation and stated that he had "no diminution in his venereal powers."

Page 304: A chimneysweep of thirty-five, who for a year had had a wart on the scrotum, which finally began to ulcerate and involve the right testicle. On admission to the hospital "there was a large deep ulcer extending into the body of the right testis, round which there was a considerable hard fungous growth from the edges of the skin, occupying about one half of the scrotum. This was excised, but recurred twice and was finally fatal. His grandfather, father and one brother had died of the same disease."

1825. *Warren:* Surgical Observations on Tumors, p. 329.

A patient of thirty-five, who six months before first noticed a wart on the scrotum. This became crusted and soon formed an open sore, which, when seen, was oval and the size of a half-dollar. The growth was excised, and the patient was without recurrence in 1848, thirteen years after.

1825. *Jeffreys:* The Lancet, viii, 318.

A chimneysweep of twenty-eight, who for ten years had had a wart on the scrotum. A year before admission, this wart began to ulcerate and to increase in size till it occupied the entire left side of the scrotum and angle of the groin, the left testis being exposed. The patient had a hemorrhage of about a pint from the tumor, which was treated with carrot and linseed meal poultices.

1835. *Syme:* Edinb. Med. and Surg. Jour., xliv, 13.

A chimneysweep of thirty, who two years before had a wart of the scrotum excised. Others soon appeared, and on admission almost covered the scrotum, which was completely removed, with recovery.

1837. *Samuel Cooper:* Dictionary of Practical Surgery, London, 1872.

A chimneysweep of twenty-three, married, had for five years had a small pimple or wart on the anterior part of the scrotum. The growth enlarged slowly, became indurated and two years ago began to ulcerate. On admission he presented "a large irregular ulcer at the lower and anterior part of the scrotum, with elevated, hard and red margins, which were in some parts very thick. The center of it was occupied by a foul adherent greenish slough. The disease did not involve the testes, and was completely excised. The glands were enlarged, but were not removed. The wound healed by granulation, and the patient was discharged well. Subsequent history unknown."

Lane, the editor, adds: "In the present day, the chimneysweeper's cancer is considered by most surgeons in every respect analogous to epithelioma in other parts."

1838. *Hawkins:* Lond. Med. Gaz., vol. xxi, p. 842.

An aged chimneysweep who for forty years had had a cancerous process in the scrotum. He was thrice operated on and finally was in hospital at the same time as his son with the same disease. Even then, his inguinal glands were not involved.

1838. *Gerdy:* Arch. gén. de méd., Paris, 3. s., ii, 385–391. Kystes et tumeurs cancéreuses des bourses et du testicule.

1841. *Welsh:* Lancet, xli, 90.

A chimneysweep who for ten years had had a wart on the right side of the scrotum, which finally began to fungate and ulcerate, presenting on admission "one granular cauliflower excrescence, hard to the touch, and emitting a stinking grumous kind of pus, unaccompanied with any severe pain." The entire scrotum was removed and healed, but a wart reappeared in four months, and two years later the scrotum was again removed, the testes not being involved. The wound was healing well at time of report, but later details are wanting.

1847. *Critchett:* The Lancet, vol. viii, n. s., p. 172.

A chimneysweep of twenty, who for four years had had on the scrotum an ulcerating sore which had spread rapidly in the past year. One uncle died of the same disease. On admission the patient showed an irregularly ulcerated sore on the left side of the scrotum, yellowish, secreting a thin, ichorous, very fetid discharge; the margin was irregular, elevated and hard; the glands of both groins enlarged. The growth was excised, the glands subsided, and the man was well and without recurrence a year later.

1841. *Liston:* The Lancet, xl, 793.

A chimneysweep of twenty-four who two years before first noticed on the left side of the scrotum a wart, which slowly increased in size. Five weeks before admission it ulcerated and began to discharge. The tumor was excised and the enlarged, indurated inguinal glands dissected out. The wounds healed after suppuration, and the patient was discharged well.

Another chimneysweep of thirty-four, who had three small ulcerating scrotal warts removed.

1849. *Cooper, Bransby:* London Med. Gaz., xliii, 5.

Reports seven cases, all in chimneysweeps aged fifty-one, thirty-four, thirty-one, twenty-eight, thirty-six, thirty-five, sixty-six.

1849. *Bird:* Prov. Med. and Surg. Jour., 127–129.

Curling: London Jour. Med., i, 220–223.

Hutton: Proc. Path. Soc. Dubl., i, pt. ii, 66–70.

O'Ferrall: Proc. Path. Soc. Dubl., i, pt. i, 297–305.

1852. *Stanley:* Med. Times and Gaz., v, 414.

A chimneysweep of forty, whose father had followed the same trade, and who for nineteen years had had a cancerous process in the scrotum, thrice operated on and thrice recurrent, the last time in the inguinal glands, which were removed with apparent cure.

1855. *Stanley:* Med. Circ., London, vii, 202.

Chimneysweeper's cancer and cancer of the penis.

1859. *Stanley:* The Lancet, London, xxxi, n. s., 612.

A chimneysweep of about thirty-five, with two ulcerated tumors on the right side of the scrotum, near the most dependent portion. The glands were not involved. The tumors were excised. Stanley alludes to cancer of the scrotum as "this well-known although now less common disease, which . . . occasionally presents itself for treatment at our hospitals."

1863. *Coote:* The Lancet, London, xl, 420.

A chimneysweep of thirty, who eight years before had had a small wart removed by Stanley (see reference above), had a recurrence four years ago. The growth is now an ulcerated mass involving the entire scrotum and the base of the penis. Growth excised; healing good.

An elderly chimneysweep, in whom the left testis was involved and the glands enlarged, and only partial removal done by Mr. Holmes.

1864. *Stevens:* The Lancet, xlii, n. s., 570.

A chimneysweep of forty-six, "with carcinomatous ulceration of the entire anterior surface of the scrotum of eight months' duration, involving the penis and having destroyed nearly half its structure." Treated by complete removal of the genitalia.

1865. *Putéquat:* Bull. Soc. de chir. de Par., 2. s., vi, 474–477. "Observation de cancer des ramoneurs ou du scrotum."

A gentleman of fifty-five, not a chimneysweep, who had a chancre ten years before, developed on the left side of the scrotum a large, irregular ulcer, with a grayish aspect, uneven surface, thick, hard, elevated, broken and everted borders. Left testis involved but glands not enlarged. The patient, unoperated, died in a year. Putéquat remarks that "cancer of the scrotum is very rare in France," and quotes Samuel Cooper as saying in his "Elementary Treatise of Surgical Pathology," p. 622: "Le cancer du ramoneur est une maladie pernicieuse sur laquelle les médicaments internes et les topiques ont une action faible ou nulle.

Idem: J. de méd., chir. et pharmacol., Brux., xli, 509–512. *Idem:* Gaz. d'hôp., Paris, xxxviii, 546.

1866. *Curling:* A Practical Treatise on Diseases of the Testis and of the Spermatic Cord and Scrotum, p. 599.

A chimneysweep of fifty-one, who began the trade at seven, and who for twenty-two years had had a cancer of the scrotum, operated on five times and ultimately causing death from emaciation, with only one groin involved and no trace of internal metastasis.

Cusack: Dubl. Jour. Med. Sci., xxi, 137.

Reports excision of a soot-wart from the hand of a female chimneysweep, whose son had a similar epithelioma of the ear.

1865. *Sauné:* Bull. Soc. anat. de Paris, xl, 636. Cancroide du scrotum.

1868. *Rouge:* Bull. Soc. méd. de la Suisse Rom., Lausanne, ii, 315. Cancer mélanique du scrotum.

1868. *Lawson:* Brit. Med. Jour., London, i, 351.

1869. *Erichsen:* Brit. Med. Jour., London, i, 211.

A chimneysweep of forty-nine, who six months before admission received on the scrotum an abrasion, at the site of which developed a purple scab, followed by a rapidly spreading red growth, which became black and painful. On entrance there was presented a raised and rather pigmented ulcerating growth on the scrotum, which was excised and healed perfectly. Further history unknown.

1874. *Bell:* Edinb. Med. Jour. (1876–7), xxii, 135–137.

A paraffin worker of forty-seven who for five years had had extensive but painless ulceration of the scrotum, with elevated exuberant granulations. He had had several operations followed by recurrence. Glands not enlarged. The mass was widely excised and the wound healed. Further history unknown.

1875. *Gerdy:* Mélanges d'anatomie, 8°, Paris, ii, 450–456.

1875. *Bell.*

A paraffin worker of thirty-four who two years before noticed on the scrotum a small pimple which has grown to a tumor three inches in diameter, involving the right tunica vaginalis and the skin, and yielding a thin discharge. Glands in both groins enlarged but not hard. Mass excised. Wound healed. Subsequent history unknown.

Both these patients had paraffin acne or eczema over those parts of hands, arms and legs not protected by clothing. This is described by Ogston: Edinb. Med. Jour., xvii, 544.

1875. *Gerdy:* Mélanges d'anatomie, Paris, ii, 450–456.

1879. *Cameron:* Glasgow Med. Jour., 5. s., xii, 40.

1883. *Heath:* The Lancet, 1883, ii, 327.

A block-cutter of eighteen, who a year before first noticed a small hard swelling, the size of a marble, in the right lower scrotum. In three months it grew to the size of a hen's egg; four months later the glands in both groins began to enlarge (the right first). No pain till three months ago. On admission, the growth involved the whole scrotum, irregular, nodulated, with a sinus at the bottom, from which was discharged a thin, yellowish, opaque fluid, sometimes tinged with blood. Death followed in four months from hemorrhage. The testes were uninvolved. Pathological report: Epithelioma.

1888. *Wilson:* Prov. Med. Jour., Leicester, vii, 69.

1889. *Butlin:* St. Barth. Hosp. Rep., xxv, 193–200.

During the past twenty-five years, seven cases have been entered in the records of the Massachusetts General Hospital under the diagnosis of cancer of the scrotum. Of these, one was secondary to cancer of the penis; and two, though undoubtedly cancer, were not verified by microscopic examination.[1] There remain, therefore, four cases of unquestionable primary cancer of the scrotum. The history of these four patients I shall report

[1] All three of these cases have since died with a clinical diagnosis of cancer.

in brief, as a contribution to the case-literature of the subject. For the privilege of making this report I am indebted to the courtesy of those members of the staff of the Massachusetts General Hospital in whose services the cases occurred. I wish to present my grateful acknowledgments to them and to the administrative officials of the hospital who have permitted and facilitated my use of the records. I wish also to thank Mr. Aitken and Mr. Brown for their interest and assistance in preparing the three cuts with which the cases are illustrated.

Case I. M. C., sixty, male, West Surgical, 229–90. Born in Ireland. Laborer. Entered Jan. 10, 1887. For three months patient had had a painful, indurated ulceration on the right scrotum, the size of a half-dollar, which he attributed to scratching. At operation, by the late Dr. C. B. Porter, the mass of tissue underlying the ulcer was removed without opening the tunica vaginalis. The glands in the groin were dissected. Pathologic report by Dr. W. F. Whitney: Epithelioma. After operation the patient had a slight bilateral hydrocele, which, however, soon disappeared, and he was discharged relieved on Feb. 3, 1887. I have been entirely unable to trace his subsequent history.

Case II. T. S., forty-nine, male, East Surgical, 396–102. Born in England. Mule-spinner. Entered Oct. 16, 1901. Six years previously patient had received in the posterior aspect of the left scrotum a wound with a pick, from which had gradually developed a painless ulcer two inches in diameter and not particularly indurated. At operation, by Dr. J. C. Warren, the ulcer was excised with part of the tunica vaginalis, and the glands of the groin dissected. Pathologic report by Dr. Whitney: Epithelioma. The patient was discharged relieved on Oct. 29, 1901, and on June 13, 1908, reported himself by letter as well and entirely free from local recurrence, though he says he has had for years on the calf of his left leg a similar growth which causes him no inconvenience.

Case III. J. O., sixty, male, East Surgical, 458–35, 518–245. Born in England. Spinner. Entered Oct. 3, 1903. A year previously the patient had been tapped for hydrocele, and at the site of puncture had developed a soft, painful, ulcerated, toodstool-like mass, the size of a silver dollar, to the left of the median rhaphé of the scrotum. At operation by Dr. J. C. Warren the tumor was excised and a radical cure of the hydrocele performed. Pathologic report by Dr. Whitney: Epithelioma. The patient was discharged much relieved on Oct. 26, 1904. On Sept. 1, 1905, he was readmitted for recurrence in the glands of the left groin of six weeks' duration. A mass the size of a plum was excised from this groin by Dr. R. B. Greenough, and the patient again discharged on Sept. 28, 1905. He died, however, on Nov. 17, 1905, with scrotal recurrence associated with profound anemia.

Case IV. M. J. F., sixty-four, male, East Surgical, 594–137. Born in Ireland. Currier. Entered Dec. 26, 1907. Four months previously, the patient had been operated for varicocele, and at the scar of incision had developed a hard, ulcerated, painful mass, the size of a horsechestnut, in the left lower anterior aspect of the scrotum. (Fig. 1.) At operation by Dr. F. B. Harrington the tumor was excised without opening the tunica vaginalis, and the glands of both groins were completely dissected. Pathologic report by Dr. Whitney: Epithelioma, glands not malignant.. The patient was discharged on Jan. 1, 1908, and has not since been heard from. Fig. 2 illustrates the microscopic appearance of the tumor. Fig. 3 is a drawing of a specimen in the Warren Museum, from a similar case, which I am permitted to reproduce by the courtesy of Dr. Whitney, to whom I wish to express my sincere thanks for this and for the use of his pathologic reports.

These cases are, of course, too few, and their ultimate history too imperfectly known, to warrant any statistical study or inferences. They are presented merely to place them on record. It is interesting to note that all the patients were born in the British Isles and that two of them were spinners, though it is doubtful if these facts are of any etiologic significance. More important is the fact that in three cases there was a definite history of precedent trauma. Only accumulation of more extensive data would, however, justify conclusions on the subject. At present it seems that cancer of the scrotum, in its early stage at least, is one of the forms of superficial epithelioma to which radium treatment would be particularly suitable.

ADDITIONAL REFERENCES ON PARAFFIN CANCER.

Gawrowsky: Ueber Schornsteinfeger-und Paraffinkrebs, 8°, Halle, 1904.
Buchanan: Tr. Glasg. Path. and Clin. Soc., 1893–5, vol. clxv.
De Buck v Broeckaert: Bull. Acad. roy. de méd. de Belg., Brux., 1903, 4. s., xvii, 890–896.
Also: Belg. méd., 1904, xi, 63–67.
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THE TECHNIC OF ARTHROTOMY. A REPORT UPON AND DISCUSSION OF ONE HUNDRED AND NINETY-EIGHT CASES.

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(From the Orthopedic Clinic of the Carney Hospital.)

[Concluded from No. 20, p. 764.]

ARTHROTOMY OF THE HIP-JOINT. INTRACAPSULAR FRACTURES. EXCISIONS. ERASIONS.

Case 164. M. D., female, thirteen, single. Separation of upper femoral epiphysis. Operation, May 12, 1903.

Incision 12 cm. in length over the anterior aspect of the left hip-joint. On separation of soft tissues the capsule was found intact. No evidence of disease. When opened fracture found to be transverse directly between the juncture of the head and neck. Cartilage clear and smooth. Head vascular and cotyloid ligament small. Shaft of femur rotated out and the whole drawn up by traction so that it was impossible to approximate ebony surfaces, so the periosteum was removed from the shaft of bone below greatest prominence of tuberosity and the head was fixed to this surface with silver wire.

Leg held in complete extension with splint and traction.

June 2. First intention. Apparently good union. Plaster spica applied.

Leg in good position with slight amount of adduction.

June 16. Discharged.

Case 165. C. T., female, fifty-one. Intracapsular fracture neck of right femur. Operation, June 27, 1906.

U-shaped incision employed. Fracture found with fibrous tissue interposed between fragments. The latter was removed and fragments approximated. Two nails

were driven into femur through great trochanter and neck into the head of the bone. Capsule then sutured. Long T-side splint used to hold leg in position. Later a plaster spica was applied.

Aug. 21. Cast removed, fracture apparently united.

Sept. 1. Flannel spica reinforced with felt.

Sept. 14. Walking with crutches.

Sept. 30. Discharged. Relieved.

CASE 166. J. H., female, twelve, single. Congenital dislocation of hip. Operation, Nov. 11, 1901.

Linear incision 6 in. long over trochanter at central point. Neck of femur found in position of extreme coxa vara combined with a backward twist of the neck. There was an entire absence of femoral head. The neck did not measure over ¾ inch in length. To expose the neck in its abnormal position it was necessary to remove the insertion of the gluteus medius. Neck of bone then removed. Free end of muscle sewed back upon trochanter with silk and fibrous capsule of joint closed.

Dec. 1. Discharged.

CASE 167. J. S., female, twenty-three, single. Congenital dislocation left hip. Operation, May 1, 1907.

Anterior incision used. Head of femur found back on dorsum of ilium. Acetabulum very shallow. Capsule infolded about the head so that it could not be approximated to the acetabulum. In addition, the adductor muscles were myotomized and after enlarging the acetabulum the head was replaced and wound closed. Plaster spica applied with forcible extension and abduction.

May 15. Slight sepsis intervened which has yielded to treatment.

May 22. New spica applied.

June 4. Patient walking on crutches. Wound clean. Discharged home.

January, 1910. Patient walks without artificial support of any kind, and there is scarcely any limp, so well is the shortening accommodated for by an extension boot.

CASE 168. L. W. McP., male, twenty, married. Intercapsular fracture. Operation, March 26, 1909.

Anterior incision, neck of femur exposed. No line of fracture could be made out, but head much lower than normal with relation to trochanter. Capsule opened and wedge-shaped piece of bone removed from neck just behind the epiphysis. Wound closed. Long plaster splint with leg in abduction and internal rotation.

April 21. Spica changed.

May 2. Discharged with spica.

June 23. Readmission. Since discharge has worn spica. X-ray shows marked coxa vara, but apparently firm bony union has taken place. One-inch shortening and very little motion.

June 26. Discharged. Instructed as to exercises. Flannel spica.

CASE 169. D. F., male, forty-three, single. Old fracture internal condyle, knee. Operation, June 29, 1906.

Semilunar incision over inner aspect of left knee. Capsule adherent, so incision was continued as for excision of the joint. Internal condyle fractured, but adherent by fibro-osseous tissue. This tissue was removed and fragments apposed by three silver wire sutures. Periosteum brought over fracture line as far as possible and tied with kangaroo tendon sutures. It was impossible, however, to completely extend the leg or correct the deformity. Wound closed. Posterior wire splint.

Aug. 17. Plaster cast applied.

Aug. 22. Discharged wearing cast. Conditions gradually improved, but deformity remained partially uncorrected.

CASE 170. R. D., male, forty, single. Spur on head of tibia. Bursa over head of fibula. Operation, Feb. 1, 1907.

Bursa dissected out *en masse*. Capsule of knee-joint opened and spur found projecting upwards towards fibula from tibial head. This was removed. No other abnormalities found.

Feb. 10. Discharged. Complete recovery.

CASE 171. J. S., male, thirty-three, married. Intracapsular fracture, right hip. Operation, July 12, 1901.

Incision over anterior surface of the right hip-joint. When the capsule was opened, the fracture was found at the junction of the head and neck. Head of bone displaced downward and forward, but still firmly attached to the acetabulum. The head of the bone was excised in pieces and wound closed. Extension side splint used to hold leg in abducted position.

July 31. Splint removed. Free motion in the joint, but considerable induration about the incision and a small discharging sinus. This healed up promptly and patient has fairly good functional result.

CASE 172. J. T., male, thirty-four, single. Operation, Jan. 14, 1903.

A T-shaped incision was made over the lateral aspect of the left femur just over the trochanter. Neck of the femur exposed, capsule opened and fracture found with an interposition of fibrous tissue between the fragments which caused permanent adduction and instability. This tissue was excised and bony surfaces curetted, then approximated and impacted with leg in abduction. Wound closed. Plaster cast applied to retain abduction with slight flexion.

Feb. 7. Discharged. Recovery uneventful.

June 19, 1903. Motion in flexion limited to within 10° of a right angle. Some permanent outward rotation. Inward rotation limited about one half; abduction restricted to about one third normal.

Left leg, 81.6 cm.; right leg, 83.5 cm. From umbilicus, right leg, 88; left leg, 86.5.

CASE 173. H. B., male, twenty-seven, single. Operation, Feb. 8, 1904.

Left hip-joint opened through incision over inner aspect. An oblique fracture was found partly intracapsular and partly extracapsular. The fragments were not united, but presented a pseudarthrosis. A small amount of redundant cartilage which was interposed between the fragments was trimmed away. The surfaces of the apposing fragments were then curetted. Head found fairly movable. Fragments approximated and a steel wire nail driven through trochanteric fragment, and into the head of the femur. Small wick inserted and wound closed. Leg put up with plaster spica in abduction and slight internal rotation.

Feb. 26. New spica. Union by first intention.

April 8. Discharged, using crutches.

CASE 174. B. McD., male, fifty-eight, married. Operation, Aug. 12, 1904.

Anterior incision used. Old ununited fracture found. The head and fragments of upper part of neck were removed. The remaining upper surface of bone curetted and allowed to drop in towards the smooth acetabulum. Wound closed.

Sept. 16. A few degrees of motion obtained under ether. Gauze spica applied.

Oct. 4. Plaster spica.

Oct. 7. Discharged.

CASE 175. R. D., male, fifteen, single. Operation, April 5, 1907.

Anterior incision used over right hip. It was impossible to bring opposing fractured surfaces in proper relation for wiring, in addition to which the head of

bone was very friable and in three pieces. The latter were removed and capsule closed. Spica applied in extension and abduction.

April 25. Discharged. Convalescence uneventful.

April 9, 1908. Re-entered hospital.

Arthroplasty was advised, in attempt to attain motion. This operation was performed on following day and extension applied.

May 1. Passive movement shows that motion is present, but causes considerable pain.

May 12. Movement of joint increasing. Discharged.

Case 176. W. McM., male, thirteen, single. Operation, May 28, 1908.

X-ray shows separation of head from neck at about epiphyseal line. Attempt was made to manipulate leg in order to obtain union without incision. Leg was put up in plaster spica with leg and thigh strongly abducted.

June 16. Discharged, wearing spica.

March 15, 1909. Re-entered hospital.

Patient wore plaster spica for about four months and flannel spica since that time.

Left leg in marked outward rotation, complete extension and slight adduction. Few degrees of motion. No abduction. Trochanter, ¾ in. above Nélation's line, 1½ in. shortening with some atrophy of thigh and calf.

March 17, 1909. Operation.

Anterior incision used. Capsule incised revealing very short neck with marked coxa vara, with line of fracture found impacted just behind epiphyseal line. Little displacement. A wedge-shaped piece of bone removed from neck which permitted abduction without force. This brought the neck in perfect apposition with the head. Wound closed. Long plaster spica, including foot, applied.

April 20. Discharged wearing cast.

Case 177. S. A., male, sixteen, single. Operation, Aug. 24, 1908.

Anterior incision used and right hip-joint opened. Head apparently normal. Fracture at epiphyseal line. Opposing surfaces were freshened and after a myotomy of the adductors had been performed the fractured ends were sutured together with silver wire. Wound closed and spica applied with leg in abducted position.

Oct. 9. Discharged home wearing spica.

Dec. 21, 1908. Re-entered hospital.

Patient about on crutches and cane. No pain. Still has 1 in. shortening of leg. Patient put in bed and extension applied for one week.

Jan. 9, 1909. Operation.

Incision parallel to old scar. Silver wire removed from head and neck of bone. Apposing bony surfaces which were not in apposition or united were again freshened. Leg then forcibly pulled downward with slight internal rotation. A wire spike was then driven from outer side of thigh passing through trochanter and neck into head of bone. Leg then put up in plaster spica.

Feb. 10. Spica reapplied. About 2 inches shortening indicates that spica was not sufficient to hold softened bone in position.

Feb. 21. Discharged home wearing spica.

Case 178. L. F. B., female, twelve, single. Permanent flexion with restriction of motion at left elbow following recent fracture of external condyle. Operation, April 29, 1904.

Incision 6 cm. parallel with long axis of arm with center opposite inner aspect of left inner condyle. Muscles separated by blunt dissection, which was continued along flexor surface of coracoid process. All structures then retracted upward. Similar incision made on outer side over external condyle, condyle directed inward and forward as arm was supinated, due to repair of fracture in faulty position. A slice 1 cm. in thickness was removed from the most prominent portion of external condyle on flexor aspect. This permitted a slight increase in flexion, which was measured to 45° beyond a right angle by removal of callus between this and posterior quarter of radial head. Motion not perfectly free, however. Capsule repaired and wound closed, arm secured with adhesive plaster in position of greatest possible flexion.

April 30. No pain, but two outer fingers are numb. Some few degrees in flexion lost.

May 6. Stitches removed, wound healed. Motion in flexion same as during operation. No gain in extension. No forced motion attempted, however.

Discharged home.

Ultimately she secured good function in the arm.

Case 179. A. S., male, fourteen, single. Tubercular hip. Erasion of hip-joint. Operation, Oct. 28, 1901. Usual hip incision made and head of femur exposed. Granulation tissue which filled the fossa was removed. A considerable amount of carious bone was found upon the posterior surface of the neck of the femur, — a lesser necrotic area was found opposite this point on the acetabular rim. Both areas were removed and bony surfaces remaining curetted. Tincture of iodine applied and wound closed. Light traction applied to the leg with sand bags to prevent eversion.

Nov. 27. Discharged, wearing spica.

Further history cannot be obtained.

Case 180. W. K., male, twenty-four, single. Excision of head of femur. Operation May 7, 1902.

Linear incision over right trochanter. Neck of bone practically destroyed. The remaining portion was removed close to the trochanter, cartilage over head of bone lifted off and granulation tissue found underneath. Cotyloid ligament partially destroyed. There was but slight evidence of acetabular disease, but the cavity was curetted and tincture of iodine applied. Wound washed, and closed with provisional sutures.

June 5. Patient has had septic temperature from the second day after the operation. Discharge from wound, which has been profuse, is diminishing in amount. A fluctuating area has appeared in the groin. When incised a large amount of greenish pus was evacuated.

Aug. 9. Patient has steadily grown worse. Again has a profuse discharge and intense pain. Discharged.

No further history can be obtained.

Case 181. I. T., male, thirty-six, single. Arthrotomy. Operation, June 25, 1902.

Large semilunar incision over great trochanter of right femur. The neck of the bone was exposed and found covered with bony spicules. The rim of the acetabulum was thickened and head of the bone presented a mushroom appearance. No motion in the joint. The head and a portion of the neck and a spur on the acetabulum were removed, the former in pieces. No evidence of acute bone disease present. The trochanter was allowed to drop in towards the acetabulum and the divided muscles sutured to capsule after thorough irrigation. Wound closed leaving wick and one provisional suture. Leg put up in abduction with slight traction.

July 7. Measured for hip splint. Slight serous discharge persists since removal of wick.

Aug. 2. Discharged relieved.

Dec. 19. Patient walks about five or six miles a day. Motion in flexion to 45°, abduction limited. No trace of active disease can be found.

Case 182. T. O'L., male, seventeen, single. Erasion of hip-joint. Operation, July 16, 1902.

Incision 10 cm. over great trochanter of left femur. Capsule found much thickened by tubercular granu-

lation tissue. No evidence of bone disease seen in that portion of the head, and neck exposed. The region about the head and acetabulum curetted and a small portion of the capsule excised. Wound closed and plaster spica applied with leg in slight flexion.

July 22. Patient has had intense pain in the hip and leg since operation.

Aug. 1. General condition poor and getting progressively worse. Wound healed, but lung shows acute tuberculosis.

Aug. 4. Patient died three days after onset of acute peritonitis. No autopsy obtained.

CASE 183. A. N., male, fifty-five, married. Osteoarthritis. Arthrotomy of hip-joint. Operation, Oct. 8, 1902.

Anterior linear incision used. Head and neck of the bone exposed and the femur was found to be firmly ankylosed. Large spurs projected from the posterior rim of the acetabulum. The entire head of the bone was excised and the bony exostoses directly beneath. A large osteophyte 2 by 3 cm. removed. Wound closed with drainage.

Oct. 20. Spica applied under anesthesia, to overcome muscular spasm. External rotation corrected about 20°.

Nov. 16. Plaster cast reapplied. Less tendency to external rotation than at any time since operation. Patient walks about with crutches and can bear some weight upon the affected leg without pain. Discharged.

Dec. 17. Patient has about 15° of motion in flexion and abduction.

CASE 184. D. L. S., male, forty-seven, married. Excision of head of femur. Operation, Oct. 29, 1902.

Anterior incision utilized to open the right hip-joint. Capsule much thickened. Neck of bone separated from adjoining tissues as much as possible and posterior surface found much eroded. The head and neck of the bone were removed. Acetabulum not involved, but showed a slight roughening on its lower, inner aspect.

Wound irrigated and tincture of iodine applied. Posterior opening for drainage. Two wicks left for this purpose and wound closed.

Nov. 5. Patient has now a mild septic temperature. Wound broke down to-day and about 50 ccm. purulent fluid escaped.

Dec. 30. Wound has been dressed daily. One sinus has healed. Discharge diminishing in amount. Patient is about on crutches with crutch splint applied.

Jan. 10. Discharged.

CASE 185. E. G., female, fifteen, single. Tuberculosis head and neck right femur. Erasion. Operation, Nov. 27, 1903.

Longitudinal incision 11 cm. long with middle opposite and posterior to neck of femur.

Capsule was grayish, edematous and contained a small amount of turbid fluid. Cartilage over head of femur thin and readily stripped off. The diseased bone extending 1.5 cm. along upper surface of neck adjoining head, comprising upper and posterior quadrant of head, was curetted out down to hard bone.

Diseased synovial fringes removed as far as possible. Acetabulum not seen, but felt to be smooth and was not disturbed. Tincture of iodine applied and wound closed leaving drain. Extension with 6 lb. weight.

Dec. 21. Few degrees of motion at hip in all directions without pain.

Dec. 23. Plaster spica applied.

Jan. 18, 1904. Discharged.

Re-entered hospital July 9, 1905.

Has psoas abscess and discharging sinus from hip. The abscess was incised and drained.

July 27. Discharged improved.

CASE 186. M. M., female, twenty-one. Tuberculosis of right hip. Excision. Operation, Dec. 1, 1909.

Incision over outer side of hip. When capsule was opened an abundance of granulation tissue was found. Trochanteric portion of neck entirely "eaten away," the head being in contact with trochanter. Capsule smooth, but head of bone rough and eroded.

Head of bone excised and sequestrum removed.

Capsule closed with catgut. Wick inserted and wound closed.

Dec. 2. About 3 lb. extension applied. Wound healed by first intention. Joint still sensitive but much less so.

Dec. 29. Plaster cast applied. Model made for leather spica.

CASE 187. C. T., male, twenty-five, single. Tuberculous elbow. Arthrotomy. Operation, June 25, 1909.

Linear incision to outer side of olecranon and joint opened. Tubercular granulations protruded from the wound. Pannus over joint surface, which was removed as far as possible.

Wound closed and plaster cast applied with arm at right angle.

CASE 188. P. M., male, twenty-six, single. Tuberculous shoulder. Excision. Operation, Jan. 16, 1909.

Five-inch incision over anterior surface of joint. Muscles separated and capsule exposed. Adhesions broken up by manipulation and some motion secured. Cartilage of head and glenoid cavity much eroded. Head of bone atrophied. Most of this removed, together with the upper portion of greater tuberosity, to allow abduction, which was impossible owing to upward displacement. Capsule turned into joint and sutured, as it was not possible to get any fascia. Shoulder spica, arm abducted 60°.

June 13. Spica removed.

June 16. Passive motion.

June 25. Ether manipulation, 25° abduction, few degrees of rotation. All motions were forcibly increased.

June 29. Discharged.

CASE 189. G. A., male, twenty-three, single. Tuberculosis left hip. Excision. Operation, Oct. 17, 1906.

Incision over outer surface of left hip. Capsule opened and a slight amount of pus evacuated. A Gigli saw passed around neck of femur and head of bone excised. Latter showed extensive disease. Acetabulum not involved. Tincture of iodine applied, capsule and wound closed, leaving wick. Traction applied.

Dec. 22. Patient has now a septic temperature. Treatment by tuberculin and pyocyaneus vaccine and local dressing with chlorate of soda. Marked improvement past three weeks.

Jan. 16. Spica applied, under ether, to insure good position of leg.

Jan. 27. Discharged.

CASE 190. G. R., male, seventeen, single. Tuberculosis of hip. Arthrotomy. Operation, Dec. 31, 1909.

A four-inch incision made over outer surface of upper thigh. Head of femur exposed and found dislocated upwards and backwards. Scar tissue in considerable amount dissected away from about head of femur. Latter freed and leg adducted. An acetabulum made, as it was not possible to utilize the old one owing to its shallowness, and the muscular contractions preventing the replacement of the head. Leg then forcibly abducted and rotated inward with traction applied at the same time. Wound closed and plaster spica, foot to chest, applied with leg in above-mentioned position.

Jan. 3, 1910. Patient complains only of the upper part of cast.

Should operation be successful, i. e., ankylosis obtained, an osteotomy is to be performed later.

Case 191. J. C., male, thirty, single. Tubercular wrist. Excision. Operation.

Long linear incision over dorsum of hand. Capsule found thickened and lined with tubercular granulations. All of the carpal bones involved and were removed. Surrounding area cleaned up as much as possible and tincture of iodine applied. Wound closed and anterior splint applied.

Aug. 31. Discharged.

June 1, 1905. Patient re-entered hospital. Condition of hand has steadily been growing worse. General health poor. Hand was amputated two inches above the radio-carpal articulation.

Case 192. E. H., male, nineteen, single. Infectious arthritis hip. Erasion. Operation, Feb. 10, 1906.

Incision made over right trochanter; joint opened. Head of bone covered with granulation tissue, which was removed and wound closed.

March 9. Patient has a great amount of pain in both hips and knees. Considerable deformity in adduction and flexion with a very few degrees of motion in rotation.

March 16. Right hip-joint opened through scar of previous operation. Capsule opened and head of femur rotated out of acetabulum. It was found to be the site of considerable inflammatory tissue, and it was thought advisable to excise the head and a small portion of the upper part of the neck. Wound then closed, after irrigation, and leg put up in extension.

May 17. Progressive improvement to date. Discharged.

Oct. 25. Right hip ankylosed at angle of 90°. No other deformity. Osteotomy performed and myotomy of tensor vaginæ femoris, ilio-femoral band and outer head of the quadriceps femoris. Wound closed and leg put up in extension on a T-splint.

Nov. 2. Fairly profuse greenish, purulent discharge.

Nov. 15. Pyocyaneus vaccine, 250,000,000.

Nov. 20. Discharge diminishing rapidly.

Nov. 21. Extension removed and plaster cast applied.

Dec. 3. Discharged. Walking on crutches. Leg in fair position.

Case 193. A. B., male, thirty-three, single. Arthrotomy hip. Operation, April 13, 1906.

U-shaped incision over right trochanter. When capsule was opened, a large spur was found projecting from rim of acetabulum downwards upon neck of femur. Spur removed and leg could now be abducted and hyperextended to almost normal limits. Wound closed.

April 27. Spica applied.

May 9. Discharged wearing light spica.

Case 194. M. B., female, sixteen, single. Spur on rim of acetabulum. Operation, June 22, 1906.

U-shaped incision over head of left femur. Capsule exposed and divided. Spur found on upper half of acetabular rim, projecting about ¼ inch. When this was removed it was possible to flex and abduct the leg to nearly normal amount.

July 6. Under anesthesia leg manipulated and put up in plaster in 40° flexion.

July 9. Discharged.

Case 195. B. B., male, thirty, married. Operation, Aug. 17, 1906.

On July 11, 1906, hip was manipulated under ether. Flexion obtained to 90°. Abduction 50°, and some rotation.

July 25. X-ray shows spur on upper rim of acetabulum. Left hip-joint opened, spur removed. Cartilage found eroded over articular surface of femur. An inflamed bursa found over great trochanter and removed. Joint irrigated and wound closed.

Aug. 30. Plaster spica applied under ether. Pathological examination of tissue removed at time of operation shows tuberculosis.

Sept. 13. Discharged.

Case 196. M. P., female, thirty, single. Tuberculosis of shoulder. Excision. Operation, Nov. 8, 1901.

Incision 5 inches long made parallel with outer margin of bicipital groove and ½ inch to its outer side. Capsule of joint exposed without cutting any muscle fibers. Head of bone, which was badly diseased, was removed just below tuberosity. The anterior inferior portion of the capsule was markedly thickened and covered with tubercular granulation tissue extending over to cover floor of glenoid cavity. When this pannus was removed cartilage was not found eroded. Tincture of iodine applied. Wick placed to bottom of wound and later closed with provisional sutures. Two silk sutures used to draw fibers of deltoid together.

Dec. 18. Voluntary motion 10°. Passive motion through nearly normal arc. No evidence of acute disease remaining.

Jan. 29, 1902. Can extend arm by climbing wall. With aid of other hand can raise hand to head.

March 5. Motion improving. No pain.

Oct. 24. Excellent result. Can carry food to mouth and comb hair. No recurrence of disease had taken place in 1906, and patient was doing the work for a large family and has fairly good motion.

Case 197. H. C., female, twenty, single. Tuberculosis of shoulder. Excision. Operation, April 26, 1907.

Incision 3 inches long made over internal aspect of humeral head and carried down to bone. Bone chiselled and pieces of soft friable bone found underneath. This was removed. Tincture of iodine applied. Cigarette wick and wound closed. Valpeau bandage.

April 29. Wound clean, wick removed. Patient out of bed.

May 8. Shoulder comfortable. Discharged home.

June 12. Ten degrees motion in shoulder-joint.

April 13, 1908. Pain in shoulder constant for past two weeks, worse at night. X-ray shows some articular destruction. Plaster cast applied to shoulder.

May 12, 1909. Re-entered hospital.

Incision made parallel and immediately to inner side of old scar. An abundance of scar tissue was encountered before reaching the capsule. The latter was thickened. When incised the head of the humerus was found eroded and was removed down to greater tuberosity. Glenoid cavity rough and was curetted. No active disease present here. The posterior portion of the capsule was brought over the excised head and sutured to the anterior portion of the capsule with chromic catgut in attempt to prevent ankylosis.

May 14. Drain removed, wound clean.

May 18. Stitches removed. Has had passive motion daily since last note.

May 25. Discharged home.

Case 198. B. W., female, forty-four. Ankylosis of shoulder, hypertrophic. Excision. Operation, Jan. 26, 1906.

Incision 7 cm. in length over greater tuberosity of right humerus. Capsule opened. Periosteum over tuberosity stripped off and soft bone found with evidence of an old ununited fracture. Head and tuberosity excised, all loose bone curetted out. Capsule then closed. Skin wound also closed and Valpeau bandage applied.

Feb. 2. Stitches removed.

Feb. 14. Shoulder much improved. Discharged.

In this group there were four cases of infection and one death. In the case of the patient who

died, the infection was not a wound infection, but was due to the lighting up of a pulmonary lesion and secondary acute tuberculosis, but it is included here because the patient died in the hospital within three weeks of the time of the operation upon his joint.

The other infections caused no permanent injury to the joints involved. In the different groups we have the following results: In Group 1 there were seven infected joints and one death; in Group 2, there were four infected joints and one death; in Group 3, there was one infected joint and that case died; and in Group 4 there were four infections, three of the joints, and one death, which, however, was an acute general tuberculous infection following the arthrotomy. Counting the deaths and infected joints altogether as infections, this gives a little over 8% of infections in the 198 patients operated. The mortality figures as a little over 2%.

There has been improvement in our results as time has gone on and the use of urotropine as a routine in arthrotomies is destined, we believe, to materially lessen the risks of infection. It is difficult to summarize the results of a series of arthrotomies performed for so many different conditions and where the results to be anticipated are of such a variable character.

In the main, however, the results which it was sought to secure seem to have been attained in the large majority of instances with measurable success and we feel that arthrotomies may be undertaken for the relief of any of the conditions discussed in this paper without undue risk and that sufficient benefit will accrue to justify the performance of the operation. The technic, however, is one that should be perfected to such a degree that the liabilities of infecting a joint are reduced to a minimum.

Medical Progress.

REPORT ON PROGRESS IN ORTHOPEDIC SURGERY.

BY F. H. BRADFORD, M.D.

BONE TRANSPLANTATION.

UNTIL recently, the statement of Ollier, presented in 1867, that bone covered with periosteum can, if transplanted, heal and can grow, was generally accepted. The bone, however, should be taken from the same animal. In 1894, Barth showed in his experiment that bone periosteum or medulla dies on transplantion; Marshall, however, found that in young animals parts of transplanted bone will remain. The subject has excited renewed attention since the remarkable case of Lexer (recorded in Report on Progress in Orthopedic Surgery in the JOURNAL a year ago). This surgeon transplanted successfully an entire knee-joint, which was removed from a freshly amputated limb. Most observers report that the bony part of the transplanted piece practically dies. Lexer and Frankenstein, however, find that transplanted bone is, in time, fully vascularized. Periosteum transplanted with or without bone is preserved and capable of producing new bone, and the medulla is partially preserved. The process of transformation of the old bone to new bone is not, however, well understood, as various observers give different findings.

Kausch examined microscopically a dead bone nine months after transplantation, and found all signs of living and organized bone, and although in a pathologic anatomical sense transplanted bone dies, living tissue finally develops in the place of the transplanted bone. Hoffman excised the cartilage of joints of dogs and placed periosteum taken from the tibia of the same animal and caused a remarkable transformation of the end of the bone in adaptation to the function of the joint. Various experiments have been made with regard to the bone-producing power of the periosteum, and the results which have been obtained appear to substantiate the view that the periosteum properly treated has an unusual power of vitality.

Transplantation of bone, if successfully performed, will prove of value not only in filling defects of the diaphysis, but also of the epiphysis, following carious destruction of the joints, restoring motion to stiff joints. Furthermore, in stiffening flail joints and in pseudarthrosis, Codivilla has utilized flaps of periosteum. Lexer, however, recommends bone plugs for faulty union of the femoral neck. A hole is drilled through the neck of the trochanter and a piece of bone covered with periosteum is inserted, and bone plugs have been used to stiffen joints instead of the former method of arthrodesis. This has been successful at the ankle when a bone peg has been driven through the os calcis into the tibia and the ankle-joint. In the knee-joint the procedure has been less successful.

Lengthening of the tibia of dogs of a centimeter and a quarter has been successfully accomplished by performing osteotomy and screwing bone screws between the fragments. Living bone freshly taken from the same individual and covered with periosteum is regarded as the best material for transplantation, but bone can be taken from freshly amputated limbs. One reporter, however, Kausch, uses bone from a collection of bones taken from freshly amputated legs and preserved in alcohol and ether. Russell boils the bones in gelatine solution. Drew has used bone from a lamb; Tomita, that from a rabbit and also from a calf. Lexer prefers bone without periosteum if the old periosteum can be preserved, because of the danger of too extensive proliferation of osteophytes.

The surgical world without exaggerated hopes may anticipate in due time the development of thoroughly practical new procedures presenting a surprising advance in the art of surgery.

INFANTILE PARALYSIS.

The attention which has been called to this affection in American medical literature since the epidemic which occurred in New York a few years ago has borne fruit in a number of articles on the

subject discussing the question of the prevalence and communicability of this affection, and describing various local epidemics with suggestions as to treatment. The excellent work of the Massachusetts State Board of Health, as shown in their recent reports, has called popular attention to the present knowledge of the subject, and the report of the Orthopedic Department of the Harvard Medical School, published in the BOSTON MEDICAL AND SURGICAL JOURNAL, gives a succinct statement of all that is at present known in regard to treatment. Of great scientific interest are the investigations at the Rockefeller Institute and the Harvard Medical School, as well as elsewhere, showing that the disease can by inoculation be given to monkeys and transmitted from monkey to monkey, thus clearly proving the existence of contagion. Beside the masterly work of Flexner and Lewis, Robertson, Chesley, Gay and Lucas have called attention to the more recent findings in the pathology of the affection and the condition of the spinal fluid both of human beings and monkeys with this affection. But as to the nature of the contagion or the method of transmission, little is at present known. The medical profession is not only eager with expectation, but a condition of exaggerated alarm may be said to exist. It cannot be said that the number of cases of poliomyelitis reported by the boards of health, compared with those from tuberculosis, scarlet or typhoid fever, justifies a strict quarantine as has been recommended. It is certainly a question, though often claimed, whether the disease is more frequent now than formerly, though there is no doubt that more cases of infantile paralysis are reported. It will be remembered that the increase in the number of cases of congenital dislocation of the hip in the hospital records following the advent of Professor Lorenz, if presented in a statistical form, could be used to prove the existence of an epidemic. Until more exact information as to the communicability of this disease has been obtained, the wisdom of a stringent quarantine is questionable. As far as our knowledge goes, although there are a number of comparatively small epidemics which have been reported, in the great majority of cases the disease appears to be sporadic, occurring in widely separated communities.

The exaggerated dread of an unknown contagion may be natural, but unless reason based upon known facts is brought to bear upon the subject, the public may fall into a state of mind resembling that agitated by the fear of malicious animal magnetism.

SPASTIC PARALYSIS. OPERATIVE TREATMENT.

Spiller, of Philadelphia, in 1905, advocated resection of the posterior roots for the relief of spasticity, and in 1908, Förster, of Breslau, reported five cases operated upon by Lietze by this method, and recently Frazier, of Philadelphia,[1] writes a résumé of the subject with a report of additional cases operated upon by him. He claims that it is established that section of the posterior roots relieves, in most instances, spasticity even of an extreme type and of long duration, whether of cerebral or spinal origin, in adults and children. Of the thirteen recorded cases, this was true in all but one. The operation is not without danger. Of the fifteen cases recorded, two died of shock.

Spasticity in the successful cases is relieved so that passive exercises do not meet with resistance, and annoying and distressing reflex associated movements and exaggerated reflexes disappear permanently though the reflexes are not lost. Voluntary motive was restored to a marked degree in seven cases. Manifestly the operation should be reserved for the cases of severe grade.

Complementary to this, the method of alcohol injections into the nerves controlling the muscles in a state of spasticity is of value and interest.

Cases where this has been done with success are reported in an important paper by Allison.[2] Permanent cures were made, and the method, being without danger, is recommended in cases not benefited by muscle training.

SCOLIOSIS.

The best method of treatment of scoliosis is a question which still challenges the medical profession. Much has already been learned, but many important factors in the problem remain to be investigated. How largely our schools enter into the problem, what the schoolteacher can do to aid in prevention and cure, how common spinal curvatures are in our schoolchildren, all are questions which need careful investigation.

An attempt at a thorough investigation of this subject has been made by Haglund in Stockholm.[3] A trained specialist of many years' experience, he attempted to determine the number of children with curves of the spine in a public school. His investigation consisted in an examination of 1,600 schoolchildren. The obstacles to the investigation consist in the difficulty of determining a definite fixed standard of pathological curves. His first desire was to learn the number of deformities of the osseous system, including knock-knee, bow-legs and deformities of the feet; but the author was forced by the magnitude of the task to limit himself to an inquiry as to curvatures of the spine. The pupils were at first carefully inspected and those who presented a noticeable deformity of the back and trunk were selected for a more detailed examination. The examiner was surprised at the number of deformities which were found on the first examination. The experience of many years as a specialist helped the examiner to set for himself a standard enabling him to decide what curves were negligible and what needed some form of special treatment. Slight curves were not considered.

From his examination, he found that, of 1,600 children of the school examined, 362 were remanded for special examination, — that is, that nearly a quarter of the school children were in a condition to justify or demand treatment; in

[1] Surg., Gynec. and Obstet., September, 1910, p. 251.

[2] Jour. Orthop. Surg., October, 1910.

[3] Zeitschr. für Orthop. Chir., xxv. Band.

other words, over 22%. The ages of these children ranged from six to fifteen, and the curves were almost equally divided between boys and girls. If the ages of these children were examined, it was found the largest per cent of curves among boys was at the age of fourteen, whereas the largest per cent in girls was at ages eleven to thirteen inclusive; of both sexes, the largest percentage was from twelve to thirteen. If the curves were divided into two classes, the severe and moderate, it was found that 344 belonged to the second class and 18 to the first class, — that is, to those where other treatment than simple general gymnastics is necessary. In Class one, the less severe type, the girls were slightly in excess, that is, 22 as compared to 21%. Of the severe type, the girls were slightly in the minority, though the number (18) was too small for a definite conclusion.

Again, dividing the curves into two classes according to character, — that is, the scoliotic or lateral curves, and the sagittal or antero-posterior curves, — he found that among boys 90 cases were antero-posterior round-shouldered or hollow-back type and 134 scoliotic type. Among girls, there were 146 of the scoliotic type and 80 of the round-shoulder and hollow-back type. Of the scoliotic type in boys, the age of greatest frequency appeared to be from twelve to fourteen, and of the girls, from ten to thirteen.

Again, grouping the cases according to the need of treatment, he found that 25 children were in great need of special treatment; 86 children could be said to be in need of special treatment; in 158, such treatment was desirable, and in 85 the treatment, although desirable, could be dispensed with without great injury to the patient. He found that although there was but little difference in the percentage of curves in girls and boys, the cases among girls were more severe than those among boys and that the muscular system, as a rule, was not as good in the former as in the latter, and for that reason it was difficult to determine precisely as to the grade of the deformity as far as the bony change was concerned.

In determining the cause of scoliosis, it was important to distinguish between the exciting causes, — as to whether this is due to what may be called the inability of the skeleton to carry its burden, — and it is important to distinguish between the static inability to withstand the weight without distorting change and the ability to carry the burden with muscular fatigue. An insufficiency of the vertebral column can either be due to a morbid condition, like rickets or a similar affection, or to too rapid growth, or can be due to the inability of the ligaments or muscles to hold the column in its proper position. Admitting the difficulty of determining this, he makes use of his own judgment in making a distinction. Taking the cases of scoliosis alone, he finds that there are 283 students out of the 1,600 ranging between fifteen and six where scoliosis existed to an extent needing consideration. The dominating scoliosis type was a primary lumbar scoliosis with more or less compensation upwards. As a rule, the scoliosis was left-sided and rarely right-sided. The connection of this scoliosis type to inequality of the legs could frequently be determined without close investigation in that the inequality of the length of the legs was so great that peculiarity in gait was noticeable. Out of 38 right-sided static scoliosis, 32 have the left leg longer than the right to an extent of ½ to 2½ cm. Of 175 left-sided static scoliosis, in 137 there was a shortening of the length of the left leg of from ½ to 2½ cm. In the other 38 cases the legs are noticed as equal. It would appear that quite a number of cases of scoliosis in schoolchildren are dependent upon an inequality of the lower extremities, and it is important to determine whether, in addition to this, there was a lack of development of one half of the body, especially on the left side. This Haglund determines by measurements in the upper portion of the body, and he finds that, of the 137 left-sided scoliotic cases, 101 had the shoulder measurement shorter on the left than on the right; of the 32 right-sided scoliotic cases with marked shortening of the right leg, 21 have a shortening of the shoulder measurement.

From this it would appear that a certain number of the habitual scoliotic cases were due to an unequal development on both sides of the trunk. Haglund uses as a means of measuring what he terms the shoulder-blade section, a line drawn from the middle line of the spinous processes to a projection on the spine of the scapula which is easily noticed on palpation and which he found to be constant.

Fully as important as the scoliotic curves are the antero-posterior or sagittal curves, which he thinks are not sufficiently investigated, for the reason that the study of the sagittal curves is an extremely difficult one, as it is not easy to establish a standard between the normal and pathological curves of this nature. There are normal, lumbar, dorsal and cervical curves, the latter being convex backwards and the other concave backwards. It is difficult to establish a normal standard of the amount of flexibility of the spine in these antero-posterior curves, as the character of motion changes in normal growth. The movement of the upper portion to a certain degree is to be regarded as compensatory. In a greater or less obliquity of the pelvis, with a corresponding degree of lumbar scoliosis, the upper curves must be influenced to a greater or less degree. The oblique position of the pelvis also would be influenced by the position of the hip, as the obliquity of the pelvis is greater if the feet are turned outward than if they are parallel.

It is important, therefore, in studying antero-posterior curves, to determine as far as possible the cause, it being established that the insufficiency of the vertebral column can be due either to affections of the bone or to special muscular weakness. The writer is inclined to regard the prevalence of the antero-posterior curves as a valuable index of the general condition of the child.

Although it is difficult in single cases to distinguish between a normal increase or diminution

of the physiological curves, it is not difficult to recognize pathological curves. These do not consist in an abnormal degree of a normal curve, but an evident alteration of the whole column and an alteration of the normal regions of the different curves and their relative motion. The transition from the physiological mobility of the different regions is such that an amount of motion can take place in the wrong portion of the spine, or the mobility can be too great or too little in relation to that seen in other portions of the spine. This is a matter which requires some experience to determine, but no more than can be obtained by any one who is accustomed to examine the spinal column in children.

Schoolchildren present three types of antero-posterior curves. In the first type, the dorsal kyphosis begins at the union of the sacrum and the lumbar vertebræ. The lumbar lordosis disappears and there remains only a slight alteration in direction, as if the whole consisted of a long curve to the upper cervical region. This curve is entirely due to muscular insufficiency and comes usually in persons of a feeble constitution, anemia or imperfect nutrition. The second type is seen especially in boys of the upper classes, where there is not infrequently a great increase of the lumbar lordosis. There may be a sharp bend; the dorsal kyphosis may be relatively small. This, however, is not always the case, as in certain instances there may be a marked dorsal curve. This is a curve which may be increased by improper gymnastic exercises. Type 3 comprises a pathological increase of the upper portion of the dorsal curve, including also a portion of the upper cervical region. This type is what is commonly called round shoulders. The kyphosis is often very rigid, and there may be a rounding from side to side. It is a very difficult form to treat and is quite injurious, as the excursion of the sternum is diminished and the respiration is interfered with. The cause of this type is not easily understood, — sitting too much with a flattened chest giving superficial respiration, adenoids, low desk and high chairs are perhaps important factors. In addition, what is called the flat back is frequently seen, that is, a back without the usual physiological curves, often with an almost straight line of the sacrum. A fifth type is round back in the upper portion of the trunk without marked kyphosis.

The writer found in examining 90 boys and 80 girls with antero-posterior curves, the largest number at the age of fifteen; that is, the largest per cent in boys at the ages of nine and thirteen, and in girls at twelve, eleven and thirteen. These were either pure antero-posterior curves or combined with scoliosis, or scoliotics in which some antero-posterior curves were noted. In more than half of the children, however, the antero-posterior curves were uncombined with scoliosis. Of these cases of a pure type, none showed an inequality of the length of the legs, nor an inequality in the shoulder measure. The first type is found more common among girls than boys, and when it occurs in boys it is more common in the younger children, but in girls more common in the older children. Type 2 is more common in boys than in girls and in boys older than nine. Type 3 is more common in girls.

The writer concludes from his investigations that the problem is not only a large one, but one which will require the combined efforts of many to solve it. He thinks that good pedagogic gymnastics every day, with out-of-door life, all under the direction of teachers of physical culture who are directly responsible for the physical condition of the children, are desirable. For treatment, it is necessary that the schoolchildren be divided into two classes: one, those which need thorough orthopedic treatment; the second, a much larger group, needs proper school hygiene. Specialists are not yet agreed as to the proper measures of special treatment. Some writers believe that corrective gymnastics alone are necessary. Some writers advocate using the Ling system of gymnastics; others, mechanical stretching appliance in preference, but Haglund considers that this question is immaterial. The kernel of the matter is that active correction should be carried out and that less stress should be laid upon passive correction; energetic treatment is a most important factor. For the ordinary group of mild cases between six and fifteen years of age he thinks no better treatment can be prescribed that the energetic Ling gymnastics. In saying this he does not mean that surgeons cannot accomplish more by more energetic measures, but that the Ling school gymnastics give sufficiently satisfactory results.

THE INFLUENCE OF RESPIRATORY FORCE ON THE FORM OF THE VERTEBRÆ.

Yansen, after a thorough study of this subject, concludes as follows: That the normal dorsal curves of the spinal column are the result largely of pull of the respiratory muscular apparatus of both sides. The spinalis dorsi muscles are essentially a muscle of inspiration, and probably also the other erector muscles of the spine, but this is less during sleep and after great fatigue or depressing influences. The forward drop of the head or a great increase of the dorsal curve diminishes the inspiratory power of these muscles. Under normal conditions the dorsal curve can serve as a measure of the strength of the back muscles, — the greater the curve, the weaker the back muscles. The inward sinking of the sternum in rachitic cases is caused by the pull of the diaphragm. An habitual scoliosis may be regarded as of respiratory origin; that is to say, if the total muscular tension of the muscular respiratory apparatus is normally balanced on both sides, the curves of the spine are normal, but if there is a difference in the two sides of this muscular pull, scoliosis results.[4]

FLAT FOOT.

It is only comparatively recently that the fact that the prevalent deformity, flat foot, is a shoe

[4] Zeitschr. für Orthop. Chir., xxv. Band.

deformity, i. e., that it is not observed in barefooted races.

Bardenheuer, after a careful investigation, confirms this view. He finds also that sandal-wearing monks, and peasants wearing loose wooden shoes, do not suffer from flat foot. Fresh recruits from the German army have a relatively high percentage of flat foot, which is reduced by the leg and foot gymnastics to which they are subjected.

His conclusions are as follows: *Valgo planus* or flat foot is an affection of great importance which interferes distinctly with the activity of the patient and indirectly and correspondingly with the general health. Flat foot is one of the most common of all surgical troubles. The cause of the trouble is the lack of correspondence between the weight of the body and the strength of the muscles. Primarily, it is due to the weakness of the muscles, and the chief cause of the muscular weakness is footwear which injures the strength of the long and short plantar muscles and of the antagonist muscles as well. The primary cause is not to be found in a change of the texture of the bones. Rickets of adolescents of the bones of the feet may, however, act as a contributory cause. The most important means of preventing flat feet is to be found in gymnastics carried out from earliest youth, especially those exercising the toe muscles, combined with instruction in normal gait; the most reliable method for the cure of flat foot is that of enforcing daily muscular exercise, thoroughly carried out. These may be sufficient to cure flat feet of a mild grade, and even in resistent flat foot an improvement in functional activity may result from gymnastics alone. Barefooted individuals do not have flat foot, as the muscles are used and thoroughly developed. Shoes should be so constructed that the activity of the plantar muscles is not interfered with. The front of the shoe should permit of proper adduction of the foot. The patient must learn to walk straight with, as far as possible, the weight falling well upon the front of the foot and especially upon the great toe, using a strong flexion of the foot and the action of supination. Persons running barefooted or wearing sandals walk with adducted feet and do not have flat feet. Hunting shoes and tramping shoes, in spite of their weight, are of aid in flat foot if they are properly constructed. The heel of the shoe should not be high and should be broad. Plates act as a means of support of the sustentaculum tali. Fixed flat foot with strong muscles and without symptoms demand no other treatment than gymnastics, but if symptoms are present, the correction of the deformity followed by gymnastic treatment is necessary. Mechanical treatment of flat foot alone never gives satisfactory results. It must always be united with gymnastic treatment, the latter constituting the most important factor of the treatment. Hallux valgus and the crowding of the three inner toes is a result of the abduction of the front of the shoe. Individuals wearing sandals habitually, i. e., monks, and peasants wearing wooden shoes, do not suffer from flat feet and have strongly developed foot muscles, especially the plantar muscles of the feet. Flat foot is not a congenital deformity, but always an acquired deformity. Flat foot in children is cured by the avoidance of shoes and barefooted locomotion. The *pes planus* of adolescence is usually developed quickly and needs the use of plates and proper functional treatment. Flat foot of adults over twenty years of age can be treated successfully among energetic people principally by gymnastic treatment, though sometimes plates are necessary.

The flat foot of adolescence, if not treated, is liable to develop the fixed contracted *pes planus*. Walking with abducted and pronated feet is especially dangerous. The so-called walking on the inner edge of the foot is quite common among persons of heavy weight [5] after forty years of age.

CONGENITAL DISLOCATION OF THE HIP.

Schanz recommends a simple method of manipulative reduction as follows: The surgeon stands on the side of the patient opposite the deformity and places one hand upon the symphysis pubis and around the affected hip. The surgeon grasping the limb at the knee, with the other hand flexes and adducts it sharply flexed. The limb is then rotated, the foot and leg being turned toward the outer side until the axis of the leg is at right angles with the longitudinal axis of the body. The head is by this maneuver brought opposite the shallowest part of the rim of the acetabulum. Under a pull with a rocking motion given to the limb, the head is rotated into the socket. Abduction is then applied, pressure being exerted on the head. In this way the contraction of the capsule is stretched.

The method is similar in theory to that recommended by Dr. Hibbs, of New York, but is simpler in not requiring the mechanism used by him.[6]

Reports of Societies.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

SPECIAL MEETING, FRIDAY, OCT. 14, 1910.

THE President, DR. GEORGE E. DE SCHWEINITZ, in the chair.

DISCUSSION ON ACUTE AND EPIDEMIC POLIOMYELITIS.

RECENT STUDIES IN THE ETIOLOGY OF ACUTE POLIOMYELITIS.

DR. PAUL A. LEWIS, of the Rockefeller Institute, read this paper by invitation.

THE LESIONS OF ACUTE POLIOMYELITIS.

DR. ALLEN J. SMITH, Philadelphia: Much of the study of this subject has been fragmentary because of the difficulty in obtaining specimens from the living child and opportunity for autopsies. The disease has been looked upon as a nervous affection, but last year the feeling of the whole profession changed and it has been ready to take up the view so well borne out by what Dr. Lewis has said, that it is a general infection with local involvements of the central nervous system, leaving behind serious alterations of the central nervous

[5] Zeitschr. für Orthop. Chir., xxvi. Band.
[6] *Ibid.*, Band xxx, 1910.

system with their sequels extending out into the muscles. More careful examinations should be made, and we need to have more data in connection with the rest of the body.

ANTERIOR POLIOMYELITIS.

Dr. Joseph S. Neff, Director Department of Public Health and Charities, Philadelphia: The results of a careful study of the reported cases of anterio-poliomyelitis in Philadelphia during the last summer demonstrate very little, with possibly two exceptions, and become of value only by adding to statistics for further deductions. The two exceptions are the parts played in the etiology by feeding, and general housing conditions. Of 99 cases in Philadelphia, 6 were breast-fed alone; 11, bottle-fed; 43, mixed-fed, and 38 partook of ordinary table-food. The disease was practically absent in the wards of the city with the highest congestion of population, and the only location showing apparent grouping of cases has the lowest ratio (excepting suburban wards) of population per acre. The study tends to show that general sanitation, crowding and housing conditions do not play a part, at least in Philadelphia, in the etiology of the disease. From observation of all the cases reported it is evident that poliomyelitis is very mildly contagious and much less so than other so-called children's diseases.

Especial attention is called to the fact that the week ending July 23 and the week ending Aug. 6, in which the greatest number of cases occurred, followed the hottest weeks of the summer. The main point to be taken into consideration by health officials, until more definite knowledge of the cause and spread of the disease is obtained, is the means of prevention. Their duty is to prevent the spread of disease, but at the same time the welfare and comfort of the community must be considered. The questions involved are as to isolation, quarantine, exclusion from school of other children in the family, placarding, etc. Up to the present time, and in view of the approaching cold weather, the health authorities of Philadelphia have done nothing further than to order isolation of the patient and the disinfection of all discharges. My own thought is to await developments next spring. Should we have isolated cases only, no further action will be needed. Should the disease become epidemic, my present thought is to compel isolation of the patient, exclude from school other children in the family for a period slightly beyond the period of incubation of the disease, and give written instructions as to the disinfection of all discharges, but I do not believe it will be necessary to placard the house. There seem to be as many secondary cases where isolation has been maintained as where it was not attempted.

SPECIAL FEATURES IN THE SYMPTOMATOLOGY AND TREATMENT OF ACUTE POLIOMYELITIS, WITH SOME DISCUSSION OF ITS PROBABLE PATHOGENESIS, BASED CHIEFLY UPON STUDIES MADE DURING THE RECENT EPIDEMIC.

Dr. Charles K. Mills: In my opinion the probable cause of acute poliomyelitis is some form of protozoon, which is perhaps carried by an insect to be found in the neighborhood of the prevailing epidemic. In the fulminant cases meningitis is commonly present and may be severe; in other cases it is transient, and often absent. In several cases which have come under my observation death has occurred with evidences of involvement of the bulb. Paralysis involving one or two of the ocular muscles has been present in some instances. In one case a moderate degree of facial paralysis was the only residual palsy. A second recrudescence of the acute symptoms was seen in several cases. My investigations show the period of incubation to be usually from one to two weeks. Prognosis as to residual paralysis in the cases I have seen has been relatively bad. In treatment I would advise the use of urotropine in the acute stage; febrifuges, fluid extract of ergot, the large Bier's cups, calomel with salines and rest when possible on the side or in the prone position. Massage or electricity should not be used for several weeks after onset, and such treatment should be conservative in character. As a rule operative procedure should not be carried out for several months. Occasionally some kind of support to prevent possible deformity is advisable.

Dr. B. Franklin Royer, Harrisburg: The studies made by the Department of Health lead to the suggestion that the disease is a systemic one, showing only occasionally paralysis as a symptom. Some of the cases show fever and go no further. From the standpoint of some observers deaths attributed to bronchopneumonia in which the fever has been high were in reality due to poliomyelitis.

Dr. F. X. Dercum: Holt and others have come to the conclusion that the contagion is spread by human carriers not in themselves infected. The mucous membranes and the digestive tract should receive special attention, and certainly the close contact of children who are ill should be avoided.

Dr. J. P. Crozer Griffith: Danger comes from the abortive cases because of the inability to recognize them. Therefore, some test by which these cases can be determined should be devised.

Dr. Hobart A. Hare: I believe that if the physician will simply attend to the ordinary hygienic measures the recoveries will be far greater in number than with the active medication of the patient. After the sharpness of the attack, attention may be paid to strengthening the partially destroyed cells.

Dr. John K. Mitchell: I believe that damage is done by too early and too severe treatment. Physicians should not yield to demands of parents that something be done, but should insist that six weeks or two months be allowed before special measures are used. He should particularly avoid the ordinary mistake of allowing the child to sit up too soon. I have seen lateral curvature the result of this mistake. Electricity should not be used under six or eight weeks, and there should not be discouragement from getting no result in the early treatment. The only satisfactory rule about the use of electricity is that the current that will produce the result is the one we want to use.

Dr. John B. Roberts: I understand that this disease is believed to be transmitted usually by infection through the nasal and faucial mucous membranes. If this theory is correct, is it not a physiological error to encourage or adopt the prevalent practice of total extirpation of the faucial and pharyngeal tonsils in children in whom there is inflammation and hypertrophy of these organs? The glossal, faucial and pharyngeal tonsils are adenoid structures apparently placed as sieves or guardians of the alimentary and respiratory tracts to arrest the entrance of micro-organisms into the general circulation. The occurrence of poliomyelitis more frequently in children of the well-to-do than in those in the lower walks of life may perhaps be due to the fact that such well-born children are now-a-days deprived by operation of these organs more commonly than the children of the poor.

Dr. William G. Spiller: I have seen one case in which lumbar puncture with the removal of an ounce and a half of fluid relieved the intense pain and the difficult breathing.

Dr. Henry W. Cattell: That which is done abroad to a very large extent is the application of a plaster of

Paris cast to maintain a proper position of the child in bed.

DR. ALFRED GORDON: The manner of transmission of the disease and the resistance of the virus to cold are important factors in prophylaxis.

DR. DAVID REISMAN: One cannot escape the view that infantile paralysis is one of the transmissible diseases. Even though the contagion may be slight, in view of the terrible nature of the disease, all possible precautions against its transmission should be taken. It has also occurred to me that some of the cases of polio-encephalitis occurring sporadically in children and in adults may have the same etiology as anterior poliomyelitis. A short time ago I saw with Dr. Hand a man, also seen by Dr. Mills and Dr. Spiller, who seemed to be suffering from an hyperacute attack of polio-encephalitis, the first symptom having been facial paralysis. I have also in mind another case of polio-encephalitis, that of a little boy of eight, who after a desperate illness made an almost complete recovery. Nothing remained except diplopia, due to a weakness of the external rectus. It may be, from an epidemiological standpoint, very important to trace the relation of these cases to epidemic anterior poliomyelitis.

Book Reviews.

A Plea for the Home Treatment and Prevention of Scarlet Fever. By ROBERT MILNE, M.D., Ch.M., Medical Officer of Dr. Barnardo's Hospitals and Homes for thirty years, etc. Pp. 80. New York: William Wood & Co. 1910.

This little book is a presentation of Dr. Milne's claim that, if patients with scarlet fever are annointed with eucalyptus oil and have their tonsils swabbed with one to ten carbolic oil, isolation is unnecessary. This is either a wonderful discovery or an error in observation!

Gynecological Diagnosis. By WALTER L. BURRAGE, M.D. Pp. xvi, 656; 207 illustrations. New York: D. Appleton & Co. 1910.

In this volume of over six hundred pages Dr. Burrage has produced what seems to your reviewer a model for works of its kind. As the title implies, the writer has chosen to confine himself strictly to diagnosis, — there is not a word as to treatment from cover to cover, — and the field has been covered with a thoroughness and the writer's views expressed with a clean-cut terseness that make the book very pleasant reading. It is probable that it was designed primarily for the student, but we feel sure that it will appeal quite as strongly to men who have been in practice for years.

The first ten chapters are devoted to methods of examination and, as might have been expected from a man with Dr. Burrage's keen insight into the meaning of symptoms, there are two extremely readable chapters upon the interpretation of the clinical history and the significance of the chief symptoms of pelvic disease, — the latter a godsend to the perplexed physician, — and throughout the book stress is constantly laid upon the meaning of symptoms. The chapters upon the physical examination and the armamentarium are eminently practical and contain many hints as to special technic suggested by the writer's experience. We note rather with surprise that the author does not approve of the routine use of rubber gloves for examination, being ourselves accustomed to think that they do not interfere with the tactile sense to any appreciable degree and that their use is an added safeguard both to patient and physician.

The rest of the book is devoted to special diagnosis, and very wisely, we think, the writer has devoted considerable space to certain matters that are generally more or less slighted in gynecological works, such as diseases of the rectum and of the breast, — the latter surveyed of necessity in rather a cursory manner, — an excellent chapter upon the diagnosis of the gynecological affections of infancy and childhood, and another, equally good, upon the menopause and old age, containing a suggestive résumé of the physical conditions present in 115 cases at the menopause occurring in his own practice. Dr. Burrage emphasizes strongly the vital importance of the prompt investigation of all symptoms occurring at this period of a woman's life, instead of following the all too common and dangerous practice of ascribing almost everything to the "change of life."

Considering the chapters on special diagnosis somewhat in detail, we note that the author has throughout avoided burdening the book with overmuch pathology, although at the beginning of each chapter we have the essentials of the pathology of the subject under consideration and a résumé of the latest views about it. We were also struck with the graphic account given of various types of gynecological disease, e. g., that of pelvic inflammation. A thoughtful chapter upon the causes of prolapse will well repay reading, as will also that upon ovarian tumors. We note that the author follows the excellent Pfannenstiel classification of these tumors. The chapter upon diseases of the vulva contains much that is generally to be found only in special works. The chapter upon the diagnosis of pregnancy is exceptionally good and strictly up to date, as, for instance, in the reference to the work of Underhill and Rand upon the changes in the urine in the pernicious vomiting of pregnancy. The great interest that Dr. Burrage takes in the diseases of the bladder and ureters is shown by the two very satisfactory chapters upon those subjects. Here, as elsewhere, we are struck by the constant warning of what not to do. We recognize with sorrow that the sins of the would-be gynecologist are quite as frequently those of commission as of omission.

As a whole, the book is an excellent piece of bookmaking. An alphabetical index of illustrations is valuable, as is also the system of having each chapter headed by a résumé of its contents with page references. While not padded with unnecessary illustrations, the book contains quite sufficient, including many excellent original ones by Miss Spaulding and Miss Heustis.

We feel that this book is a distinct addition to our working library and hope that its well-merited success will spur the writer on to prepare a companion volume upon gynecological treatment.

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THE ABOLITION OF PUBLIC ABOMINATIONS.

In an editorial in the issue of the Journal for Oct. 13 on "Some Public Abominations," we referred to the common roller-towel as one "whose abolition should go hand in hand with that of the public drinking cup." Interesting confirmation of this statement is found in a recent bulletin of the New York State Health Department at Albany, N. Y., which says: "The public drinking cup must be branded as a public nuisance and must give way under the weight of public opinion enforcing the conclusions of the sanitarian; and with the common drinking cup ought to go the common towel, which at times may prove even more dangerous than the common cup." It is evident that the gospel of public hygiene is making converts. Anent the abolition of public cups in Massachusetts, it is also interesting to note a recent letter to the daily press from a correspondent who suggests that the continued use of common communion cups in churches is a violation of the new ordinance and pertinently queries whether "the church that persists in the use of the single cup in the communion service" does not "deprive many thinking people of the very help and comfort offered them." At the time when the bill for the abolition of common drinking cups was pending before the state legislature, we published in the issue of the Journal for March 31, 1910, under the heading of "Religious Opposition to a Hygienic Measure," a note calling attention to this very matter of the communion cup as furnishing to certain people a ground of objection to the proposed law. That law has now gone into effect, and it should seeem that, with all due respect to tradition and sentiment, its provisions might properly be enforced in the church as well as in the market place.

In other matters as well as in that of drinking-cups there seems to have been recently in Boston a local recrudescence of interest in certain public abominations. One of the irritating and dangerous abominations, associated with the dryness of our climate, is that of the dust which, in the absence of rain and the presence of wind, fills our city streets with choking and irrespirable particles, and our respiratory tracts with foreign bodies and assorted bacteria. Dust is one of the most potent agents in the dissemination of pulmonary disease and of chronic nasopharyngeal disturbances predisposing thereto. Neither street-watering nor oiling avails to check it more than temporarily. Now it is reported that the superintendent of streets in Boston is about to try for this purpose a new chemical preparation, presumably calcium chloride, which by its deliquescence keeps the streets moist by drawing water from the atmosphere. Such a preparation has been tried in several large American cities with considerable success. At any rate, the abolition of public dust would be a worthy hygienic achievement.

Finally, we have had in Boston during the past week a renewed crusade for enforcement of the statute against promiscuous public expectoration, — a "spit war," as it has been euphemistically designated by the yellow press. A general order was issued by the police commissioner directing more rigorous enforcement of the law, with the result that a number of arrests were made and a number of offenders fined $2 each. Various humorous incidents occurred during this campaign. One offender, who was fined only $1, remarked that it was cheaper to spit in his quarter of the city than elsewhere. Another, an Italian, on being searched after his arrest for spitting, was found to be carrying a loaded revolver; he was fined $2 for expectoration and $25 for carrying a concealed weapon. It might prove a valuable augmentation to the public treasury to arrest and search all citizens periodically. Most exquisitely subtle and ironical of all was the suggestion that women, children and the poor and ignorant be not arrested for spitting, but only well-dressed gentlemen. *Noblesse oblige encore.* After all, the anti-spitting crusade, though as yet of too short duration to produce notable change in public manners, has been interesting and profitable, and, if it turns out to be more than a transient burst of enthusiasm, may prove a genuine step towards the abolition of one more public abomination.

ONE ASPECT OF VENEREAL PROPHYLAXIS.

SOME of the phases of venereal prophylaxis touch unexpected places in the social fabric. One is the question of the division of responsibility between the individual who has contracted venereal disease and society which has permitted his infection. It happens that in the navy this is far from being an academic question, because the very practical matter of determining whether a man with venereal disease shall be considered to have received his infection "in line of duty" or otherwise comes frequently before medical officers, and their decision is of much importance both to the individual and to the service. It is the practice to consider venereal disease as contracted "in line of duty" only in those cases, which are by no means uncommon in the navy, in which infection has been innocently acquired. Perhaps this is the only just way, and yet the fact is being recognized more and more clearly that there is a certain responsibility, if not actual liability, which rests with the naval service for the enlisted man who becomes infected with venereal disease while serving his country afloat.

In an exceedingly interesting article in the *United States Naval Medical Bulletin*, Passed Assistant Surgeon Heber Butts discusses the justice of regarding general paresis as a disease which may be contracted in "line of duty." Since 1899 twenty-seven cases of general paresis have been admitted to the Government Hospital for the Insane from the active lists of the Navy and the Marine Corps. Seventeen of these cases were given "line of duty" in the reports of medical boards of survey. But practically all cases of general paresis give a positive Wassermann reaction, and Dr. Butts says that it seems fair now to conclude that cases of general paresis should be given "line of duty" only if positive evidence is furnished that syphilis was innocently acquired. If the mode of infection is to remain the test in cases of syphilis which do not result in general paresis, it seems only fair to apply it when that disease occurs.

At first thought it seems absurd to hold that the government is responsible at all for the enlisted men of the navy who contract venereal disease, and yet Dr. Butts shows that it is by no means easy to say just where the responsibility of the individual ends and the responsibility of the service to the man commences. He takes, as an instance, a farmer boy who enlists at some inland recruiting station as a coal-passer. "The navy takes him out of an environment in which, it may be assumed, prostitutes are few or unknown, and there is comparatively small danger of his becoming infected with syphilis. Sooner or later in the course of his service he is taken to an environment, — perhaps to the Orient, — to the fabled land 'east of Suez,' where he is told 'there ain't no Ten Commandments,' where syphilis is rife, where prostitutes are many, and where the restraining influences of father, mother, sister and sweetheart are removed. He frequently finds time passing slowly; clean places of amusement are few or absent; he feels an impulse while in Rome to 'do as the Romans do,' and the army of prostitutes which frequently follows a fleet like birds of prey exerts an influence amid conditions which in his home community did not exist. The responsibility for the acquisition of syphilis, general paresis or tabes by that young man may not be entirely his own. The naval service should share in it, I am convinced, though not to the degree of giving him 'line of duty' and a pension. That responsibility, too, on the part of the naval service increases according to the degree to which it is possibly able to protect its personnel from syphilitic and parasyphilitic diseases and fails to do so. The greater the opportunity to protect, the greater the responsibility."

One cannot help applying this to conditions in civil life. The young farmer whom Dr. Butts takes for his example might have gone to a distant city to make his way instead of enlisting in the navy. He would have lost the protecting influence of his mother, his sisters or his sweetheart in nearly the same degree, and temptation might come to him there in nearly as attractive guise and nearly as insistently as in the navy. Of course if he yielded and became infected with syphilis, a very large share of the responsibility would rest with him, but only the most superficial reasoning could convince one that some share would not rest also with the community which either neglected its "social problem" altogether or else turned it over to corrupt authorities to solve in the manner which would yield the largest return of financial gain or political profit.

In the navy the responsibility is recognized, and there is a growing tendency to meet it by providing proper recreation for the enlisted personnel and by an energetic and very successful effort to limit infection by applying prophylactic treatment to those who have been exposed. It is a question whether in civil life we have recognized our responsibility so clearly or considered very seriously the adoption of measures to prevent infection. Probably it is too radical to sug-

gest that dispensaries should be established in certain parts of the city where young men who have been exposed might secure preventive treatment at any hour of the day or night by methods which have proved so useful in the navy, but, if we admit that the community has even a small part of the responsibility which is so freely recognized in the naval service, it is difficult to find the most logical reasons why no such efforts should be made.

ADMINISTRATION OF THE ROCKEFELLER FOUNDATION.

In the issue of the JOURNAL for March 10, 1910, we commented editorially on the establishment by Mr. Rockefeller of the Rockefeller Foundation. Plans for the incorporation of this foundation are still in progress. In an address last week before a session of the National Association of State Universities at Washington, D. C., President Schurman, of Cornell University, criticised the terms of the charter as proposed in the bill now before the national legislature whereby the administration of the fund is placed in the hands of a self-perpetuating board of trustees. Instead, he suggests a governing board similar to that of the Smithsonian Institution, which has a board of regents composed of the Vice-President and the Chief Justice of the United States, three members each of the Senate and of the House of Representatives, "together with six other persons, other than members of Congress, two of whom shall be resident in Washington and the other four inhabitants of some state, but no two of the same state."

The disadvantages and possible dangers of either method of administration are obvious. Whichever be selected, it is important that the control of so vast a fund, with such enormous possibilities for public good or evil, be determined only after mature deliberation and sagacious counsel.

SPREAD OF ANTITYPHOID INOCULATION.

THE experience of the Massachusetts General Hospital in the control of typhoid infection among its nurses and ward-tenders by means of antityphoid inoculation has already led to the adoption of voluntary inoculation among nurses and internes of several other hospitals in Boston. As we have several times pointed out in the columns of the JOURNAL, the procedure is simple, free from danger, produces little or no inconvenience and apparently affords a high degree of immunity against the disease. Not to take advantage of such a valuable discovery in preventive medicine is indicative of either inertia, prejudice or unreasonable fear. It is probably too much to hope as yet for the establishment of compulsory general antityphoid inoculation, but the spread of voluntary inoculation is gratifying and should be continuous. Physicians and nurses should be the first to set in their own persons, and in those of their families, an example of intelligence and progressiveness; and physicians particularly should explain to their patients the nature of the inoculation, and should urge upon them the adoption of this wise and beneficent measure of self-protection. Those who know best the dangers of typhoid should lead in the attempt at its extermination by prevention.

DECLINE OF NATURAL INCREASE OF POPULATION IN THE UNITED STATES.

THE latest bulletin of the United States Census Bureau presents the data of population in the states of Rhode Island, Michigan, Missouri, New Mexico, Delaware, Vermont and Massachusetts. During the decade from 1890 to 1900 these states showed an aggregate increase in population of 18.4%; from 1900 to 1910 their increase has been only 14.9%. Assuming that they are fairly representative of the entire Union in quality and distribution of population, and that the total rate of increase throughout the United States in the past decade has been approximately 15%, — though such assumptions are justifiable only for purposes of speculation, — the total population of this country in 1910 may be expected to be about eighty millions, an increase of fourteen millions since 1900. But of this increase about one half has been due to immigration, so that the actual natural increase in population would be only seven millions, or about 10%. This is about the same rate as that of England, and considerably lower than that of Germany. In the United States the excess of births over deaths has steadily declined since 1850, and at its present rate of decrease our population, without immigration, would become stationary by 1950. Until the completion of the data of this census, such comparisons are purely hypothetical, but it seems probable that the decline of natural fecundity is as well marked in our country as among other English-speaking peoples, though not yet so far advanced as in France. What this probability

may portend in ultimate racial development, no human judgment can forecast. From the analogy of other national histories, however, it should seem to indicate the inevitable future supplanting of our race by aliens as inheritors of our language, institutions and ideals.

PROPORTION OF PHYSICIANS TO POPULATION IN GERMANY.

Overcrowding of the medical profession seems not to be confined to large eastern American cities, or even to the United States. A recent report by the United States Consul-General at Dresden indicates that in many parts of Germany the number of physicians has shown a much greater proportionate increase than the total population. During the twenty years from 1883 to 1903 the population of the Province of Brandenburg increased 55%, and the number of doctors increased 302%. In Posen the increase during the same period was 17% and 106% respectively, and in Berlin 69% and 155%. In Saxony from 1883 to 1906 the population increased about 48% and the physicians nearly 126%. Even so, however, the ratio of physicians to population is not as high in Germany as in many American cities. In Berlin at present there is one doctor of medicine to 776 inhabitants; in Saxony, one to 2,016; in West Prussia, one to 3,102; in Posen, one to 3,246; in Reuss, one to 3,723. After all, overcrowding is only a relative term, and keenness of competition, or rather emulation, should result in the medical profession, as elsewhere, in the evolution of higher types of efficiency through the process of selection.

THE CARNEY HOSPITAL AND THE RETIREMENT OF SISTER GONZAGA.

It is announced that Sister Gonzaga, for thirty years associated with the Carney Hospital in Boston, and sister superior since 1889, has been transferred by the head of her order to Baltimore. During her incumbency as sister superior she has been virtually the head of the hospital, combining, in a way, the duties both of superintendent and trustees. It is largely due to her progressive spirit that the Carney Hospital has shown the remarkable development of the past few years.

On April 1, 1891, an addition to the hospital was opened at a cost of $148,082.75, and in 1901, a new out-patient department building at a cost of $91,000. A little later a new lighting and heating plant, a laundry, mortuary and stable were added to the hospital equipment. Boilers, dynamos for power and light and a new elevator have been installed this year. These additions to the hospital have demanded the raising of a considerable sum of money, in which Sister Gonzaga has taken an active part. Even more important than these material additions to the hospital plant was the creation, eight years ago, of a continuous single headed surgical service, to which Dr. John C. Munro was appointed and which he still holds. At about the same time a similar service was established for the orthopedic department under Dr. J. E. Goldthwait and later under Dr. C. F. Painter. Three years ago a continuous medical service was instituted under the charge of Dr. Henry A. Christian, and two years ago a similar gynecological service under Dr. F. W. Johnson. The establishment of these various services was very largely due to the influence of Sister Gonzaga, who saw in this method of hospital organization an opportunity for increased efficiency. These continuous services were the first to be established in this community, although other hospitals are by degrees adopting a similar plan. It should be borne in mind that this policy at the Carney Hospital was instituted with no idea of increased efficiency for medical instruction, since at that time the hospital had no medical school associations.

During her long period of service as the head of the hospital Sister Gonzaga selected the staff without reference to religious belief, and thereby made it one of the most progressive in the community. She leaves with every regret on the part of the staff. It is to be hoped that her successor will continue her policies, particularly in selecting the best available men for staff positions in a non-sectarian spirit.

MEDICAL NOTES.

Award of Nobel Prize for Chemistry. — Report from Stockholm states that the Nobel prize for chemistry has recently been awarded to Prof. Otto Wallach, of the University of Göttingen.

Alleged Fever Temperature of 116°. — From Maysville, Ga., comes an entirely unauthenticated press report of a patient in that city who had a temperature of 116° F. Such mythical statements may well be taken with the same incredulity accorded to accounts of babies weighing over fourteen pounds at birth.

A Suspected Case of Leprosy in a Laundryman. — Report from Passaic, N. J., states that on Nov. 16, Mark Lee, a Chinese laundryman of that city, was taken to the isolation hospital as a leprosy suspect. His laundry has been fumigated, all the clothing therein sterilized and the carriage in which he was driven to the hospital has been burned.

A Tuberculosis Hospital for New Brunswick. — Mrs. James C. Jordan is reported to have presented the New Brunswick government with an estate at River Glade, valued at $30,000, to be used as a tuberculosis hospital.

A Living Centenarian. — Mrs. Thomas Chase, of Everett, Mass., is said to have been born on Nov. 17, 1810, in Warner, N. H. She was married in 1829 and has had six children. Her health is at present excellent, and her interest in current events unabated, though she is reported not to care for "modern amusements."

The Typhoid Epidemic at Annapolis. — The epidemic of typhoid fever among naval cadets at Annapolis, Md., which we noted in the latest issue of the Journal, has extended. During the past week, seven new cases which developed at the academy were sent to the naval hospital, and four other cadets are under quarantine suspected of having the disease. The source of the infection has still not been determined, and its origin seems the more unaccountable since there is not at present a single case of typhoid in the city of Annapolis.

Two Centenarians. — Peter Borry, who died last week at Reading, Pa., was locally reputed to have been born in 1808. He spent his entire life on a farm and is said to have attributed his longevity to moderation in the use of alcohol and tobacco. Many equally temperate men, however, have failed to live as long.

Mrs. Lucinda Adams, who died last week in Johnstown, N. Y., is said to have been born on Nov. 24, 1808. Her general health, vision and memory are reported to have been unimpaired until a fortnight before her death. In her later years she became particularly fond of motoring, and was much interested in aviation. She is survived by six children, sixteen grandchildren and twenty-two great-grandchildren.

"Osler in Chinese." — It is stated on the authority of the *London and China Telegraph* that Osler's "Principles and Practice of Medicine" has been translated into Chinese by the president of the China Medical Missionary Association at Shanghai. It is said that this is the only authoritative work on the practice of medicine as yet available for the Chinese in their own language. Translations of various other medical works are also in progress, among them an Atlas of Anatomy, which, presumably, will be of special value since dissections of the human body are not yet permitted in China.

Appeal for Red Cross Endowment Fund. — The Red Cross Society of America has made an appeal to the public for contributions in small amounts towards the sum of $2,000,000 which it is desired to establish as a permanent fund for the endowment of the society. A general committee has been appointed in charge of the subscriptions, with a sub-committee in each of the principal cities of the Union. The value of the work done by the Red Cross in times of peace as well as of war is unquestioned, and the nobility and integrity of its purposes unassailable.

Dr. Grenfell in Boston. Work of Miss Holman. — In the issue of the Journal for Nov. 3, we commented editorially on Dr. Grenfell's romantic and beneficent work among the natives of Labrador and the north. Dr. Grenfell arrived in Boston on Nov. 20, and will remain for a short time in this vicinity, making several public addresses relative to his work and the increasing possibilities of its service. In December, he will sail for England and will return thence in May to Labrador.

A work similar in kind to Dr. Grenfell's, though very different in environment, is that which for the past eight years has been done by Miss Lydia Holman, a nurse among the mountaineers of North Carolina. At a meeting of the Twentieth Century Club in Boston last week this heroic woman told the story of her hardships, efforts, successes and failures. During this time she has covered day and night in all sorts of weather, alone and often on horseback, a territory of sixty square miles, ministering to and relieving and endeavoring to teach an ignorant and superstitious peasantry. Her present project is the establishment of an infirmary and social settlement for the aid and extension of her work, an undertaking in which she should have the warmest support and encouragement.

Vaccination Laws in Germany. — The present vaccination laws of Germany, enacted in 1884, make it compulsory for every person in the empire to be vaccinated not only in infancy, but again at

the age of eight and again at eighteen. Since this regulation has been in force, there has not been a single death from smallpox in the German army. This fact, which is eloquent testimony to the efficacy of protective inoculation, may well make the medical profession in America envious of the laudable stringency of German law. The paternalism of Teutonic government makes it an effective machine in medical prophylaxis.

Smallpox among the Arapahoes. — In a recent issue of the Journal we commented on the well-known peculiarly malignant virulence assumed by certain infections among aboriginal peoples. During the four days from Nov. 14 to 18, ninety-three Indians are reported to have died from a sudden epidemic of smallpox on the Arapahoe Reservation near Cheyenne, Wyo. Doubtless the rapid fatality of this always dangerous disease is favored by the ignorance and prejudice of the Indians, but it seems at least in part an evidence of the high susceptibility to pestilential infections of our native tribes.

Problems of the Opium Traffic. — At the annual session of the National Association of Wholesale Druggists, held last week at Dallas, Tex., Charles A. West, of Boston, chairman of the committee on legislation, recommended "an international tax on opium manufactured for smoking purposes." It is to be presumed that this suggested law is intended to be prohibitive in its action. The Association voted to hold its next meeting in October, 1911, in New York City.

In this connection it is interesting to learn of the alleged preparation by the Chinese of an appeal to Great Britain to abrogate the two treaties which give private British interests the right to engage in the opium trade. Ostensibly this request is for the purpose of diminishing the amount of illicit traffic in the drug. Actually one cannot help suspecting the motives of a people to whom complete control of the opium market would be a source of considerable wealth.

Name of Parent Substances of Derivative Not Required on Label. — Druggists and manufacturers under the pure food law are not required to name the parent substances of a derivative when they state on the label the name and quantity of the derivative, according to the decision of Chief Justice Clabaugh in the Supreme Court of the District of Columbia. The Court held that the secretaries of Agriculture, Treasury and Commerce and Labor, upon whom the law imposed the duty of making regulations to carry out the act, exceeded their authority when they attempted to require the manufacturing druggists to add to the name of the derivative the fact that it is derived from a parent drug, such as alcohol, cocaine, acetanilid, etc. Such action the court determined to be legislation and not regulation.

Two Neoplastic Lovers. — The following item, sent us by a correspondent, revives memories of an ancient medical witticism, whose unfamiliarity to a modern generation of young physicians may perhaps justify its repetition:

"James Payn, the novelist, was editor of the *Cornhill Magazine*, London. Next door to his office a medical journal had its sanctum. One day Mr. Payn's door was cautiously opened. 'I have brought a little thing about sarcoma and carcinoma,' said the visitor. 'Very sorry, sir,' said Payn, politely, 'but we have all the poetry we want.' 'This isn't poetry!' exclaimed the visitor. 'It is an essay on two varieties of tumor.' 'Oh, I beg your pardon,' said Payn. 'I thought they were a pair of Italian lovers.' The visitor was a well-known medical professor who had entered the wrong office."

Probably the stories of Paul and Virginia, or Gracieuse and Percinet, were too fresh in the editor's recollection to make him desire more of the same.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Nov. 16, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 41, scarlatina 28, typhoid fever 9, measles 20, smallpox 0, tuberculosis 67.

The death-rate of the reported deaths for the week ending Nov. 16, 1910, was 16.56.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 12, 1910, was 181, against 173 the corresponding week of last year, showing an increase of 8 deaths, and making the death-rate for the week, 14.01. Of this number 97 were males and 84 were females; 177 were white and 4 colored; 114 were born in the United States, 65 in foreign countries and 2 unknown; 44 were of American parentage, 115 of foreign parentage and 22 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 51 cases and 2 deaths; scarlatina, 39 cases and 1 death; typhoid fever, 19 cases and 3 deaths; measles, 16 cases and 0 deaths; tuberculosis, 51

cases and 20 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 30, whooping cough 1, heart disease 28, bronchitis 5. There were 10 deaths from violent causes. The number of children who died under one year was 24; the number under five years, 38. The number of persons who died over sixty years of age was 64. The deaths in public institutions were 56. Cerebrospinal meningitis, 1 case. Anterior poliomyelitis, 1 case.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases and 1 death. Typhoid fever, 1 case and 1 death. Scarlet fever, 6 cases. Diphtheria, 4 cases and 1 death.

Deducting deaths of non-residents, the total is 172 and the death-rate is then 13.31.

Reappointed Medical Examiner. — Orland J. Brown, M.D., of North Adams, Mass., has just been reappointed by Governor Draper, Medical Examiner for Berkshire County. The appointment is for a period of seven years, and this is Dr. Brown's fifth consecutive term of service.

An American Elected to Berlin Academy of Science. — Report from Germany announces that William Morris Davis, professor of geology in Harvard College, has recently been elected a member of the Berlin Academy of Science.

Penalty for Practising without Registration. — In the municipal court last week Jeremiah Scopa, of East Boston, was fined $100 for practising medicine without being registered under the laws of the Commonwealth of Massachusetts. He was subsequently held in $1,000 bail for the grand jury on a charge of perjury.

Successful Candidates for Registration in Dentistry. — Of 81 candidates who took the examinations in October last before the Massachusetts State Board of Registration in Dentistry, 25 passed and are now entitled to practise their profession in this Commonwealth.

Hospital Concerts for December. — It is announced that during the month of December the concerts of the Hospital Music Fund will be given as follows: On Dec. 4, at the Channing Home, Brookline; on Dec. 11, at the New England Hospital for Women and Children, Roxbury; on Dec. 18, at the Cambridge Hospital; and on Dec. 25, at the Massachusetts Homœopathic Hospital, Boston.

Proceeds of Several Fairs. — At the fair held in Boston last week by the Board of Directors of the Blind Babies' Aid Society, several thousand dollars were realized for the benefit of the Boston Nursery for Blind Babies. At a fair held three weeks ago in Boston, the sum of $1,100 was raised for the Woman's Charity Club Hospital. The Nurses' Club of Boston had a sale last week, the proceeds of which are to be devoted to furnishing the rooms of the club.

Some Recent Bequests to Hospitals. — Among numerous bequests to public charitable institutions, in the will of the late Anna Healy, filed for probate in Boston last week, were legacies of $5,000 to the Carney Hospital and $2,000 to the Free Home for Consumptives.

The will of the late Mrs. Daniel Dempsey, of Woonsocket, R. I., filed for probate in that city on Nov. 14, makes a bequest of $5,000 for the maintenance of a free bed in St. Joseph's Hospital at Providence, R. I.

Meeting of the Milk and Baby Hygiene Association. — At the annual meeting of the Milk and Baby Hygiene Association of Boston, held last week, Dr. Arthur A. Howard was elected medical director for the ensuing year. The report of the director, Mr. Kruesi, emphasized the part taken by the Association in procuring the prohibition of the sale of "loose milk" in Boston, and in securing the establishment of scientific research into some of the problems of the milk feeding of infants. This report further recommended the presentation, advocacy and support by the Association of a bill before the Massachusetts State Legislature forbidding "the employment of women in industry for two weeks before and six weeks after childbirth." A similar measure has been operative in Switzerland since 1877.

Protest against Condemnation of Bob-Veal. — In the issue of the Journal for Nov. 3 we noted the recent condemnation by the Boston Board of Health of a shipment of bob-veal as unfit for food. At a meeting last week of the New England Live Stock Dealers' Association, the president was authorized to appoint a committee of five to confer with the Massachusetts State Board of Health, with the United States inspectors and with the cattle commissioner in regard to a repeal of the present law governing the sale of veal in this state.

Reunion of Jefferson Medical College Graduates. — At a reunion of New England graduates of the Jefferson Medical College, held in Boston last week, addresses were made by

Walter A. Ballantyne on "Sanitary Problems of To-Day," and by Dr. Alfred Worcester, of Waltham, Mass., on the invaluable service done by nurses in the campaign against tuberculosis. Among the other speakers were Dr. John C. Berry, of Worcester, Mass., and Dr. John E. Donley, of Providence, R. I.

A REMINISCENCE OF DR. LANGE'S VISIT. — In an address before the annual meeting of the Board of Directors of the New England Peabody Home for Crippled Children, held in Boston last week, Dr. Robert W. Lovett spoke of the praise accorded to the work of this institution by Dr. Fritz Lange, of Münich, at the time of the latter's visit to this country last spring. In the issue of the JOURNAL for April 7, 1910, we commented editorially on Dr. Lange's distinguished position as "one of the leading authorities in Germany on orthopedics." His commendation is gratifying and complimentary not only to the institution in question, but to American orthopedic surgery.

PROPOSED COMMISSION ON PUBLIC HEALTH. — There has recently been filed with the clerk of the Massachusetts House of Representatives, for introduction at the next session of the State Legislature, a bill providing for the abolition of the present State Board of Health and the establishment in its stead of a salaried Commission on Public Health, to be composed of three persons appointed by the governor, who would devote their entire time to the work, and who, in addition to other duties, would be given "supervision of the inland waters and water-supply of the Commonwealth."

This proposed measure seems to represent the local resentment of a certain municipality (Lynn) against the present State Board of Health over the installation of a plant for the purification of water. As the legislator who proposes it has just failed of re-election by his constituency, the bill probably hardly needs serious consideration.

NEW YORK.

HOME FOR NURSES, JEWISH HOSPITAL. — The new home for nurses of the Jewish Hospital, at Classon Avenue and Prospect Place, Brooklyn, was dedicated on Nov. 6 with appropriate ceremonies. The building cost $100,000, and is very thoroughly equipped.

ARRESTS FOR MOTOR CAR SMOKE. — Health Commissioner Lederle announces that since Sept. 29, when the active enforcement of the ordinance was first put into effect, 365 arrests have been made for violations of the Sanitary Code forbidding the escape of dense volumes of smoke from the exhaust pipes of motor cars; that 286 of the offenders have been fined; that 47 are under suspended sentences, and that but 32 have been discharged.

NEW YORK MILK COMMITTEE. — The New York Milk Committee will hold a conference for the purpose of discussing the most efficient ways of controlling the municipal milk supply in New York City, Dec. 2 and 3. There will be four sections: Milk Economics, Milk Supply and the Public Health, Milk Standards, and Milk Commissions. Physicians, sanitarians, research workers and representatives of the municipal, state and national health and agricultural departments will be present. The meetings will be thrown open to the public, and the medical profession is cordially invited to attend and to participate in the discussions.

CAPTURE OF THIEVES THROUGH FINGER PRINTS. — Two thieves have been cleverly captured, through their finger prints, by the detective force of the city. On the afternoon of election day, Nov. 8, a residence on West Tenth Street was entered and a number of articles stolen from it. It was found that finger markings on the glass face of a clock in the house corresponded with the finger prints on file with the police as belonging to two men whose photographs were in the Rogues' Gallery. The two were on a list kept of known thieves who make a business of visiting houses whose owners are away, and this knowledge eventually led to the capture of these thieves.

CHOLERA ON AN INCOMING STEAMSHIP. — On the steamship *San Giorgio*, which arrived on Nov. 16 from Naples and Palermo, it was found that two persons in the steerage, a mother and her child of two years, had died and been buried at sea. While their deaths were described as due to gastro-enteritis, Health Officer Doty, after a preliminary bacterial examination of post-mortem evidence, became convinced that one if not both had died of cholera. There were also nine cases of illness in the ship's hospital, and these were taken to the Quarantine Hospital on Swinburne Island, while all the other steerage passengers were transferred to Hoffman Island for observation.

SCARCITY OF WATER. — Notwithstanding some recent rains, there is still great scarcity of water in Westchester County, and, under authority

granted by Mayor Gaynor and Water Commissioner Thompson, of New York, the Water Bureau of Yonkers began, on Nov. 16, the work of tapping the Croton Aqueduct at Ardsley, where the aqueduct runs parallel to the Sawmill River. For the present, a supply of between 3,000,000 and 4,000,000 gallons will be required from New York, and for this the city of Yonkers will have to pay about $500 a day.

Against Public Drinking Cups. — The State Health Department is co-operating with the railroads in endeavoring to do away with the public drinking-cup on trains and in stations, and in a recent circular states that there is no excuse for such on the train, or anywhere else, now that penny-in-the-slot machines serve out paper cups, and that metal collapsible cups can be purchased for a dime. The circular also warns the public against the use of the common towel, which at times may prove even more dangerous than the common cup, as the friction accompanying the use of the towel can easily rub disease germs from one face or hand into the eyes or a scratch in the skin of another person.

Profit Still in the Drug Business. — There would seem to be some profit still in the drug business. It is announced that the corner store at Thirty-fourth Street of the new Greely Square Hotel, which is to occupy the entire easterly side of Broadway between Thirty-third and Thirty-fourth streets, has been leased from the plans to the United Drug Company of Boston for a term of twenty-one years at the enormous rate of $110,000 a year. The store will contain about 5,500 square feet, so that the renting value averages $2 per square foot. This is said to be virtually double the price that has been asked for high-class ground floor stores in the choicest retail districts of Thirty-fourth Street and Fifth Avenue.

Endowment Fund, American National Red Cross Society. — President Taft having appointed committees in all the important cities of the country for the purpose of raising an endowment fund for the American National Red Cross Society, designed to represent a contribution of ten cents from each individual of the population, the New York committee has been very successful in securing a large amount in a short space of time. The subscriptions already aggregate $329,500, and those of $25,000 or over are the following: Mrs. E. H. Harriman and Mrs. Russell Sage, each $50,000; D. O. Mills (bequest), Jacob H. Schiff, Cleveland H. Dodge and Arthur C. James, each $25,000. The committee consists of H. P. Davison (chairman), Robert Bacon, Charles Hallam Keep and Lloyd C. Griscom.

Care of Tuberculous Patients. — At a meeting of the subcommittee on charities of the Commission on Congestion of the Population in New York, held on Nov. 15, M. J. Borden, secretary to Commissioner Drummond, of the Department of Public Charities, declared that the facilities for caring for tuberculosis patients in the city are entirely inadequate. "The daily population of our public hospitals and institutions," he said, "is about 10,000. The waiting list for admission to the tuberculosis pavilions is over 500. In 1902 there were only about 100 patients in these pavilions, but to-day they number over 800, crowded into space suitable for only about 500, and there are more than 30,000 people in the city suffering from tuberculosis. As long as the present tenement-house conditions continue, the city will be compelled to spend increasing amounts of money each year for the care of tuberculosis patients."

Mayor Gaynor and St. Mary's Hospital, Hoboken. — At a meeting of prominent men held on Nov. 11, a movement was started to raise a fund, by voluntary subscriptions from citizens of New York, to be presented to the sisters of St. Mary's Hospital, in Hoboken, as a Thanksgiving offering. The testimonial is to be given as a token of the gratitude and appreciation of the citizens for the sisters' great kindness to Mayor Gaynor and careful solicitude for his welfare when he was confined in the hospital after he was shot by James Gallagher. At the meeting a committee was appointed to take charge of this work, of which John D. Crimmins is chairman and A. Barton Hepburn, president of the Chamber of Commerce, treasurer. St. Mary's receives 4,000 patients annually, the great majority of whom are treated gratuitously, and there are at present over 300 patients in the hospital. Its work is much hampered and restricted by reason of the lack of necessary funds. The old building is in such poor condition that all but one floor is about to be vacated, and on the new addition to the hospital there is a debt amounting to nearly $150,000. No charge whatever was made for service in the case of Mayor Gaynor, but on leaving he presented the Mother Superior with a check, the amount of which has never become known.

Current Literature.

MEDICAL RECORD.

NOV. 12, 1910.

1. MAHER, S. J. *The Relation of the Acid-Fast Tubercle Bacillus to Other Forms of Bacterial Life.*
2. *LOURIA, L. *The Diagnostic and Therapeutic Value of Lumbar Puncture.*
3. KNAPP, M. I. *Insufficientia Pylori.*
4. *RICHARDS, W. M. *Some Peculiar Results of Eyestrain.*
5. GROSS, M., VON OEFELE, F., and ROSENBERG, B. S. *Technic of Examination of the Duodenal Contents.*
6. LYDSTON, G. F. *A Case of Death under Gas and Oxygen Anesthesia.*

2. Louria writes an exhaustive paper on the value of lumbar puncture in diagnosis and treatment. Outside of its use in meningitis, this procedure has an important place in therapeutics as a means of relief for the meningismus of acute infections, the cerebral manifestations of uremia and the headaches of chlorosis; also in eclampsia, traumatic myelitis, concussion of the brain and meningeal syphilis.

4. Richards reports some peculiar results of eyestrain. He has been able to relieve a surprising variety of disorders — somnolence, insomnia, post-nasal catarrh, hoarseness, asthma, indigestion — by the correction of refractive errors. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

NOV. 12, 1910.

1. BIERHOFF, F. *Concerning the Sources of Infection in Cases of Venereal Diseases in the City of New York.*
2. BUTLER, G. F. *Gross Drugs vs. Active Principles.*
3. GROAT, W. A. *The Serum Diagnosis of Syphilis, using the Noguchi System.*
4. *FORDYCE, J. A. *Further Observations on the Use of the Ehrlich-Hata Preparation "606" in the Treatment of Syphilis.*
5. SKINNER, E. H. *The X-Ray and the Special Senses.*
6. BOGGS, R. H. *The Röntgen Treatment of Carcinoma of the Breast.*
7. RANDLE, W. H. *Prophylaxis of Enterocolitis.*
8. STRUNSKY, M. *What shall we do to Prevent Lateral Curvature of the Spine?*
9. WOLBARST, A. L. *Ehrlich's Arsenobenzol: Its Technic and Indications for General Use.*
10. PICOTTE, W. S. *Accidental Detachment of the Normally Implanted Placenta.*

4. Fordyce reports thirty cases of syphilis in which he has used Ehrlich's amido-arseno-benzol. He is impressed with the remarkable action of the drug in early cases and in cases resistant to mercury and iodide. The preparation and mode of administration are very important factors in successful treatment. The order of effectiveness is as follows: (1) Intravenous injection of a very dilute alkaline solution; (2) intramuscular injection of an alkaline solution; (3) acid solution; (4) neutral emulsion (intramuscular or subcutaneous). Primary lesions should be treated as early as possible; as an aid to complete sterilization, energetic local treatment should be employed — excision, cauterization or other means of destruction. In disease of the central nervous system the dose must be small (0.2 to 0.4 gm.). [L. D. C.]

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

NOV. 12, 1910.

1. PORTER, M. F. *Kidney and Ureteral Stones.*
2. *HATCHER, R., and BAILEY, H. C. *Clinical Use of Strophanthus.*
3. EDSALL, D. L. *The Work of the Council on Pharmacy and Chemistry.*
4. LOEB, H. W. *Acute Nephritis following Acute Tonsillitis.*
5. *STONE, W. J. *The Treatment of Typhoid Bacillus Carriers.*
6. BEEBE, S. P. *Artificial Immunization in Non-Bacterial Diseases.*
7. IRONS, E. E. *Points in the Application of Vaccine Therapy.*
8. *ROSENOW, E. C. *Autogenous Vaccine Therapy in Endocarditis.*
9. LEOPOLD, J. S., AND ROSENSTEIN, T. *Significance of Tuberculides in Diagnosis of Tuberculosis in Infancy.*
10. HOSKINS, R. G. *Thyroid Secretion as a Factor in Adrenal Activity.*
11. CROOK, J. L. *Suspended Respiration during Operation.*
12. ADLER, H. *Diagnosis of Ulcer of the Stomach and Duodenum by the Roentgen Ray.*

2. Hatcher and Bailey, from experimental and clinical observation with the various digitalis products, state that the intravenous injection of crystalline onabain affords the most exact dosage possible in digitalis therapy and the most rapid effect. The effect of any digitalis body on the cardiac action is more prompt after intravenous injection than in any other way.

5. Stone claims that typhoid carriers, injected within a comparatively short time after their infection, probably receive more benefit from properly prepared autogenous vaccine than from any other known form of treatment.

"Contact carriers," who never to their knowledge have had typhoid, are more susceptible to inoculation than carriers who have had a definite attack of the disease. When the infection has persisted for years it may be difficult to clear up the condition by bacterial inoculations.

8. Rosenow states that evidence points strongly to the fact that injections of dead bacteria in acute endocarditis are of very small therapeutic value and may be actually harmful. [E. H. R.]

THE LANCET.

OCT. 22, 1910.

1. DONKIN, H. B. *The Harveian Oration on Some Aspects of Heredity in Relation to Mind.*
2. DURNFORD, J. *Remarks on the Royal Navy Medical Service.*
3. *McDONAGH, J. E. R. *Further Experiences with "606" (Eighty Cases).*
4. LETT, H., AND TURNBULL, H. M. *A Case of Benign Cyst of the Humerus.*
5. BILLARD, G. *Anaphylaxia in Hay Fever, Nettle Rash and Asthma.*
6. WOOD, J. W. *Three Cases of Thrombosis of the Lateral Sinus.*
7. HEWLETT, R. T. *The Treatment of Cholera Asiatica with an Anti-endotoxic Serum.*
8. HARDING, H. W. *The Action of Chlorine upon Water Containing the Cholera Vibrio.*

3. McDonagh has found much larger doses of "606" needed to cure an early chancre than to cure an extensive gummatous ulceration, and concludes that the cure, therefore, is largely due to the amount of antitoxin formed. If a mother after giving birth to a syphilitic infant be treated with "606" while nursing the child, the child's symptoms quickly disappear, although no arsenic is present in the breast milk; therefore it must be due to the antitoxins formed by the death of spirochetes in the mother. He uses a nearly neutral solution of about 6 ccm. and injects between the scapula and the spine. There is occasional difficulty in breathing, owing to spasm of the chest muscles after this injection; this, however, soon passes off. As a prophylactic the drug is powerless, but in no primary stage treated with "606" did any secondary symptom develop. In the second stage, symptoms generally disappear after a single injection of 0.5 to 0.6 gr. Three cases of tabes with marked ataxia did not improve, and in general in the parasyphilitic affections, "606" is rarely, though occasionally, of use. [J. B. H.]

OCT. 29, 1910.

1. DELÉPINE, S. *An Address on the Chief Aim of Medicine.*
2. DUCKWORTH, D. *A Clinical Lecture on Hematemesis.*
3. BARKER, A. E. *A Case of Acute Pancreatitis; Operation; Recovery.*
4. MEEK, W. B. *Phagocytosis of Erythrocytes by Endothelial Cells: Some Points in Connection with it, and a Method for Its Demonstration.*
5. TELFORD, E. D. *Some Notes on "Delayed Chloroform Poisoning."*

6. Edgecombe, W. *A Case of Poisoning by Aconite.*
7. Guthrie, T. *A Method of Removing Nasopharyngeal Fibromata, with Two Illustrative Cases.*
8. Paterson, P. *The Treatment of Ascites by Drainage into the Subcutaneous Tissues of the Abdomen.*
9. Morrell, R. A. *Preliminary Observations on Some Cases of Esophoria not caused by Refractive Errors.*
10. Parry, L. A. *Two Cases of Malignant Pustule.*
11. Wechselmann, W. *The Treatment of Syphilis with Ehrlich's Diozydiamido-arsenobenzol.*

8. Paterson describes a method of draining ascites, due to malignant disease or cirrhosis, from the peritoneal cavity into the subcutaneous tissues of the abdomen. The technic of placing the glass button so as to carry on this drainage is simple. At first a fluctuant tumor is formed, but as absorption becomes established into the superficial vessels, this soon passes off. After twenty-four hours little or no discomfort is felt by the patient. [J. B. H.]

British Medical Journal.

Oct. 22, 1910.

1. Miers, H. A. *An Address on Scientific Observation.*
2. Stewart, P. *An Address on Certain Intracranial Diseases Associated with Nasal, Aural and Laryngeal Symptoms.*

THE BRITISH MEDICAL ASSOCIATION.

Section on Gynecology and Obstetrics.

3. Herman, G. E., *et al. Discussion on the Causes and Treatment of Dysmenorrhea.*
4. Young, J. *The Structure of the Stroma of the Endometrium and Its Bearing on the Menstrual Changes.*
5. Tate, W. W. H., *et al. Discussion on Treatment of Fibroids Complicating Pregnancy.*
6. Döderlein. *The Origin and Prevention of Puerperal Fever.*
7. Kerr, J. M. M. *Additional Cases of Rupture of the Uterus.*
8. *Campbell, J. *An Embolism during Labor.*
9. Wallace, A. J. *Intraperitoneal Hemorrhage in Cases of Uterine Myomata.*
10. Ivens, F. *Localized Necrosis of an Adenomyomatous Right Tube, with a Left Tubal Mole and Fibroid Uterus.*
11. Gottschalk, S. *Cases of Intestinal Obstruction due to the Uterus.*
12. *v. Herff, O. *The Causal Treatment of Dystocia in Cases of Pelvic Contraction.*
13. Lockyer, C. *Fibroid Tumors of the Uterus as a Complication of Pregnancy.*
14. Nagel, W. *Papillary Ovarian Cysts: Should Both Ovaries be Removed?*
15. Longridge, C. N. *Involution of the Uterus.*
16. McIlroy, A. L. *The Surgical Treatment of Fibrosis of the Uterus.*
17. Gottschalk, S. *Erosion of the Cervix.*
18. Döderlein. *Extraperitoneal Cæsarian Section and Hebosteotomy.*

Section of Psychological Medicine and Neurology.

19. Hyslop, T. B. *Introductory Remarks by the President.*
20. *Savage, G. H., *et al. Discussion on Insanity and Marriage.*
21. Baugh, L. D. *Paranoidal Symptoms at the Female Climacteric.*
22. Bárány. *The Vestibular Apparatus and the Cerebellum.*
23. Thomson, D. G. *On the Teaching of Psychiatry.*
24. Russell, J. S. R., *et al. Discussion on the Treatment of Tabes Dorsalis.*
25. Ash, E. *On the Psychological Treatment of Certain Functional Conditions.*
26. Jolly, W. A. *The Knee-Jerk and Simple Reflexes.*
27. Bruce, A. *Demonstration on Sclerosis of the Adventitia.*

8. Although the causes of air embolism during labor are numerous, the most common one is the delivery of the patient under anesthesia in the left semi-prone position and failure to turn her over on her back as soon as the child's head is born. The left position tends to allow an inrush of air into the uterine cavity, which does not occur if the patient is on her back. Prophylaxis simply consists in placing the patient on her back. The symptoms, if not at once fatal, resemble those of embolism from a clot — spasmodic inspiratory attempts, convulsions, cyanosis, increased pulse, only they soon disappear, only to reappear again in a short while in worse degree than before. When such embolism has occurred, the placenta should at once be removed and the uterus washed out. Saline infusions, strychnine, digitalis and oxygen should be administered. Rest in bed for five to six weeks should be insisted on. The writer cites two interesting cases in detail.

12. Herff strongly recommends treating such degrees of contracted pelvis as will allow of it by means of induced premature labor. Especially if the life of the mother is more valued than that of the child is this operation desirable, as the mortality in the mother is practically zero, the after-effects almost none and the danger to the child only slightly greater than that other method which he advises, Cæsarean section.

20. Savage, Shuttleworth, Jones, Russell, *et al.*, discuss briefly the question of marriage and various mental disorders and degrees of insanity. Savage emphasizes the fact that in no case should marriage be allowed as a means or a hope of cure, especially in cases of so-called moral perversion, alcoholics, etc. [J. B. H.]

Oct. 29, 1910.

1. *Keith, A. *Remarks on Diaphragmatic Herniæ.*
2. *Armstrong, G. E. *Typhoid Perforations and Perforations of the Gall Bladder.*
3. Dick, J. S. *Bacillus Coli Infections with Special Reference to Their Recognition and Comparative Frequency.*
4. Collum, R. W. *On the Diet of a Patient before Operations under General Anesthesia.*
5. Hird, R. B. *Ophthalmic School Clinics in the Country.*
6. Faulder, T. J. *Submucous Resection of the Septum Nasi.*
7. Shaw, W. F. *Three Bad Prognostic Signs in Eclampsia.*

Section on Ophthalmology.

8. Higgens, C. *Introductory Remarks by the President.*
9. Berry, G. A., *et al. Discussion on the Future of Ocular Therapeutics.*
10. Harman, N. B. *The Use of Carbon Dioxide Snow in Eye Work.*
11. Pisani, L. J. *On the Conditions which may account for the Greater Prevalence of Cataract in India.*
12. Russell, J. S. R., *et al. Discussion on the Diagnostic Values of Ophthalmoplegia, Partial and Total.*
13. Harman, N. B. *The Education of High Myopes.*
14. Thompson, A. H. *The Operative Treatment of High Myopia.*
15. Benson, A. H. *A Plea for the More Extended Use of Buccal Mucous Membrane in Enlarging Certain Forms of Contracted Socket.*
16. Spicer, W. T. H., *et al. Discussion on the More Chronic Forms of Anterior Uveitis.*
17. Fink, G. H. *Drainage after Cataract Operations.*
18. Harman, N. B. *School Clinics.*

Section on Physiology.

19. Thompson, W. H. *Introductory Remarks by the President.*
20. Schäfer, E. A., *et al. Discussion on the Factors that make for an Efficient Circulation.*
21. Melville, Colonel, *et al. Discussion on Food Requirements for Sustenance and Work.*
22. Krogh, A. *Demonstration on Tonometric Determination of Dissolved Gases.*
23. Krogh, A. *The Forces governing the Gas Exchange in the Lungs.*
24. Taylor, M. R. *The Excretion of Creatine in Diabetes.*

1. Keith gives an interesting study of diaphragmatic hernia. In his series the proportion of congenital to acquired cases is 26: 8. He describes the various forms and the anatomy of such herniæ.

2. Armstrong discusses typhoid perforation as it has occurred at the Montreal General Hospital. Out of 2,051 cases of typhoid, from 1897 to 1910, there were 93 cases, 4.5% of perforation. The author has studied 97 cases of perforation; 78 were operated on, with 24 recoveries, a percentage of 30.7%. During the past year, owing to earlier diagnosis and operation, in 19 operations 9 recovered, a percentage of 47.3%. In 50 out of 93 cases, the perforation occurred in very severe types of fever, while in 6 cases it was in the ambulatory type. He believes in using local anesthesia whenever possible. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 42.

OCT. 20, 1910.

1. ORTH, J. *Rudolf Virchow and Bacteriology.*
2. KRAUS, F. *Diagnosis of Functional Heart Disease.*
3. *HERZOG, H. *The Nature of Trachoma Bodies.*
4. MÜHLENS, P. *Native Quartan Malaria.*
5. *KNIERIM, H. *A Rare Localization of Lead Sulphide in Chronic Lead Poisoning.*
6. POLLNOW, L. *Transitory Amaurosis.*
7. HAUSMANN, T. *Movable Cecum and Appendix, with Remarks on Palpation of the Appendix.*
8. POTTENGER, F. M. *Muscular Rigidity and Its Importance as a Sign of Apical Pulmonary Tuberculosis.*
9. *Investigation of the Infectiousness of Bovine Tubercle Bacilli.*

3. Herzog has continued his studies with trachoma bodies and has now reached the conclusion that these bodies are involution forms of bacteria and in all probability the gonococcus. In old specimens of gonococci he has been able to produce the same picture in regard to morphology and staining reaction.

5. Knierim includes in his article the reports of other authors who have observed an abnormal position of the lead line in cases of lead poisoning. In this case the evidence of deposits of lead sulphide was present on the mucous membranes of the lips in addition to the usual position on the gums near the teeth. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 38.

SEPT. 20, 1910.

1. *GRAFE, E. *Significance of Oil-Acids for the Diagnosis of Gastric Cancer.*
2. ANSCHERLIK, H. *On the Reported Results of the Use "Ehrlich's 606," and a Few Interesting Cases.*
3. SCHROEN, H. *Studies of Weichardt's Epiphany Reaction.*
4. KLAUSNER, E. *Drug Eruptions and Hypersusceptibility.*
5. SCHOTTMÜLLER, H. *Pachymeningitis Interna Infectiosa Acuta and Meningismus.*
6. KEHR, H. *Twenty Years of Gallstone Surgery: A Review of 1,600 Operations.*
7. *MELCHIOR, E. *Dangers of Forcibly Dilating the Anal Sphincter.*
8. *GOLDSCHMIDT, R. *Ascaris Poisoning.*
9. SCHAEFER. *Cog-Wheel Breathing.*
10. KELHING, G. *Indurated Ulcer of the Stomach.*
11. COLMANN, A. *Myoma and Glycosuria.*
12. LANGER, J. *Occurrence of Spirocheta Pallida in the Vaccine with Regard to Congenital Syphilis.*
13. REICHMANN, V. *A Case of Atypical Acute Myeloid Leukemia without Involvement of the Bone Marrow.*
14. WERNER, R. *Zykloform as a Local Anesthetic.*
15. STREMPEL. *A Case of Irreducible Luxation of the Fore-Finger.*
16. WILDT, A. *Use of Gilded Surgical Needles.*
17. HIRSCH, J. *Transportable Table for Examination or Operation.*

1. The writer advances the theory that the hemolytic substance which has been found in the gastric contents of patients having carcinoma of the stomach is a free fatty acid coming from the tumor itself. He has tested for hemolytic properties the contents obtained after an Ewald meal in a large number of cases of carcinoma, benign gastric disturbances and normal cases. The evidence seems to show that the hemolytic substance cannot come from the meal. Before testing the stomach was always washed clean so that food previously ingested did not interfere. Tests were also made for bile and intestinal ferments which have hemolytic properties. It was found that in cases of gastrectasis the test was unreliable, but when there was no regurgitation through the pylorus a positive result occurred in the great majority of cases of proven carcinoma and a negative result in most of the non-malignant conditions. (The fact that of thirteen doubtful cases only three reacted positively suggests that the test may be of less value in the early stage of carcinoma.)

7. Melchior calls attention to the danger of serious incontinence following forcible dilatation of the anal sphincter. He says that this can be entirely avoided by doing the work under complete anesthesia and by not using great force.

8. It is stated that persons working with ascaris worms in the fresh stage frequently suffer from poisoning in the form of conjunctivitis or swelling of the hands, and the writer believes that these are due to an emanation from the parasite. He thinks it probable that the symptoms observed in ascaritis are due to the same poison, but he does not give definite information as to its nature. [G. C. S.]

No. 39. · SEPT. 27, 1910.

1. *SCHREIBER, E. *Intravenous Use of Ehrlich's "606."*
2. *HÜGEL, G., AND RUETE, A. *Our Experience to Date with the Ehrlich-Hata Arsenic Preparation "606."*
3. *SIESKIND, R. *Summary of 375 Cases Treated with Ehrlich-Hata Preparation.*
4. SELLER, J. *Clinical Effect of Ehrlich's Diamido-Arsenobenzol: "606."*
5. SEIDEL, H. *Permanent Biliary Fistula and Osteoporosis.*
6. KRECKE, A. *Treatment Before and After Laparotomy; Particularly Early Getting Up.*
7. FISCHER, L. *A Case of Dysbasia Angiosclerotica with Ischemia Followed by Hyperemia.*
8. GROS, O. *A Method of Increasing the Effectiveness of Local Anesthetics.*
9. LÖWEN, A. *Use of Novocaine as Local Anesthetic in a Solution of Sod. Bicarb. and Common Salt.*
10. WEIEL, E. *On Digipuratum (Knoll).*
11. MERZ-WEIGANDT, M. N. D. *A Lip Clamp.*
12. JOGICHESS, M. *Epidemiology of Poliomyelitis Acuta Anterior.*

1. Schreiber reports having injected 325 patients intravenously with "606." He has observed a rise of temperature within a few hours after the injection in a considerable number of them. It lasts as a rule only a short time. A few patients had nausea, vomiting or diarrhea and one had urticaria. No other ill-effects were noted and in no case were the symptoms severe. It is the writer's impression that results were more prompt and surer by the intravenous than by other methods of injection and he, therefore, recommends it for syphilis of the central nervous system. He insists on small dosage when the drug is used intravenously.

2. The writers report on 30 cases of syphilis treated with "606." Ten of these received it intramuscularly and 20 subcutaneously. They are in favor of the subcutaneous method on the ground that absorption is better and quicker, that infiltration occurs less often and that the slight pain it causes is more easily borne in the back than in the buttock.

3. This article contains so much of value that a complete summary cannot be given here. Three hundred and seventy-five cases of syphilis of all sorts and stages were treated with "606." Of these, 44 were followed for five months, and 8 of them had recurrence. The following indications are given for the use of "606": Malignant syphilis; syphilis in any stage when mercury is not well borne; cases of recurrence after repeated mercurial treatment; cases of syphilis in the early incubation period (when possible also excision of the chancre or destruction of it by the Holländer hot-air method); tuberculous syphilis; visceral syphilis; decrepit patients; latent syphilis when the Wassermann reaction persists; and parasyphilitic affections in the very early stage.

Contra-indications: Severe non-syphilitic retinal or optic nerve diseases; severe organic disease of heart or vessels; severe pulmonary disease except tuberculosis;

advanced degeneration of the central nervous system; and, temporarily, cases of angina or febrile diseases. The latter can be injected after the acute illness has passed. Remarkable results were obtained in malignant syphilis. [G. C. S.]

No. 40. Oct. 4, 1910.

1. *Faulhaber. *Röntgen Diagnosis of Deep Ulcus Ventriculi.*
2. *Grosser, P., and Betke, R. *Mors Subita Infantum and the Parathyroid Glands.*
3. *Greven, K. *Beginning and Duration of the Excretion of Arsenic in the Urine after Use of Dioxydiamidoarsenobenzol.*
4. Favento. *On One Hundred and Fifty-six Cases Treated with the Ehrlich-Hata "606."*
5. Gioseffi, M. *Progressive Pernicious Anemia.*
6. *Lattes, L. *The Influence of Fat in the Blood on the Poisonous Effect of Chloroform.*
7. Janney, N. *Studies of a Few Commercial Diabetic Breads.*
8. Jacobaeus, H. C. *The Possibility of Cystoscopic Examination of the Serous Cavities.*
9. Hahlweg. *Treatment of Coli Pyelitis by Washing the Pelvis of the Kidney.*
10. Hamburger, F. *Treatment of Phimosis in Early Childhood.*
11. Spiess, G. *A Case of Severe Dyspnea due to a Polyp in the Right Bronchus.*
12. Hartmann. *Supervision of Infants.*

1. The writer has been successful in diagnosing ulcer of the stomach by means of the x-ray. He gives diagrams and reports a few cases. His conclusions are similar to those of Haudek, whose work he seems not to have seen. (Ref.: Münch. Med. Woch., July 26, 1910.) The method is chiefly of use for deep ulcers situated on the greater or lesser curvature, because it depends upon the shadow thrown laterally by the bismuth in the ulcer. He says that when an abnormal spot of bismuth (which he describes in detail) can be seen projecting from the stomach, and that when in addition an hour-glass constriction can be seen in the same region, then the diagnosis of a deep ulcer can be made with certainty and its position can be stated.

2. Grosser reports three cases of sudden death in infants, in all of which hemorrhages were found in the parathyroid glands. He believes that destruction of these glands by hemorrhage was the cause of death, and he urges that in all similar cases the parathyroid glands should be carefully studied.

3. Greven says that when mercurial treatment is combined with the use of "606" the excretion of arsenic in the urine seems to be delayed, and that when iodide of potash is given, excretion of arsenic is apparently delayed.

6. Lattes reaches the conclusion that an increase of the fat in the blood, contrary to Reichers, diminishes the quantity of chloroform necessary for narcosis, and that this results because the fat-tissue of the body takes up much less chloroform. [G. C. S.]

Berliner Klinische Wochenschrift. No. 43.

Oct. 24, 1910.

The Semi-centennial of the Berlin Medical Society.

1. Fränkel, B. *Latest Statistics concerning the Campaign against Tuberculosis.*
2. Landau, L. *Changes and Progress in the Treatment of Chronic, Inflammatory and Suppurative Diseases of the Uterine Appendages.*
3. v. Hansemann, D. *The Berlin Medical Society and Pathological Anatomy.*
4. Fraenkel, A. *Interstitial Emphysema of the Lungs, with More Especial Regard to Mediastinal and Subpleural Emphysema.*
5. *Fürbringer. *Estimation of the Conditions of the Spermatozoa in the Diagnosis of Male Sterility.*
6. Jochmann, G. *Accidents in Serum Therapy.*
7. Zangemeister, W. *Antistreptococcus Serum and Streptococcus Immunity.*
8. Gebhartz, H. *Examinations concerning the Erect Position.*
9. Lesser, F. *Critical Remarks concerning the Action and Methods of Application of Preparation "606."*
10. Schlesinger, E. *The Primary Form of the Normal and Pathological Stomach and Its Beginning.*
11. Alexander, A. *The Indications and the Technic of X-Ray Treatment of Diseases of the Skin.*
12. Gillet. *Technical Novelties.*

5. The author goes into the different pathological conditions to which the semen is disposed. He emphasizes the importance of using fresh material uncontaminated. He also shows that it is not an easy thing to make a positive diagnosis of male sterility. He considers that the male is the responsible factor in very many cases of sterilitas matrimonii, but emphasizes the fact that an examination should be made by a specialist before the patient accepts the diagnosis of male sterility as final, and even then a gynecologist should make certain that all is normal with the wife. [J. L. H.]

Annales de l'Institut Pasteur.

Sept. 25, 1910.

1. *Nicolle, C., and Mauceaux, L. *Researches on Oriental Pustule; Cultures, Reproduction and Immunization.*
2. Heckenroth, F. *Attempt to Obtain a Species of Nagana Resistant at the Start to the Emetic.*
3. Shoukévitch, J. *Experiments upon the Immunity of Rabbits against the Bacillus Suipesticus.*
4. Rosemblatt, M., M. and Mme. *Effect of Concentration in Saccharose upon the Paralyzing Action of Certain Acids in Alcoholic Fermentation.*

1. Nicolle and Mauceaux have made an exhaustive study of oriental pustule. They find that the causative agent is the Leishmania tropica, which they have been able to reproduce on artificial media, and which is similar to the protozoa of kala azar. The cultures grow best at 22° C. and will live at this temperature for two months. Transplantations are best made on the tenth to fifteenth day. The virus of the oriental pustule is pathogenic for man, monkey and dog. Successful inoculation experiments have been carried on. They describe in brief the characteristics of the lesions, but have put aside their histologic study for another special work.

This virus is inactive in the horse, cat, sheep, white rat, goat and donkey. Also, it is inactive when given intraperitoneally in a variety of animals. The point for favorable inoculation is on the nose and eyebrows especially. An immunity against a second inoculation is obtained provided that the first attack has entirely healed. During the first attack further infection may occur. There is probably a negative phase of hypersensibility. Kala azar infection when cured offers an immunity against the pustule disease. The latter offers increased resistance but not immunity to kala azar. The dog is suspected of being the common carrier of this infection. [C. F., Jr.]

Miscellany.

CHOLERA IN VARIOUS LOCALITIES.

During the week ending Nov. 19, there was a moderate recrudescence of Asiatic cholera in Italy. Thirty-five new cases and 9 deaths of the disease were reported, as against 13 cases and 5 deaths the preceding week. A fresh outbreak of cholera is reported from Constantinople, where, on Nov. 17, there are said to have been 37 new cases and 18 deaths, and on Nov. 18, 49 new cases. The steamer, *San Giorgio*, which reached New York City on Nov. 16, from Naples and Palermo, was held at quarantine on account of the death of 2 passengers, during the voyage, with symptoms suggestive of cholera. Nine other passengers, all from the steerage, were

found to be sick with similar symptoms, and were detained on suspicion for diagnosis. On Nov. 17, another suspected case of cholera was detained at Quebec, Canada, by order of the United States immigration physician stationed at that port. The patient, a Russian, who arrived at Quebec, on board the *Royal George*, from Bristol, England, was destined for Oronto, Wis. The vessel on which he sailed has been quarantined. It is gratifying to observe such evidences of the vigilance and zeal with which the extensive frontiers of our country are guarded by United States officials against invasion by this disease.

DESIRABILITY OF A STATE PSYCHOPATHIC HOSPITAL.

The desirability of establishing a state psychopatic hospital or sanatorium for the observation and study, during temporary detention, of borderline psychoses and of patients in the incipient stages of mental alienation is still under consideration by a special commission, consisting John B. Tivnan, of Salem, chairman; Dr. William N. Bullard, of Boston, secretary; Dr. Burnham R. Benner, of Lowell; Hon. Edward S. Bradford, of Springfield; and Charles E. Ware, of Fitchburg. At a hearing in the State House last week before this commission, Dr. Henry R. Stedman, of Brookline, chairman of the board of trustees of the Taunton State Hospital, pointed out some of the disadvantages of such an institution, and its possibilities of conflict with the work of the Psychopathic Hospital for the Metropolitan District, soon to be completed. On the whole, however, he approved of the establishment of the proposed hospital, by the state, on a small scale and as an experiment. Other opinions, favorable and adverse to the project, were expressed by other physicians present at the hearing.

Correspondence.

PARIS LETTER.

Recent Developments in the Syphilis Question.

[From Our Special Correspondent.]

Paris, Oct. 31, 1910.

Mr. Editor: The syphilis question has been making rapid strides of late. What with the discovery of the germ of the complaint, of the possibility of reproducing the disorder in animals, of the Wassermann reaction and of the apparently specific action of various forms of arsenic on the vitality of the germ, the study of this disease has advanced more during the last few years than during as many centuries previous to the finding of the spirochete pallida.

But all of these steps in advance do not stand on the same footing in the eyes of the public, at least over here. The germ, the transmission of the disorder to the higher apes, and the Wassermann reaction were looked on with eyes of indifference, — more or less as matters of scientific interest alone, concerning no one outside of the profession. A temporary ripple of excitement occurred when Brieux carried the subject on to the public stage in his well-known play that every one went to see, and coined his now-famous name for the disease, "avarie" (i. e., damage; adjective, damaged). This term filled a deeply-felt want. In spite of the liberty with which we treat all subjects here, both in conversation and press, the crude word syphilis stuck in people's throats, and few papers would have ventured to print it. But with this harmless little term "damaged, all barriers were removed, and Madame X. now tells Mlle. Y. in a public salon and in ordinary tones that Mr. Z. is *avarié*, without a moment's hesitation.

Another ripple of interest was created among the public when an enterprising physician, together with a well-known firm, succeeded in reproducing biological pictures of the spirochete pallida, together with numerous other germs, and gave cinematographic representations of the same to public audiences. I was present at one of these demonstrations, and I must confess that it was one of the emotions of my life to see these germs thrown on a screen, some of them *as large as a man's forearm*, and wriggling and squirming around among cells, blood corpuscles, intestinal detritus, etc., just as they act when placed fresh under a microscope. It was positively *overpowering;* and the feeling crept over me, in spite of myself, that it was a wonder any one of us was alive to tell the tale if such ferocious enemies as these were abroad in the land. There was one series of pictures of the blood of a patient with some rare tropical disease whose name escapes me, taken on successive days, and showing the progressive multiplications of the germs among the blood corpuscles until the latter were entirely swamped by the former and the blood was turned into a grovelling mass not unlike a heap of maggots, that was simply terrifying!

But these little ripples of interest were the merest bagatelles as compared with what has occurred since Ehrlich came forward with his 606. The other discoveries, if mentioned at all in the daily, political press, had at most the honors of three lines in fine print among the *faits divers*. But 606 was received with the honors of war and full regimentals, the editors feeling that here was a guest to whom too much courtesy could not be shown, as any one of them might have need of him when least expected. For we here transpose the common dictum about tuberculosis and say that every man either has been, is or will become *avarié*.

The result was that the daily press, *Matin* at the head, fell on the question like one man, and the front page and leading columns, in the widest and biggest type, have been freely used in disseminating news about Ehrlich and his famous 606 until really we are a bit sick of it. Furthermore, this campaign afforded an opportunity for more or less questionable efforts on the part of enterprising practitioners to keep or bring their physiognomies and merits before the public gaze. The irrepressible Doyen was the first to seize the chance, and opened fire in his usual place, the first column of the first page of the *Matin*, in an article more or less critical concerning Ehrlich and the new preparation, which I think he must now regret having written, since it amounts practically to the fact that his gun went off, to use Kipling's expression, "slightly prematoor." He also took the occasion to again call attention to the merits of his mycolysin, which somehow or other continues to be ignored, nor can I make out that, in the eighteen months or so since this remedy was put on the markets, the city death-rate among the infectious disorders (which the preparation was announced as destined to put an end to once and for all time) has shown any noticeable diminution.

Another confrère, Mouneyrat, also took advantage of the discussion to call public attention to a preparation of his called hectine, which he says is far preferable to 606 and has, he claims, been already tried in sixty thousand cases, — I say *sixty thousand!* I do not know this confrère, but it seems to me that for a preparation of which the general medical public has never heard to have been already tried on that number of patients without its fame being noised abroad strikes me as singular. The French have a very neat expression for emergencies like this: "*Cela n'est pas possible; ca se serait su!*" This series of *s's* is delightful. However, I was both surprised and chagrined to see no less a personage than Bouchard take part, in an interview, in this discussion in the daily press, and refer to the merits of hectine; so I suppose there must be something in the story. But how Mouneyrat, in a short

space of time, can have collected a series of cases of that magnitude passes my comprehension. Is everybody in the country in the active phase of syphilis? This claim of Mouneyrat has furthermore given rise to what appears to be rather an unpleasant incident. It seems that Ehrlich claims that Mouneyrat did not discover hectine at all, but got the idea from him himself during a visit to the Frankfurt laboratories. Hence, talk of lawsuits, patent infringements, etc. In short, a disagreeable affair.

Well, then, as I said, for the past three months, since early August, the daily papers have been filled with articles about Ehrlich, visits to his laboratory, interviews with this man and that man, the opinions of so-and-so of the Institut Pasteur, discussions before the Academy of Medicine, telegrams from Ehrlich denying things that were said before that learned body, — until the public mind has come to think of nothing else but syphilis, and even children in short clothes are treating their dolls with this 606, which they see at the head of articles in all the papers, for this mysterious disease which I suppose they look on as some kind of measles or whooping cough special for grown-ups.

The result of all this has been rather surprising and unexpected, and was described to me by the head of one of the laboratories here where they prepare the serums, remedies put up in bulb form, and other hypodermic preparations that are in such common use in Paris. He said that any number of old syphititics, whose disease had been quiescent for years so that they had practically forgotten all about it, had become uneasy on reading so much about syphilis in the papers; and that many of them had begun to treat themselves with hypodermics of soluble preparations of mercury, while the most advanced section, the up-to-daters, were applying to him in such numbers for a Wassermann test, to see whether their disease was in an aggressive or quiescent stage, that he had been obliged to create a special department for the Wassermann test and put a man at the head of it ($10 a test!). As to his sale of bulbs of mercury, it had quadrupled!

So much for the gossip on this subject, — now for more serious details.

The remedy was, I believe, first used clinically in March last. Since that time the question of the treatment of syphilis by 606 has been up before three or four German congresses, while the German medical press has teemed with articles on the subject. An amiable Frenchman, who signs J. D. in the *Presse Médicale*, has been kind enough to wade through and assimilate the more important portion of this dreary German prose, on behalf of his confrères, and has obligingly produced a digest of the subject in the number of Oct. 19. While referring those who wish for fuller data to the article itself, where they are exposed with the neatness and lucidity in which the good French writer excels, I will take the liberty of stealing a little of this man's thunder and send you the salient facts of the article.

Opinions are practically unanimous as to the efficacy of the drug, whose action appears to be little less than miraculous in certain cases, — curiously enough, the particularly grave ones. But the enthusiasm of the first hour has had time to calm down, and 606 is no longer looked on as the harmless preparation that was going to cure any case of syphilis in one single injection. Those who have had opportunity to use the remedy on a large scale, while admitting its really great qualities, say that we are still altogether in the experimental stage with this preparation, and that a great deal has yet to be learned about it. Furthermore, it has already given rise to some nasty accidents, and its effect on sight has been claimed by some to be similar to that of atoxyl, though this has been vigorously denied by Ehrlich. However this may be, it is certain that the German physicians in whose hands the remedy has been placed have been very cautious in having the patients' sight thoroughly tested before applying the treatment. That the remedy is still in its experimental stage is perhaps best shown by the fact that its users do not even agree yet as to dose and technic, each man apparently having a different way of preparing the substance for injection, whether hypodermic or intravenous. The latter method is painless, but in the early days the preparation used for hypodermic administration was extremely painful, preventing the patient from walking or assuming a seated position, and necessitating even in certain cases confinement to bed for a week. In this particular undoubted progress has been effected, as methods of dissolving the powder, which is very delicate and comes in little bottles in which a vacuum has been created, have been devised that permit of hip-injections being made without any pain whatever.

The dose to be given at a séance has also not yet been accurately determined. Ehrlich advises 0.45 to 0.50 for women; 0.50 to 0.60 for men. Alt, however, claims that it is preferable not to exceed the dose of 0.50, as above that figure the patient is exposed to accidents such as tachycardia, irregular heart action, syncope and nausea. Other experimenters, again, appear to have used larger doses, and 0.70 and 0.80 have been freely administered, — even as much as 1.20! Wechselmann, on the other hand, does not advise the single dose, but accords his preference to the small dose frequently repeated.

The most remarkable features of the result of the treatment by 606 in the primary and secondary stages are: First, its marvelous effect on the mucous patch, the infecting element *par excellence* of the disease; and, second, the fact that in a few days it does away with cervical leucodermia, a symptom which mercury does not affect in the slightest degree. The practical importance of the action of 606 on the mucous patch will escape no one's attention. If by means of a single injection (now painless) a patient can be prevented with almost certainty from transmitting the disease to others, we have acquired a means of treatment whereby in dispensary and hospital out-patient departments the large category of men and women who have neither time, education nor intelligence sufficient to insure a proper treatment by mercury being carried out can be rendered quite innocuous to the community at large in a very short space of time. The result of the method must unquestionably be a rapid diminution in the number of fresh cases within a very short period.

But the triumph of this new remedy appears to be in the ulcerous forms of tertiary syphilis and in early malignant syphilis, — just where we most needed it, as many of these cases either resist mercury altogether or yield to its action in a very slow manner. As the writer says: "It seems as though the deeper and more destructive the lesion, the quicker the cicatrization; the greater the resistance shown to mercury and iodism, the more brilliant the results from 606." In many cases of visceral syphilis its effect is equally satisfactory, and in particular many ocular forms can be treated in this way with most encouraging results. Syphilis of the nervous system is still a debateable ground. Ehrlich does not cease to advise caution where there is organic trouble of the central nervous system; in fact, he would apparently prefer that at least for the present the remedy should not be used with this category of patients at all. Some physicians, however, have passed over this warning and have published results that have been satisfactory. Possibly the unsatisfactory ones have not been brought into prominence! At any rate, there is considerable talk about a certain number of cases treated by 606 that have ended fatally.

The question of heredo-syphilis, before and after birth, is treated in this excellent review, as also that of its action on the spirochetæ themselves and on the Wassermann test. Several instances have been reported where, on the other hand, 606 failed to act altogether. There are already many cases of relapse after treatment, so that the vision at one time held before our eyes of the cure of the disease by a single injection will have to be relegated to the repository of lost illusions. The article finally treats of the accidents, light and serious, due to the treatment, and of the cases of death following it that have been published. My space, however, is limited and I must be satisfied with referring the reader to this painstaking and up-to-date review of the question.

The general impression resulting from the perusal of this article is that a valuable step in advance has been made, but that the millenium is not yet at hand. Our therapeutics of syphilis have been modified, but not revolutionized; the death knell of mercury and iodide is not yet ringing. To me really the most important side to the entire question, if experience bear out its accuracy (14,000 cases have been treated now, according to the latest statistics I have seen), is that mentioned above: its rapid curative action on the infectious element of syphilis, the mucous patch. "*S.*"

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 12, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,263	324	Waltham	2	1
Chicago	—	—	Pittsfield	10	2
Philadelphia	—	—	Brookline	2	—
St. Louis	—	—	Gloucester	10	—
Baltimore	—	—	North Adams	8	2
Cleveland	—	—	Northampton	11	1
Buffalo	—	—	Chicopee	3	2
Pittsburg	—	—	Medford	10	—
Cincinnati	—	—	Beverly	4	—
Milwaukee	—	—	Leominster	4	1
Washington	—	—	Hyde Park	4	0
Providence	—	—	Melrose	3	1
Boston	181	38	Newburyport	6	—
Worcester	48	15	Revere	4	2
Fall River	36	18	Westfield	6	—
Cambridge	34	8	Woburn	6	1
Lowell	36	15	Peabody	3	1
New Bedford	30	13	Marlboro	1	0
Lynn	28	5	Attleboro	2	2
Springfield	35	9	Adams	4	3
Lawrence	—	—	Clinton	5	3
Somerville	—	—	Gardner	3	1
Brockton	12	7	Milford	—	—
Holyoke	14	7	Watertown	4	1
Malden	11	2	Plymouth	—	—
Chelsea	8	3	Southbridge	5	1
Newton	9	2	Weymouth	—	—
Salem	14	1	Framingham	4	2
Haverhill	8	1	Wakefield	—	—
Fitchburg	—	—	Webster	3	—
Everett	8	2	Arlington	3	—
Quincy	—	—	Greenfield	5	1
Taunton	15	3			

CHANGES IN THE MEDICAL CORPS U. S. NAVY DURING THE WEEK ENDING NOV. 19, 1910.

SHOOK, F. M., passed assistant surgeon. Detached from the Naval Medical School, Washington, D. C., and ordered to duty at the Naval Hospital, New York, N. Y. Nov. 12, 1910.

SOCIETY NOTICES.

THE NORFOLK DISTRICT MEDICAL SOCIETY.— A regular meeting of the Society will be held at Masonic Temple, 171 Warren St., Roxbury, Tuesday, Nov. 29, at 8 o'clock. Telephone, Roxbury 22753. Business; Communication: "The Use of Obstetric Forceps in Posterior Positions of the Occiput," Edward P. Starbird, M.D. Discussion opened by Frederick L. Good, M.D. Refreshments after the meeting.

BRADFORD KENT, M.D., *Secretary*,
798 Blue Hill Ave., Dorchester.

NEW ENGLAND BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION.— There will be a meeting of the New England Branch of the American Urological Association at the Boston Medical Library on Tuesday, Nov. 29, at 8.15 P.M. Program: (1) Demonstration of patients. Reports of cases. Demonstration of specimens and instruments. (2) Papers on tumors of the bladder: (*a*) "Pathology and Prognosis," Dr. Wm. F. Whitney. (*b*) "Some Clinical Aspects Based on a Series of Personal Cases," Dr. Lincoln Davis. (*c*) "The Transperitoneal and Suprapubic Operations," Dr. C. L. Scudder. (*d*) "The Intravesical Operations," Dr. Horace Binney. Discussion.

R. F. O'NEIL, M.D., *Secretary*,
379 Beacon St., Boston.

NEW ENGLAND ASSOCIATION FOR THE EDUCATION OF NURSES.— The fall meeting of the New England Association for the Education of Nurses will be held in the John Ware Hall of the Medical Library Building, 8 Fenway, Boston, Mass., on Wednesday, Nov. 30, at eight o'clock in the evening. The topic of the meeting will be "The New Registration Law; What It Means and Its Advantages." The members of the Massachusetts State Board of Registration will be the speakers of the evening. The public is cordially invited to attend and take part in the discussion.

RECENT DEATHS.

DR. FRANK N. LEWIS, who died on Nov. 13 in New York City, was born in 1857 at Burlington, Vt. He was an academic and medical alumnus of the University of Vermont. After serving as an interne at the Mary Fletcher Hospital, Burlington, Vt., at the Brooklyn Eye and Ear Hospital, and at the New York Eye and Ear Infirmary, he settled in practise in New York City in 1888. He became instructor in ophthalmology at the New York Post-Graduate Medical School, and was visiting surgeon and later executive surgeon at the Manhattan Eye, Ear, and Throat Hospital. He was a member of the American Medical Association, of the New York State Medical Society, of the New York Academy of Medicine, of the American Ophthalmological Society, and of the New York Ophthalmological Society. He is survived by his widow.

DR. JAMES ROSS WAGGENER, who died at Brookline, Mass., on Nov. 17, was born in Kentucky in 1846. On Sept. 12, 1872, he entered the United States Navy, in which he became medical director, and on Jan. 20, 1903, was commissioned captain. Since his retirement on May 6, 1907, he had lived in Brookline.

DR. PLACIDO FERRATI, who died in Worcester, Mass., on Nov. 16, had practised medicine in that city since 1905. He graduated from the Tufts Medical School, Boston, in 1902.

DR. DANIEL WAYLAND JONES, who died in Boston on Nov. 18, was born at Ashburnham, Mass., on Jan. 14, 1829. He received the degree of M.D. from the University of New York in 1852, and for ten years thereafter practised medicine in Medfield, Mass. He then went to Philadelphia for a time, and in 1871 and 1872 traveled and studied in Europe. On his return he at first settled in Newton, Mass., where he served for a time as city physician. In 1878 he came to Boston, where he continued in practise until his retirement in 1894. During his later years he had made a specialty of diseases of the rectum. He was a member of the American Medical Association, The Massachusetts Medical Society, and the Massachusetts Medical Benevolent Society. He was a widower.

DR. THEODORE R. BURGTORF, a well-known physician of the Borough of the Bronx, New York City, was shot and killed by his wife as he lay sleeping beside her early in the morning on Nov. 14. Mrs. Burgtorf then shot herself twice in the abdomen, and is in the Fordham Hospital, with some chance of recovery, it is stated. She admitted the shooting, saying that she was crazed by pain, which she could endure no longer, and was prompted by a desire not to leave her husband behind. For a long time she had been suffering from tic douloureux, and some three years ago, in a paroxysm of pain, she attempted to kill herself and her son. Three months ago she underwent an operation, and it had been thought that she was improving. Dr. Burgtorf was fifty-five years old and a native of Germany. He was graduated from the Long Island College Hospital, Brooklyn, in 1894, and was very successful in practise. He is survived by one son, Adolph, twenty-four years of age, a graduate of the New York College of Dentistry.

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Reprint from Public Health Report No. 49. The Present Organization and Work for the Protection of Health in the United States. By Walter Wyman. 1910.

The New Remedies for 1909–1910. American Druggist Handy Guide, No. 8. Reprint.

Notes and News. Mr. Balfour on Cancer Research. Reprint.

Treasury Department. Public Health Bulletin No. 39. Studies upon Leprosy. By Donald H. Currie and Harry T. Hallman.

Treasury Department. Reprint from Public Health Reports No. 50. The History, Development and Statistics of Milk Charities in the United States. By J. W. Kerr.

Department of Commerce and Labor. Bureau of the Census Bulletin No. 108. Mortality Statistics, 1909.

Original Articles.

THE DOCTRINE OF VITALISM IN MEDICINE.*

BY M. G. SEELIG, M.D.,
Assistant Professor of Surgical Pathology in St. Louis University.

BETWEEN living and non-living matter there is the fundamental difference that in living matter there is always something else present in addition to the properties found in non-living bodies. This additional "something" endows living bodies with a "tendency to disturb existing equilibria, to reverse the dissipative processes which prevail throughout the inanimate world, to store and build up where they are ever scattering and pulling down; the tendency to conserve individual existence against antagonistic forces, to grow, and to progress, not inertly taking the easier way, but seemingly striving for the best, retaining every vantage secured and working for new ones." This quotation from Professor Ward's, "Naturalism and Agnosticism" serves excellently the twofold purpose of defining life and of emphasizing the "something additional," which, for want of better understanding, we call "vital force." Vitalism concerns itself solely with the abstract thought that there is inherently resident in living matter, a directing element or force that is not under the control of the known laws of physics or chemistry. Vitalism is the *testimonium paupertatis* of the scientist, his credo expressed in terms of honest agnosticism.

Antipodal to this doctrine of the inscrutability of the fundamental basis of life stands the dogma of the non-vitalist: that since many of the phenomena of life conform with the laws underlying the properties and actions of inorganic bodies, we have every reason to assume that the sum total of activities constituting life is as much subject to the laws of chemistry and physics as is the sum total of activities of gunpowder or of the threshing machine. According to this view the human body is a machine, not only in the sense that its activities are directed towards a purposeful end, but also in that each step towards the accomplishment of this end is predicated upon a definite axiom. The sum total of these axioms constitutes the great body of natural law. There are, says the non-vitalist, many axioms still in the crucible of proof, many still unguessed; but the result of the final assay will invariably be the disclosure of a principle as essentially mechanical, physical or chemical as are the already established laws of the inorganic world. The assumption of an intangible, immeasurable vital force is, according to the doctrine, unnecessary and, to say the least, uninspiring.

To attempt to set a measure of comparative value on these two doctrines of vitalism and mechanism would inevitably lead us on to the treacherously thin ice of metaphysical argumentation. Our interests, I take it, are primarily medico-historical, and out of respect to those limited interests, the moot points of static and dynamic teleology, abstract causality, things in themselves, perception, the ego and consciousness must be left tenderly in trust with the philosopher and psychologist. This sacrifice to the needs of medical history should not be made, however, without full consciousness that the trust funds are valuable assets, subject to claim on demand. If justification be required for such brusque and autocratic refusal to incorporate philosophy with history, it can be offered in an exceptionally concrete fashion. This small pamphlet of nineteen pages by Prof. A. Bier, entitled "Ueber die Berechtigung des Teleologischen Denkens in der Praktischen Medizin," represents a philosophical defense of associating the phenomena of disease with the idea of purposefulness; the redness, pain, swelling and heat characterizing inflammation are all expressive of nature's purpose to overcome the disease. Bier characterizes this type reasoning as teleologic and emphasizes a professed unwillingness to camp with the vitalists and their mixed company of "unklaren Köpfe und Mystiker." This large volume of three hundred and fifty pages by Dr. Thoele, of Hannover, written in answer to Bier, not only charges him with being tautological, mystical and unscientific, but actually refers these charges to the fact that he has reasoned faultily on a vitalistic basis. Our justification, then, for dismissing philosophy must rest largely on the same basis as Osler's reason for avoiding "thorny theological questions," namely, the layman's natural desire to seek shelter under the wing of authority. While the authorities are settling their terms, indulging in their polemics and establishing their compromises, the medical historian may exercise his uncommon privilege of surveying the arguments without specifically entering them.

Let the survey begin with Aristotle — surely an appropriate start; for Aristotle occupies the position of an apostle both in matters medical and philosophical. His two important works, "The History of Animals" and "Concerning the Soul" served to establish a medico-philosophical autocracy of thought that held sway down through the Middle Ages. Many of his fundamental conceptions in anatomy and physiology, we know, are incorrect, but the basis of his reasoning is eminently sound. "It demands most careful examination," he says, "to determine in just what fashion an animal or plant develops from seed; for surely everything that has occurred must occur from something, through something and as something; but after all, the important factor is not so much *out of what* the parts develop as *through what* [force] they develop." Driesch construes the Aristotelian doctrine regarding development in such fashion that the soul is made to vivify the semen, thus preparing it to coalesce properly with the female element. This is almost undefiled vitalism. There is much in Aristotle, despite Driesch, that forces one to recognize his appreciation of the similarity existing between ontogeny and human craft and art work; much, in other words, that labels him as a mechanist. The interpretation of what he

*Read before the Boston Society for Medical Improvement, Nov. 14, 1910.

says is often difficult and obscure, but whether Driesch be right or wrong in the construction he places upon Aristotle's doctrine of development, and whether it be permitted any one to assert dogmatically that Aristotle was or was not a vitalist, it is certainly true that the old philosopher, dissatisfied with the purely mechanical explanation of life, felt the inner impulse and necessity of wrestling with the question of the rationality of existence; he groped about for something higher than the purely mechanical, and, as a result of his groping, he laid down, in rather unclear fashion, it is true, a problem which Eucken, in his recent Noble prize essay, characterizes even to-day as "torturing and pressing in that what we held a sure possession now becomes an object of weary search."

In reality, Aristotle occupied a middle position between the pure idealism, pantheism if you please, of Thrales, Empedocles and Plato, and the materialistic mechanistic doctrine of Democritus. He enjoyed the privilege, however, of working in a more clarified atmosphere than these, his predecessors, for Hippocrates before him had firmly established the essential difference between the organic and inorganic worlds. The Hippocratic doctrine of pneuma is important, not only because it is the earliest medical explanation of the basis of life, but also because, appropriated as it was by Galen, it maintained authority as a doctrine for fifteen centuries. This idea of pneuma as promulgated by Hippocrates is such an inextricable snarl of possibilities as to defy unraveling. To one it appeals as a material something comparable to oxygen; to another as an impalpable, intangible, sole-animating substance, theoretically essential to an understanding of life processes; and, accordingly as one construes it, he is mechanist or vitalist. From an historical point of view, this alone is significant: that, following Aristotle in succession, the Alexandrian schools of medicine and the school of methodists represented by the Asclepiadists, added not one whit, not even by way of subtlety, to the views of Hippocrates and Aristotle. Likewise, when Greek medicine was transplanted on Roman soil, and reinvigorated by Galen, nothing essential was added to the former doctrines concerning the vital principle of life. Galen's classification of pneuma or spiritus into "animal spirits," "vital spirits," and "natural spirits," with their subordinate "attractive," "propulsive," "retentive" and "secretive" faculties, adds nothing either new or practical, serving merely to emphasize again the inevitable groping for light, the restless search for a final cause.

After Galen — the deluge. Roman medicine declined, Rome fell, and the interregnum of intellectual darkness set in. Mysticism, superstition, folly, loose thinking, mad-cap doctrines and insane dogmas were the orders of the days. In the general tottering and fall, medicine crumbled with the rest. The Middle Ages knew no vitalism, no mechanism, no nothing; for all these years the field of thought lay fallow. In course of time, however, the fallow field began to bear fruit as fallow fields always will. The renaissance was inaugurated by Columbus, Gutenberg, Copernicus and Luther, during the fifteenth and early sixteenth centuries. Medicine mirrors the reawakening during the sixteenth century in such names as Vesalius, Fallopius, Servetus, Eustachius and Paré, and in such facts as the founding of ophthalmology, and the laying claim to botany and chemistry as subservient to medicine. With the announcement of Harvey's discovery, medicine emerged from the period of renaissance and started on a route of advance which, for directness of course was never before equalled. From now on, practically every name of historical significance in medicine stands for an individual who both promulgated a new scientific theory or fact and concerned himself in some fashion with the doctrine of vitalism, either by way of disclaiming or asserting belief in vital force as a ruling element in the organic world.

Before entering farther in the chronological discussion of the medical history of vitalism, it will be of more than passing interest to note just how the problem assumed an importance so great as to protract a discussion for three centuries. There is a German word which characterizes the swing and authority of a movement of thought as a "tendenz." Such a tendenz, whether it manifest itself in the arts or in the natural sciences, is almost invariably the outcome of the preestablishment of a philosophic doctrine; for it is as impossible to restrict the influence of an Aristotle, a Kant, Nietzsche or Spencer to the domain of pure philosophy as it is to limit the laws of gravity to falling apples. Let us, for example, consider Bacon and Descartes, the two men who did most to revolutionize philosophical thought in the seventeenth century. In reality, these two philosophers did not work simultaneously, — Descartes superseded Bacon, — but their combined effort resulted in the establishment of the doctrine that all natural phenomena are made up of scales of facts, the more complex ones resting for their explanation upon the simpler ones, but all of them governed by primary laws. Bacon enthroned doubt, Descartes consecrated it, and then each proceeded to the development of his own system. Bacon's system was in itself a machine, — an organum, — constructed so as to enable the mind to overcome obstacles, to open vistas, to riddle seemingly unsolvable problems. He pointed out the supreme importance of observation and induction as the essential elements in the final solution of primary laws. His insistence was upon verification. Descartes, in his turn, strove to apply to the human body mathematical theorems similar to those used in reaching his famous conclusions concerning light refraction. Underlying his mathematics and his philosophy was the fundamental proposition that the human body is a machine. And so, Descartes and Bacon were instrumental in setting in motion a tendenz that colors medical theories to-day even more deeply than three centuries ago.

Beyond all question of doubt, the establishment

by Descartes and Bacon of the doctrine of primary governing laws in nature did much to correlate the phenomena of the human body with activities of the inorganic world, activities brilliantly studied at this very time by Galileo and Newton. In so far as this correlation holds true, medicine, in common with the philosophy of the time, must be regarded as mechanistic in tendency. The iatrochemical and iatrophysical schools, developed during this period under Sylvius, Willis, Sydenham, Santorini, Baglivi, Bellini and others, mirror most clearly the tendency of the times to reason along lines of pure materialism. But just as in the philosophy of Descartes the machine teaching had a counterpoise in the shape of an extra-corporeal force, — the God element, — and just as in the system of Bacon, with all its rigid adherence to the observation of natural law and order, there was nevertheless a hearkening to the idea of "divine inspiration," so, too, in the medicine of these times, the doctrine of pure mechanics was opposed by a dogma more spiritual in tone. Van Helmont, for example, impressed medicine deeply with his theory of Archeus — an extracorporeal force practically unlimited in its regulative powers. If exception be taken to the introduction of Van Helmont's views, on the ground that they were so saturated with piety and mysticism as to be valueless, we still shall not have to travel far afield in order to deduce that medicine was not wholly mechanistic in her trend. William Harvey, in his epoch-making discovery, demonstrated in a fashion never since excelled, the fundamental interdependence of body function and the laws of mechanics. One cannot avoid the conclusion, however, that Harvey's belief was firm in the existence of a force above pure mechanics, a "something over" after mechanics have accounted for everything probable. In his "Exercitationes de Generatione Animalium" he states that the developing fetus is a natural body, animated, however, by a soul; it is the product not of the uterus, but of the soul (*non opus uteri sed opus animae*). The development of the human body is the work of an "opifex," and is the result of the existence in the germ of a "principium," which, for the want of a better term may be called "primordium vegetabile," "and he," says Harvey, "who unqualifiedly correlates the body with the idea of a machine, is not a proper judge [*aequus aestimator*] of nature." On the basis of such excerpts as these, Driesch classifies Harvey as an "unbefangener Vitalist."

During the eighteenth century, medicine, in common with the other sciences, underwent a general process of clarification. The philosophy of Locke, Voltaire, La Mettrie and Leibnitz furnished the necessary thought stimulus to awaken the labors of such men as Bernoulli, Galvani, Volta, Priestly, Lavoisier, Linnæus and Buffon. The reaction in academic medicine was furnished by Albrecht von Haller, Valsalva, Albinus, Camper and Winslow, and in practical medicine chiefly by the famous trio of systematizers, — Hoffmann, Stahl and Boerhaave. Bernoulli, for the pure scientists; Haller, for the biologists, and Boerhaave, for the practical medical men, referred the phenomena of life back to "spiritus animales"; Stahl, the father of "animismus," located the regulation of all organic activity in "anima," the ultimate principle of life. Probably the most interesting feature of this era is the evident tendency to unravel the problems of organic life by brilliant experimentation, to construe phenomena as forces, and yet, withal, to recognize the existence of a higher force (spiritus animalis, phlogiston, anima), whose very definition was impossible. Dismiss from consideration these attempts to interpret the final principle, and the era is one of mechanistic activity; concentrate on the thought devoted to explaining the essence of life and we are dealing with vitalists striving to interpret the ultimate. It is little short of fascinating to contemplate the confusion of thought and the activity of strife that went hand in hand with Leeuwenhoek's studies of spermatozoa, Swammerdam's and Malpighi's embryological studies and the work of Reaumur and Spallanzani on regeneration. Bound up in the arguments regarding evolution and epigenesis, and in the theories of the ovulists and animalculists, there is the ever-present confusion due to ignorance of final causes combined with an almost insatiable desire for "more light." Naturally studies of this sort, approaching as they do scientific bed rock, compel one to declare either for or against the existence of a vital inherent formative force. If he accepts the existence of such a force his task is comparatively simple, consisting merely in a declaration of belief such as Casper Wolf makes in his *vis essentialis*. If, on the other hand, he denies the existence of such a force, he must either "stack arms" or else conceal his uncertainty in a confused terminology such as that used by Weismann in his elaboration of biophores and determinants.

If space permitted, it would be interesting from a purely historical point of view to survey the actual systems of medicine that owed their origin in large part to this eighteenth century discussion of vital force; to show, for example, how Cullen, Brown, and, through Brown, our own Benjamin Rush, Sauvages, Rasori and Glisson worked under the direct stimulus of the immediately preceding age; but the detailed study of system must give way to the larger purpose of tracing the influence of vitalism through the later period of medical history. Indeed, it is scarcely to the point to consider Blumenbach, who, toward the end of the eighteenth century, summed up the entire subject in two small monographs, thus earning for himself the distinction of placing the doctrine of vitalism on a basis of scientific rationalism. The important consideration is this: that during the discussion that began with Harvey early in the seventeenth century and ended with Blumenbach late in the eighteenth century, medicine was making steady continuous progress. An inventory shows, as gains to medicine, the circulation of the blood, the development of embryology, the

demonstration of bacteria, the birth of histopathology, the rational beginning of physiology and a tremendous advance in the systematic study and development of anatomy and clinical medicine. On the other side, philosophy may claim the expansion of Harvey's original idea of vital principle or "primordium vegetale" into Blumenbach's conception of irritability, contractility, sensibility and nisus formativus (*bildungstrieb*) as four coequal representatives of vital force. If we be granted the privilege, for argument's sake, of assuming that Blumenbach's quartet clarified the philosophic atmosphere, we can even then only say that while the atmosphere was clarifying, medicine was thundering ahead.

Indeed, nothing illustrates more clearly the inherent tendency of practical and scientific medicine to establish its own equilibrium, to set its own independent pace of advancement, than the fact that steadiness was secured and advance accomplished during this era, side by side with the promulgation of Kant's doctrines regarding judgment and pure reason, and Schelling's and Hegel's views on "Natural Philosophy." Baas states that if Kant's views regarding the admission only of mathematical reasoning in medicine had gained more influence, the science would have been reduced to a maze of theory. As regards Schelling and Hegel, it suffices to say that their philosophy has been made responsible for such possibilities in medicine as mesmerism, homeopathy and rademacherism. It is difficult to determine whether Schelling and Hegel were expounders of a rational or of a mystic vitalism, and whether Kant was vitalist or not. It is certain, however, that Humboldt, Liebig, Von Baer, Johannes Mueller, Schwann, Schleiden, DuBois Reymond, Helmholtz and Claude Bernard were some of the men who worked under the influence but not under the spell of the new natural philosophy. It is equally certain that Humboldt, Liebig, Van Baer and Mueller were champions of vitalism, and that Schwann, Schleiden, Reymond, Helmholtz and Bernard were champions of the machine theory of life. "Lebensrichtung," "lebensreiz," "primum movens," "vitalen eigenschaften" are some of the terms culled from Liebig, Von Baer and Mueller, indicating more clearly than could a lengthy discussion the complexion of their belief in an underlying vital force.

The middle era of the nineteenth century furnished two epoch-making discoveries that rudely upset the philosophical, or perhaps better said, the metaphysical basis on which the vitalism of these men rested. Following the enunciation of Robert Mayer's doctrine of the conservation of energy, and Charles Darwin's theory of natural selection and adaptation, medical thought became even more emphatically mechanistic in tone than during the old days of the iatromechanical and iatrochemical schools. Helmholtz dealt sledge-hammer blows to any doctrine that controverted pure mechanics as a sufficient and all-satisfying explanation of vital processes, and, curiously enough, he based his reasoning on the premise that Mayer's doctrine of conservation of energy established the identity of organic and inorganic forces, leaving no room or place for a purely speculative vital force. Schleiden's and Schwann's discoveries regarding cell life tended, naturally, to strengthen the belief in the power of experiment and study eventually to furnish all the details of a complicated living machine. DuBois Reymond, in his classical and now famous *Ignorabimus* dissertation, further strengthened the materialistic trend first by an avowed *ignoramus* regarding many knotty problems in science, an emphatic *ignorabimus* regarding the possibility of ever explaining the power of thought, and a clear enunciation of his belief that the resort to vital force was futile, because "force" is merely a measure and never a cause. Claude Bernard threw all the weight of his authority against the admission of vitalism in science or medicine, in his "Leçons sur les Phénomènes de la Vie." "What is this tremendously powerful force," he asks, with some heat, "which can accomplish nothing, acting alone?" Against such onslaughts as these, even by the admission of so ardent a vitalist as Driesch, the light of vitalism flickered out! At this stage of medical history it was that there developed the "deadly hatred of philosophy," an era represented by the old Vienna school, a group of men to whom an individual represented a conglomerate mass of functionating organs, and whose absorbing interest was the post-mortem verification and explanation of disturbed function. No philosophy, no speculation, precious little therapy, — just the working out of laws!

Such an attitude of mind is apt to prove and, indeed, did prove to be a bit unsatisfying. All that was necessary to stimulate the spirit of unrest was admissions by such men as His, Goette and Baer for the embryologists, that rational morphology was not to be explained entirely on a purely mechanical basis; the statement by Bunge for the physiologists that, although the theory of mechanics may in time prove satisfactory, just now it is not sufficient to meet the demands, and, finally, the stand taken by Virchow, for the pathologists, that from the purely practical, as contrasted with the scholastic and metaphysical point of view, "sind wir auch in der Pathologie vitalisten." Virchow stated bluntly that he felt compelled to believe that the essential basis of life is a force that must be differentiated from the molecular force of the inorganic world. If such a belief should seem to reflect upon him as a man of science, he could only answer in the words of Chauffard, "Peu d'anatomie pathologique éloigne du vitalisme, beaucoup d'anatomie pathologique y ramene."

It was this new swing of authority that re-established vitalism on the fairly firm basis that it maintains to-day, and it seems that the strength of the vitalistic argument is mirrored by the reflected light from names of prominence in the world of science. Thoele, for example, has been able to classify many of the later-day medical men of prominence into groups of vitalists, each

group representing a medical specialty: Pflueger, Weigert, Verworn, Rubner, Ribbert as the group of physiologists and pathologists; Roux as the head and master of the group of embryologists, with Hertwig as coadjutor; Ehrlich, Buchner, Pirquet and others as representing the bacteriologists, and Goldschneider, Edinger and Bier for the clinicians.

But what shall we say to the fact that among these names, despite the assurance of Thoele, there are men who vehemently disclaim vitalistic allegiance? Our answer must be the statement already furnished, that our object merely is to trace consecutively the influence upon and dominance in medicine of thoughts relating to final principles and causes. To attempt to do more than this would mean entering the lists of what Virchow very properly called a *Wortstreit*. Cull over the very small part of the literature on vitalism mentioned this evening, and you will find no less than a score of substitute terms to take the place of the expression "vital force"; each substitute is clothed with its own specific and connotative qualifications, which must, of necessity, be conceded, if orderly and conclusive argumentation is to result, but which, as a matter of fact, are never conceded by any two parties to the argument. It is truly difficult to determine who is vitalist and who not; indeed, there is more than a pale haze of obscurity enveloping the very fundamental terms of mechanism and vitalism. How natural to expect, therefore, that even among the vitalists themselves there should be contending schools. Strecker and Pauly as disciples of the type of vitalism laid down by Bunge stand out in rather sharp contrast to such vitalists as Driesch, Reinke and Schneider — a contrast that has been softened rather than explained away by the work of Uexkuell, of the present-day Heidelberg school of vitalists. Uexkuell's volume came off the press late in 1909. It leaves the problem very much as it found it.

How unsatisfactory a survey of this sort is, no one realizes better than he who makes it, particularly if he makes it with the futile purpose of reaching a final definite conclusion. Satisfaction must come to the medical man solely through the consciousness of having gained an intimate acquaintanceship with the details of a problem, perplexing, it is true, unsolved, and yet, withal, intimately bound up with the advance of his own particular brance of science. Those of us who feel the inner impulse to unravel the complex phenomena of disease are confronted constantly with the ultimate unknowable. However we may construe this ultimate principle, — either as a molecular force or as a force eternally beyond the ken of man, — no one may cavil at our belief, provided we do not allow it to paralyze our efforts.

The danger for science that lurks in vitalism is the tendency to supplant belief in an incomprehensible force by worship of that force. For some of us, the very idea "unknowable" carries with it enough of the mystic to "put my reason to St. Paul's sanctuary. Who can speak of eternity without a solesism or think thereof without an extasie?" ("Religio Medici.") The danger that lurks in the mechanistic doctrine, as has been stated by our own William James, is that "it is essentially a view of things from the outside and knows nothing of how they happen." Vitalism furnishes a ready-made answer to an all-perplexing question. Mechanism suggests, by analogy to the inorganic world, a method of solving perplexities; but, as Taine has pointed out, the method means the creation of a faith by every individual, for himself, thus subjecting himself to every curiosity and to every pain.

What more natural, with William James in our mind, than that those of us who are floundering in doubt should reach out towards a practical system of thought that measures the problem for us by its utility, and emphasizes the spirit of compromise by teaching that truth at any particular time is only provisional and likely to be converted into other forms of truth? For me, just such a compromise is furnished by the Italian philosopher Rignano, when he states that "whether one clearly recognizes it or not, it is just this search for the nature of the vital principle which properly constitutes the principal object and final goal of all biologic study in general." With this definite goal in view, with the application of proper, orderly and logical methods of investigation, it becomes immaterial whether we constitute ourselves a Charles Gradgrind, "a man of realities, a man of facts and calculations. A man who proceeds upon the principle that two and two are four, and nothing over, and who is not to be talked into allowing for anything over. With a rule and a pair of scales and the multiplication table always in his pocket, sir, ready to weigh and measure any parcel of human nature, and tell you exactly what it comes to," — or whether we believe with Burton that it is merely necessary to

> "Grant an idea, primal cause, the causing cause, why crave for more?
> Why strive its depth and breadth to mete, to trace its work, its aid to implore,
> Unknown, incomprehensible, whate'er you choose to call it, call;
> But leave it vague as airy space, dark in its darkness mystical."

PRESENT KNOWLEDGE OF THE LAWS OF HEREDITY.*

BY W. P. GRAVES, M.D., BOSTON.

GERMINAL CONTINUITY.

The laws of heredity generally accepted at the present day are based fundamentally on the theory of germinal continuity. This theory divides the cells of multicellular organisms into two classes called the *somatic* cells and the *germ* cells. The somatic cells constitute all the differentiated cells which make up the structure and

* Read before the Bigelow Club, Oct. 12, 1910.
Although many authorities have been consulted in the preparation of this paper, the writer is chiefly indebted to Prof. J. A. Thompson, whose writings on heredity are especially clear and illuminating to the beginner.

various organs of the body. They have only a temporary existence and become disintegrated on the death of the organism. The other class of cells, namely, the germ cells, are the reproductive cells and are represented by ova in the female and spermatozoa in the male. These cells, or the substance which constitutes them, remain undifferentiated throughout the life of the organism. Each one of them carries condensed in its nucleus all the heritable qualities derived through the parent ovum from preceding generations, and under the stimulus of fertilization is capable of passing this inheritance on to succeeding generations. Thus the germ cells possess potentially the quality of immortality. The theory of germinal continuity has been based on facts observed in the development of certain lower organisms. Boveri has shown that the fertilized ovum of the thread worm of the horse divides into two cells, one of which becomes the *parent of all the somatic cells*, and the other becomes the *parent of all the germ cells*. Similar observations have been made in a number of worms and insects. In most cases, however, this distinct separation of the somatic and germ cells at the first division cannot be recognized, and a morphological continuity of the germ cells from ovum to ovum cannot be followed. In order to fill in this gap in our knowledge as to the exact nature of the germ cells in most organisms between birth and maturation, Professor Weismann, the most distinguished of modern evolutionists, has devised the hypothesis of the *germ-plasm*, and his views are at present generally accepted. Weismann's theory may be summarized as follows.

(1) In each development, a portion of the specific germ plasma which the parent ovum contains is not used up in the formation of the offspring, but is reserved unchanged for the formation of the germinal cells of the following generations.

(2) What is actually continuous is the germ plasm " of definite chemical and special molecular constitution." A continuity of germinal cells is now rare; a continuity of intact germinal plasma is constant.

(3) This germ plasm has its seat in the nucleus, is extremely complex in structure, but has nevertheless an extreme power of persistence and enormous powers of growth.

(4) The germ substance proper must be looked for in the chromatin of the nucleus of the germ cell.

(5) The splitting up of the substance of the ovum into a somatic part, which directs the development of the individual, and a propagative part, which reaches the germ cells and there remains inactive, constitutes the theory of the continuity of the germ plasm. (From J. A. Thompson's " Heredity.")

Thus the germ cells form a distinct continuous lineage entirely apart from the somatic cells, and are not to be regarded in any sense as having been produced by the somatic cells. The parent, therefore, whose individuality represents a collection of mortal somatic cells, is not in a strict sense the producer of his offspring, but only the temporary custodian of a portion of the immortal germ plasm. " The animal body is in reality a vehicle for ova, and after the life of the parent has become potentially renewed in the offspring, the body remains as a cast-off envelope whose future is but to die." (Sir Michael Foster.)

Noll eloquently writes: " The vital capacity of the cells of the functioning permanent tissue is always limited in time. Without limit, on the contrary, and never finding a natural close, the vital power of the germ plasm is preserved. This substance does not age. It produces new passing individuals, but it is permanently preserved in their progeny; it is always productive, always growing young and increasing. Thousands upon thousands of generations which have arisen in the course of millions of years were its products, but it lives on in the youngest generations with the power of giving origin to coming millions. The individual organism is transient, but its germ plasm, which produces the immortal tissue, preserves itself imperishable, everlasting and constant." [1]

A graphic conception of the theory of germinal continuity can best be given by Wilson's familiar diagram (Fig. 1).

PHYSICAL BASIS FOR THE LAWS OF HEREDITY.

It has long been known that the new individual results from the union of only two germ cells, namely, the ovum of the female and the spermatozoon of the male, but the nature and organization of these germ cells is a matter of comparatively recent knowledge and one of surpassing interest. It is not within the scope of this paper to review the different modes of reproduction, namely, the budding, division and sporulation of unicellular organisms, nor, in multicellular organisms, the rare cases of true hermaphroditism and parthenogenesis. We can refer here only to sexual reproduction, viz., the union of two germ cells of opposite sexes, so-called amphimixis. The ovum is a sphere of comparatively large size containing living matter which is called cytoplasm, together with a certain amount of nutritive material. It contains a central kernel or nucleus which is a network of delicate threads carrying minute masses of stainable material which is called the chromatin. This chromatin under certain forms of activity separates into definite

[1] In this quotation the expression " germ-plasm " has been substituted for " embryonic substance " which occurs in the original.

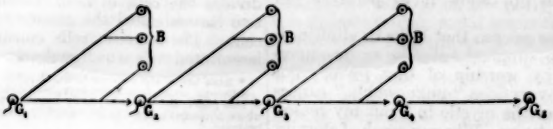


FIG. 1.

small rod-like masses which are called chromosomes. All the cells in the body of a given individual contain exactly the same number of chromosomes, and every individual of a given species possesses the same number of chromosomes in his cells.

The spermatozoon is much smaller than the ovum, and its size may be less than one millionth of the egg of the corresponding species, the egg under such circumstances being swollen with nutritive material. Most of the cytoplasm of the spermatozoon resides in the tail, the function of which is purely one of locomotion. The nucleus is situated in the head and usually contains exactly the same number of chromosomes as does the corresponding ovum. While the ovum is passive, the spermatozoon is active and motile.

As will be shown later, all the characters of inheritance probably reside in the chromosomes, and it is, therefore, to a study of these remarkable bodies that we must turn in order to have a clear understanding of the laws of inheritance. As has just been said, every species of plant or animal has a fixed and characteristic number of chromosomes "which regularly recur in the division of all of these cells; and in all forms arising by sexual reproduction the number is even." (Wilson.) For example, sharks have thirty-six chromosomes; the mouse, salamander, trout and lily have twenty-four; the ox, guinea pig, man and the onion have sixteen. The even number of chromosomes is due to the derivation of one half the number from each parent. In 1883 Van Baneben made the remarkable discovery that the nuclei of the ripe ovum and spermatozoon contained each one half the number of chromosomes characteristic of the body cells. It has also been discovered that this reduction in the number of chromosomes takes place two generations before the formation of the definitive germ cells. This process is termed the *maturation* of the germ cells, and it is by this means that the number of chromosomes in a given species is kept constant.

The actual process of amphimixis, or the union of the ovum and the spermatozoon, and the future development by division of the ovum is too complicated a one to be described in this paper. It may briefly be said, however, that after the spermatozoon has bored its way into the ovum, the surrounding membrane becomes thickened and prevents the entrance of other spermatozoa. The chromosomes in the nuclei of the two united cells then split longitudinally, and the fragments from each cell pair off equally in opposite poles of the ovum in such a way that, when the daughter cells are formed by the division of the ovum, each daughter cell receives an exactly equal contribution from its paternal and maternal chromatic substance. Inasmuch, therefore, as the chromatic substance contains all the heritable qualities, it follows that the new individual receives an exactly equal inheritance from both his father and mother.

PROOF THAT THE NUCLEUS IS THE BEARER OF HERITABLE CHARACTERS.

It is generally accepted that the nucleus and not the cytoplasm of the germ cell transmits the heritable qualities of the individual. Arguments for this view are that the nuclear elements divide with an exact equality, while the cytoplasm does not; the important phenomenon of maturation takes place in the nucleus and not in the cytoplasm; the spermatozoon contains only a relatively small amount of cytoplasm, which is almost completely used up in the formation of its organ of locomotion; the ovum, on the other hand, contains a relatively large amount of cytoplasm, which apparently is used as nourishment during the early stages of development of the new individual.

Extraordinary experiments in artificial fertilization strongly corroborate this theory. Boveri dissected out the nucleus from the ovum of a sea-urchin. He then fertilized the enucleated ovum with the normal spermatozoon of another species. The offspring from this union resembled only its father.

Delage divided a sea-urchin's egg into two parts, one of which contained the nucleus. These two parts, together with a complete normal egg, were then allowed to be fertilized by spermatozoa of the same species. The normal ovum developed into a normal sea-urchin; the portion of the dissected ovum which contained the nucleus developed into a normal sea-urchin of smaller size; the portion of the dissected ovum without a nucleus developed, but incompletely. This experiment showed that fertilization can take place with only one nucleus, but that the full quota of cytoplasm is necessary for complete normal development. Loeb has caused the eggs of sea-urchins to develop parthenogenetically by changing the chemical composition of the sea water. In other words, he caused the sea-urchin eggs to grow without fertilization by a spermatozoon, the converse, therefore, of the experiments of Boveri and Delage.

These experiments show that there must be at least one nucleus present to cause development, and also that the nucleus of each germ cell, both male and female, contains all the elements for the production of a perfect individual of the species. They also go to show that the liberating stimulus which gives rise to the unfolding of a new individual is, in reality, a chemical reaction.

HEREDITY AND VARIATION.

The facts of heredity and evolution depend both on the tendency in species of like to beget like, and also on the tendency of species to continual variation. In complex organisms, although the offspring always bears a general resemblance to its parent, the two are never exactly alike. This tendency of the offspring to deviate from its parent forms the basis of evolution. The tendency to resemblance in type is termed the "inertia of species," and may be illustrated in the human species by the persistence of woolly hair in the negro, the slanting eyes of orientals, the oval face of the Eskimo or the characteristic nose of the Jews. Many animals have lived on unchanged for many millions of years. For example, the bony structure of the Lingula of to-day is exactly like the fossils of the Silurian ages.

The science of heredity is chiefly interested in the modes and character of changes in type which occur in species. These changes are divided into two important classes, referable to the two classes of cells into which the organism is divided, i. e., the somatic cells and the germ cells. Those changes which affect the somatic cells are termed *modifications*, and those changes which take place in the germ cells are called *inborn variations*. This classification is of extreme importance in the understanding and practical application of the laws of heredity, and for that reason it is necessary to give special attention to its consideration.

MODIFICATIONS.

From the day of its actual birth, i. e., the division of the fertilized mother ovum, the new being is in a state of continual adjustment to a complex environment. The organism possesses a normal amount of elasticity, and, after ordinary adjustment, as Thompson well puts it, "like a bow unstrung rebounds to its previous state." Examples of such adjustment and rebound are the disappearance of sunburn after a summer vacation, the recovery from the effects of heat or cold or infectious diseases, etc.

In other cases, however, the environmental adjustments create a permanent structural change in the soma of the individual. In other words, "the limit of organic elasticity has been transcended," and the bow unstrung no longer rebounds to its previous state, but remains permanently warped. These permanent structural changes are termed *modifications*, or, more familiarly, *acquired characters*. Examples of modifications are the deforming of trees by the wind; the permanent tanning of the skin of soldiers in the tropics; occupation deformities; the small feet of Chinese women; immunity after contracting certain infectious diseases; the blacksmith's biceps, etc. The great importance of the consideration of modifications or acquired characters lies in the problem as to whether such modifications may be transmitted by heredity.

INBORN VARIATIONS.

In contrast with modifications which have to do only with the somatic cells, inborn variations have their origin purely in the germ cells. In other words, inborn variations include all differences in hereditary resemblance after all modifications have been subtracted. Examples of inborn variations are albinism in the negro; the appearance of extra digits, as in double-pawed cats; the long manes and tails of wonder horses. As to the transmissibility by inheritance of inborn variations there is no question.

To the evolutionist and biologist the analysis and study of inborn variations is of extreme importance, but the discussion of them can in this paper be only briefly alluded to.

Variations are divided into two classes, termed continuous variations or fluctuations, and discontinuous variations or mutations.

CONTINUOUS VARIATIONS OF FLUCTUATIONS.

Fluctuations are those small variations or deviations from type which occur frequently in every generation. They "amplify or lessen existing qualities without really changing their nature. They always oscillate around an average, and if removed from this for a time they show a tendency to return to it. They are inadequate to make a single step along the great lines of evolution, whether progressively or retrogressively; they do not form the raw material of evolution, as has often been supposed."

Most of the variations which we are accustomed to observe in man and the higher animals are of the fluctuating variety. The deviations from parental resemblance which we observe in our children, such as differences in height, mental acumen, athletic facility, appreciation of or indifference to music or literature, are all fluctuating variations. Deviations observable in our domestic animals which are so important to the breeder, such as speed in a horse, the shape of a dog's tail, special qualities of excellence in cows, hens, pigs, etc., are examples of fluctuating variations. By careful and rigorous artificial selection new types of species may be maintained so long as there is no slackening in the selection. As soon, however, as the selection is slackened the type reverts speedily to the average mean of the species. Darwin believed that new species were created by the natural selection of fluctuating variations, a process which, if true, would involve an enormous amount of time. Most modern biologists admit the possibility of some species having been evolved in this way, but the remarkable discoveries of Mendel and De Vries of the laws of inheritance in plants have, for the most part, completely changed the view of zoölogists with regard to the origin of species in this way, and the generally accepted opinion now is that most species have sprung into being by sudden bounds rather than by the slow creeping process of natural selection. The changes in such cases are supposed to be the result of what are called *discontinuous variations*, or variations which appear suddenly without any observable continuity with previous deviations.

DISCONTINUOUS VARIATIONS: OR MUTATIONS.

Variations of this kind were considered by Darwin and then rejected. The application of the theory of discontinuous variations to heredity forms the basis of the differences between the modern school of evolution and that of Darwin. Discontinuous variations have been named by DeVries, *mutations*, and it is important to become familiar with this term and its significance, as it appears constantly in all modern literature of heredity. It may be said that they occur rarely as compared with fluctuations, which are constant in every generation. They follow no law of frequency, although it is probable in some species that there may be a periodic tendency to mutations. "They lead by a bound to a new position of organic equilibrium; they breed true to this

position, and there is no regression to the old mean." DeVries and his school maintain that all species have originated by mutation instead of by the continuous selection of fluctuations. It should, however, be remembered that DeVries is a botanist, and that all deductions concerning mutations have been taken from the study of plants. With regard to mutations in animals, comparatively little is known. Probably such instances as the tailless cats of the Isle of Man, certain breeds of hornless cattle, short-legged lambs, thornless roses, giants, wonder horses, white negroes, are examples of mutations. Apparently mutations may or may not breed true to type.

TELEGONY AND MATERNAL IMPRESSIONS.

Telegony relates to the popular belief long held by breeders that an hereditary influence of one sire may be exercised on the future offspring of the same mother paired with a different sire. Darwin was a believer in this phenomenon, and cited as a proof the celebrated case of Lord Morton's mare. This mare, a pure-bred Arabian, was paired with a quagga, as a result of which a hybrid was produced. Later the mare was paired with a pure-blooded Arabian stallion and produced two colts with striped markings on the legs and neck. It has long been the belief among breeders of dogs, and apparently not without reason, that a purebred bitch, if accidentally crossed by a dog of another breed, is spoiled for future pure breeding. There are numerous interesting examples recorded of telegony, although it has been shown that very few of them will stand the test of a rigorous scientific cross-examination. The following is an example.

A man of striking physical beauty and marked regularity of physiognomy, blond in type, with blue eyes, had an amorous episode with a young woman of dark complexion. Later the young woman married a man of dark complexion and with unusual irregularity of features. A child was born, which resembled in an extraordinary degree, both in features and in coloring and in other ways, the mother's former lover.

The general belief among investigators of to-day is that there is probably no well-founded scientific basis of truth in telegony.

The popular belief in maternal impressions is extraordinarily prevalent even at the present day. Although striking instances not infrequently occur of birth-marks, deformities, etc., which bear a peculiar resemblance to some powerful impression made on the mother's mind during pregnancy, it is difficult to conceive that there could be any mental influence on the part of the mother which would affect the anatomical structure of the *foetus in utero*, when it is considered that there is absolutely no nerve connection between the mother and the fetus. Probably all cases of so-called maternal impressions are coincidences.

TRANSMISSION OF ACQUIRED CHARACTERS.

We have seen in an earlier portion of this paper that acquired characters are based on permanent modifications in the makeup of an individual, which have been brought about by the external influences of his environment, and that they are entirely independent of those inborn characters which he has received as an inheritance from the germ-plasm of his parents. It can readily be seen that by far the most important question in the study of heredity is whether acquired characters are transmissible to future generations. The solution of this problem is of moment not only to the biologist, but also to the individual himself in his personal, social and national relations. Herbert Spencer expressed the importance of the question when he said: "Considering the width and depth of the effects which the acceptance or non-acceptance of one or the other of these hypotheses [transmissibility or non-transmissibility] must have on our events of life, the question, Which of them is true? demands beyond all other questions whatever the attention of scientific men. A grave responsibility rests on biologists in respect of the general question, since wrong answers lead, among other effects, to wrong belief about social affairs, and to disastrous social actions."

The debate between those who do and those who do not believe in the transmission of acquired characters has been an interminable one since the time of Lamark, the first great authority to assert transmissibility. He believed that all inherited characters are acquired. Since his time Herbert Spencer has been the greatest champion of Lamarkianism, while Galton, Darwin, Weismann, Huxley and Wallace and most of the modern biologists have been for the most part disbelievers in transmissibility.

The arguments for and against the theory are extremely interesting, but are too numerous and complicated to be more than alluded to in this paper. It can only be said that the arguments against the theory are based largely on the fact that the germ cells, by which the inheritance is carried, remain undifferentiated and distinctly apart from the body cells during the life of the individual, and it is inconceivable that influences which affect only the body cells can be impressed in any way on the germ cells so as to reproduce in a succeeding generation the same particular somatic results.

Anatomical evidence against the theory of transmission is also strong. The practice of circumcision for many hundreds of years has made no difference in the anatomical structure of Jewish babies. Chinese babies are born with normal feet notwithstanding the modificational deformity to which their mothers have been subjected for centuries. No one believes that the removal of the vermiform appendix of every individual of the human race would have the slightest effect in producing an appendix-less species.

It is sufficient for the purposes of this paper to summarize the more common belief of modern evolutionists by saying that *no incontestible evidence has yet been produced that acquired characters may be transmitted.*

The non-transmissionists, if I may use the term, do, however, make one admission, which compels them at times to occupy a middle ground. They do not deny that the body is subject to certain modificational influences which may be of such a saturating character as to influence directly the germ cells so that they may produce defective offspring. An example of this kind may be seen in the mentally and physically defective children which chronic alcoholics are wont to produce. Other influences, such as lead poisoning, narcotism and possibly toxic effects of certain diseases, may affect the germ cells so as to produce variations in the offspring. It should be remembered in the consideration of this subject that changes which are brought about in the *foetus in utero*, such as deformities by constriction of the cord or infections from tuberculosis or syphilis through the placenta, must be regarded as modifications and not inherited qualities, because in a biological sense the individual is born at the time of the division of the fertilized ovum, and the fetus, having already started on its life cycle, is only a temporary parasite during its uterine sojourn.

Those who believe in the transmission of acquired characters are accustomed to cite as proof of their theory that pathogenic bacteria when subjected to certain degrees of heat for successive generations gradually lose their pathogenic power, and it is asserted that this diminution of virulence is inherited. The other school, however, points out that, as bacteria are unicellular organisms, there is no division into somatic and germ cells. Any environmental influence like heat saturates the entire organism and, therefore, directly injures the germinal substance. A case of this kind is analogous to the effect of alcohol and other saturating poisons which in complex organisms may so affect the germ-cells as to create variations in the offspring.

The non-transmissionists appear to admit that certain environmental nutritive influences, good or bad, to which the germ cells of an individual may be subjected act as a liberating stimulus to set going certain variations which might otherwise have remained latent.

Notwithstanding the general skepticism as to the transmission of acquired characters, the importance of nurture, education and environment must not be underrated. The individual with his raw material of inheritance is extraordinarily plastic. A common-place inheritance carefully nurtured may surpass an excellent inheritance with an indifferent education. The great jumper, Page, was born with weak legs, and in a concentrated effort to strengthen his muscles acquired the character or modification of being the world's greatest jumper. Sandow in his youth was feeble and weakly and acquired his extraordinary development as a pure modification. It is not likely that Page could transmit his saltatory ability, nor Sandow his muscular development, but it is undoubtedly true that both Page and Sandow inherited and could transmit, as an inborn variation, the mental power of concentration which enabled them to succeed so well in their physical training.

Thompson, in summarizing the importance of nurture and education, notwithstanding the impossibility of transmitting their results by inheritance, writes optimistically, "Unlike the beasts that perish, man has a lasting *external* heritage capable of endless modification for the better, the heritage of ideas and ideals embodied in prose and verse, in statue and painting, in cathedral and university, in tradition and above all in society itself."

HEREDITY IN DISEASE.

The fact that the science of heredity is still in its infancy, and that outside of plant life and the less complex forms of animal life practical facts are meager, is most appreciated when one studies what is known of heredity in diesase. This branch of the subject is the one which, of course, is the most vital to the interests of the physician. It seems evident that with the equipment of the rapidly accumulating knowledge which biologists are at present acquiring, the burden of increasing the knowledge of heredity in disease will rest in a large part upon the shoulders of those to whom is given the greatest opportunity for its study, namely, the clinicians and general medical practitioners. While the scientific investigator is studying in his laboratory the wonders of elementary life, the clinician may assist greatly in the solution of problems of heredity by the observation and collection of statistical data which appear almost daily in his professional experience.

From what is known of the subject to-day, it is evident that specific diseases are not directly inherited. It is equally evident that a predisposition to certain diseases may be definitely inherited, this predisposition being of the nature of a germinal variation. As will later be seen in the discussion of the Mendelian theory, heritable qualities may be either positive or negative, that is, an individual may inherit the absence of a quality. For example, the individual with pure blue eyes inherits the absence of some determinant, be it a ferment or what not, which causes the production of pigment in the iris. It may be imagined that an individual predisposed to a certain constitutional disease, as shown by the frequent occurrence of the same disease in his immediate ancestry, inherits the absence of a determinant which would create a resistance to this disease.

There is statistical evidence to show that there may be distinctly inherited predisposition to gout, rheumatism, asthma, cardiac disease, obesity, tuberculosis, insanity and other nervous affections. It is of great importance to determine always whether a certain disease occurs as an inherited germinal variation or whether it is purely adventitious, for on this point depends the question of the transmissibility of the disease. For example, deafness occurring as a germinal variation is transmissible; deafness occurring early in life as the result of accident or infectious disease is not transmissible. Imbecility or epilepsy occurring as inherited variations are transmissible, but if they are the result of a cerebral injury, they

are not transmissible. The following instance of a family residing in a neighboring town is instructive.

An imbecile father and an imbecile mother have seven imbecile children. The popular story in the town is that the father acquired his imbecility early in youth from being kicked in the head by a horse. Statistical evidence, however, makes it probable that the imbecility of the father was inherited and existed before his injury, because all the children are imbeciles and if he had been normal at birth a certain proportion of the children would be normal. This is substantiated by the fact that one of the imbecile daughters gave birth to three illegitimate children by normal fathers and all three of the children are normal and one of them is of exceptional aptitude.

Certain defects may be germinally inherited which are not diseases in the sense of being pathological processes, but which may, some of them, lead to disease. Such instances are hemophilia color blindness, freckling, diabetes insipidus, myopia, inability to digest the proteids of eggs or milk, etc. Anatomical defects may also be inherited germinally. Examples of this are albinism, absence of metacarpal bones, hare-lip, cervical fistulæ, spina bifida, tailless cats, hornless cattle, earless sheep, etc.; or the variations may be of the plus instead of the minus variety, as polydactylism. Monstrosities are less often due to germinal inheritance than to some injury in utero, as, for instance, from the pressure of an hydramnios or a strand of the amnion.

Microbic diseases, with the possible exception of syphilis, are not transmitted as such. Tubercle bacilli are not carried in the germ cells from either parent, even when the genital organs are infected with tuberculosis. It is true that in rare cases the *foetus in utero* may be infected from the mother through the placenta. Inheritance in the matter of tuberculosis is entirely the transmission of a predisposition to the disease, a predisposition which is intensely hereditary, over 35% of all cases having an immediate tubercular ancestry.

Professor Hamilton writes suggestively of heredity in tuberculosis: "Most likely the particular vulnerability resides in the epithelium, the protective coverings of the body being too little resistant, too easily stimulated by external agencies, and too readily penetrated by the parasite of the disease." That the tubercular predisposition bears some relation to the anatomical structure is borne out by certain physical characteristics frequently seen in the tubercular patient, e. g., very dark or very light hair, bushy eyebrows, long eyelashes, lanugo growth over the spine, narrowness of chest and tallness of stature.

The details of the transmission of syphilitic disease are too well known to be described here.

One of the most important instances with regard to heredity in the light of the present progress of medical science is the transmissibility of acquired immunity to infectious disease. Ehrlich has shown by experiments in rabbits that acquired immunity may pass through the placenta to the *foetus in utero*. Cases have been known where a mother during pregnancy contracted and recovered from smallpox and transmitted her immunity to the fetus. Such immunity is not, however, to be regarded as inherited. The acquired immunity, derived from antitoxins and serums, unfortunately appears only to affect the somatic cells and must be classed with acquired characters or somatic modifications as there is no evidence to show that immunity of this kind is transmissible. This seems to be only an added proof of the inexorable law of the non-transmissibility of acquired characters.

The comparative immunity which certain races gradually acquire to specified diseases is an important question in the study of heredity. Examples of this kind are the gradual diminution of virulence which scarlet fever and measles have shown in some of the European races, notably in Germany; the immunity of Englishmen to tuberculosis as compared with the American negroes; the slight effect which the use of opium has on the inhabitants of India, who have employed it for centuries, as compared with the more destructive effect which it has on the Chinese, who have used it for a shorter period of time, and the extremely destructive effect which it has when introduced into races who have never used it; the comparative immunity which English-speaking races possess toward alcoholism, as distinguished from the annihilating effects which it has when newly introduced into savage races like the American Indians.

This gradual diminution of virulence has been used as an argument to prove the transmissibility of acquired characters. It should, however, be recognized that many of these diseases do not endow their individual victims with immunity, but rather with greater susceptibility. Individuals who have been afflicted with tuberculosis or typhoid fever do not acquire immunity, and chronic indulgence in alcohol or opium does not establish immunity in an individual towards these poisons, but rather makes him more susceptible to a craving for them. If acquired characters of this kind were transmitted by inheritance, there would be an accumulative inheritance of susceptibility to such an extent that the race would eventually be annihilated. Undoubtedly the gradual acquisition of immunity in a race to a certain disease represents an example of the survival of the fittest. It can be shown that racial immunity to a specific disease is in direct proportion to the experience which the race has had with the disease, and it is supposed that the more susceptible element has gradually been sifted out.

The predisposition to disorders of the nervous system is extremely heritable. This is said to be due to the fact that the nervous organism is the most complex in the body and is, therefore, most easily thrown out of equilibrium. Hamilton interestingly gives as a reason for this susceptibility to disease variation that from an evolutionary standpoint the nervous system is the most recent equipment of the body, and he gives evidence to show that the more recently inherited organs are less stable in the matter of germinal

variability. A neurotic tendency may appear in the offspring in the same form by which it was expressed in the parent, or it may be expressed differently. For example, some specific form of acute neurosis may appear in the offspring merely as a general neurasthenia, or a deficiency of control, and conversely. The main point to be borne in mind is that the hereditary variation is distinctively a predisposition.

What is called the "inheritance of secondary effects" relates to hereditary changes, which result from direct injury to the germ cells, as, for example, poisoning from alcohol, opium, lead, hydrocyanic acid and nicotine. Examples of the secondary hereditary effects which may result from chronic alcoholism in the parents are insanity, criminality, debility, infantilism, imbecility, structural abnormalities and epilepsy. One record of eighty-three epileptic children showed that sixty were from drunken parents. Experiments of injecting alcohol into eggs have produced actual defects and abnormalities in the offspring. Unquestionably the predisposition to the craving for alcohol is a heritable quality.

LAW OF FILIAL REGRESSION.

This law relates to the general tendency which highly differentiated species always exhibit to gravitate toward an average mean. We see gifted parents producing common-place children and, on the other hand, unexpectedly gifted children born from under-average parents. Francis Galton studied this tendency to approximate to a mean and reduced his observations to a definite law which he called "Filial Regression." He investigated about one hundred and fifty families with special reference to stature, eye color, temperament, artistic faculty and some forms of disease, and showed statistical evidence to prove that there was in all these respects a constant tendency to regression toward mediocrity, e. g., an unusually tall parent would be likely to have a child less tall than himself, while an unusually short parent would have offspring less short than himself. To quote Galton, "The law of regression tells heavily against the full hereditary transmission of any gift. Only a few out of many children would be likely to differ from mediocrity so widely as their mid-parent, and still fewer would differ as widely as the more exceptional of the two parents. The more bountifully a parent is gifted by nature, the more rare will be his good furtune if he begets a son who will be as richly endowed as himself, and still more so if he has a son who is endowed yet more largely. But the law is even-handed; it levies an equal succession-tax on the transmission of badness as of goodness. If it discourages the extravagant hopes of a gifted parent that his children will inherit all his powers, it no less discountenances extravagant fears that they will inherit all his weakness and disease. It must be clearly understood that there is nothing in these statements to invalidate the general doctrine that the children of a gifted pair are much more likely to be gifted than the children of a mediocre pair. They merely express the fact that the ablest of all the children of a few gifted pairs are not likely to be as gifted as the ablest of all the children of a very great many mediocre pairs. Nor must the fact of regression be supposed to affect the general value of a good stock or the general disadvantage of a bad one. Two gifted members of a poor stock may be personally equivalent to two ordinary members of a good stock, but the children of the former will tend to regress; those of the latter will not."

THE LAW OF ANCESTRAL INHERITANCE.

If the law of germinal continuity is true, it must be assumed that in the germ plasm of every individual there are condensed the characteristics of a infinite number of ancestors. As Thompson puts it, "The individual inheritance is a mosaic of ancestral contributions." This idea is familiar to all in the frequently seen re-expression of characteristics which were conspicuous in a grandfather or great-grandfather. Galton, in order to make a generalization of this fact, studied the data as to stature and other qualities in man, and as to coat color in Basset hounds, and from these statistics he enunciated the following law, "The two parents between them contribute *on the average* one half of each inherited faculty, each of them contributing one quarter of it. The four grandparents contribute between them one quarter or each of them one sixteenth and so on, the sum of the series, $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16}$, etc., being equal to 1 as it should be." Prof. Karl Pearson repeated Galton's work and practically corroborated his law, although Pearson's fractions differed slightly from Galton's. It is extremely important in considering this law to appreciate that it refers only to the *average* taken from a very large number of cases and that it should not in any case be applied to individuals. The practical application of Galton's two laws of filial regression and ancestral inheritance is obviously of great importance and extremely far reaching. The lack of harmony which exists between these two laws and Mendel's theory of gametic segregation is at once apparent. For an ingenious but reasonable attempt to reconcile the two opposing theories, the reader is referred to Thompson's "Heredity," page 315.

MENDEL'S LAW.

By far the most interesting and important development in the science of heredity is the extraordinary discovery of certain laws of inheritance in plants by Gregor Mendel in the middle of the last century and their rediscovery after years of oblivion in 1900. Mendel's discovery is claimed to have the same relationship to biology as did Dalton's law of constant proportions to chemistry a century age. Punnett, in commenting on the significance of Mendel's discovery, says: "The superstructure of modern chemistry has been raised upon the foundation of the atom; not otherwise may it be with biology, though here, perforce, the analytical process must be lengthier, both from the complex nature of the material and from the greater time involved in

experiments on living forms, for, unlike the chemist, the biologist is trammeled by the times and seasons. Nevertheless, the achievements of the last few years are such as to warrant us in looking forward to the time when our progress in the knowledge of the living may bear comparison not unworthily with the science of the things that are without life."

Gregor Mendel was born in 1822 in Austrian Silesia. He became a priest, and eventually became abbot of the monastery at Brünn. He had received special education in physics and in the natural sciences, in which he was greatly interested. It was his hobby to study the laws of inheritance in hybridizing various plants which grew in the garden of the monastery, and chose for his chief experiments the edible pea, which he found especially suitable for his work, as this plant possesses certain constant differentiating characters and admits of easy artificial fertilization.

Mendel discovered that in crossing two species of the pea which had differentiating characters the offspring resembled only one of the parents. In other words, the differentiating character of one parent appeared to completely dominate the differentiating character of the other parent. When, however, the offspring of the two original parents was inbred, some of the offspring retained the dominating character possessed by the parent, while some exhibited that character of the grandparent which did not appear in the second generation. The amazing discovery was also made that in the offspring of the third generation the number of those which showed the dominant character was always in the proportion of 3 to 1, as compared with the number which showed the suppressed character. Mendel then found that those individuals of the third generation which showed the suppressed character bred true to this character indefinitely. He found too that one third of the members of the third generation which showed the dominating character bred true to the dominant character indefinitely, and that the other two thirds bred in the same way as the members of the second generation.

One of Mendel's classical experiments consisted in crossing a variety of pea which always grew tall with a dwarf variety. The result of this cross was a variety of pea which exactly resembled the tall parent. When, however, this pea was inbred, the result was three tall peas to every one dwarf pea. When the dwarf peas of this generation were inbred, they continued to breed true, generation after generation. When, however, the tall peas of the third generation were inbred, one third of them bred tall peas, generation after generation, while the other two thirds acted in exactly the same manner as the tall peas of the second generation, namely, producing tall and short peas in the proportion of 3 to 1. The quality of tallness in this experiment was called by Mendel the *dominant* character, and the quality of dwarfness was called the *recessive*. This experiment may be best understood by the following diagram, in which *D* stands for the dominant character or tallness and *R* stands for the recessive character, or dwarfness.

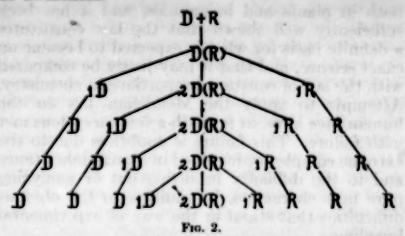


Fig. 2.

The theory which Mendel advanced to explain the results of these experiments was called by him the law of *gametic segregation*. He assumed that when the male *D* and the female *R* gametic cells unite, every cell of the hybrid will contain both *D* and *R*, in which case one dominates, namely, *D*, giving *D* (*R*).

If we assume that in the gametic cells of the hybrid the characters *D* and *R* separate again and go to different cells, half of the gametic cells will contain one character only and the other half the other character. This is supposed to take place both in the male and female individuals. The male gametic cells containing *D* may meet egg cells containing *D* or *R*, and, conversely, the male cells *R* may meet the egg cells *D* or *R*. The possible combinations that may result are shown in the following diagram.

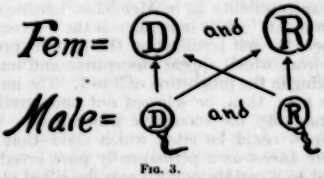


Fig. 3.

There will be two chances of *D* and R uniting to one of *D* and *D*, and one of *R* and *R*. Hence the proportion 1*DD*: 2*D* (*R*): 1*RR*.

Thus it will be seen that Mendel assumed that there were *two kinds of gametic cells* in the hybrid. This theory has stood the test of various experiments, and it is now generally accepted, although it appears to contradict some of the theories of heredity still in vogue. The point of practical importance in Mendel's theory is that perfectly pure bred individuals may be sifted out in future generations from cross-bred ancestors.

The elaborate work of Mendel, of which the experiment here described is only a sample, was published in the proceedings of a local scientific society in 1865. It attracted almost no attention and did not even come to the notice of Darwin, to whom it would have been of incalculable assistance. In the year 1900 the celebrated botanist Hugo DeVries, working independently, and two investigators, Correns and Tschermak, rediscovered the same law, and it was then that Mendel's extraordinary work came to light.

Numerous experiments to test the validity of Mendel's law have since then been carried out, both in plants and in animals, and it has been sufficiently well shown that the law constitutes a definite basis for what is expected to become an exact science, and that it may justly be compared with the law of constant proportions in chemistry. Attempts to apply the Mendelian law to the human race have so far with a few exceptions met with failure. This failure is doubtless due to the extreme complexity involved in human inheritance and to the difficulty in sifting out or analyzing pure unit characters, in addition to the obvious difficulties that stand in the way of experimental breeding.

A few cases where the Mendelian law has been found to work in the human race have been recorded. The two most celebrated examples are one of brachydactylism, and one of night-blindness, The case of night-blindness apparently started as a mutation in a woman who lived in the middle of the seventeenth century. The descendants of this woman, to the number of two thousand, have been carefully traced, and the occurrence of night-blindness has followed closely the Mendelian law.

The following is an example of where the Mendelian law has been put to practical use. Certain forms of wheat are susceptible to the attacks of a fungus which causes the disease called wheat rust, while other forms of wheat are immune. It has been discovered that when the susceptible and the immune forms are crossed, the resulting hybrids are all susceptible to rust, thus susceptibility is, in Mendelian language, the "dominant," while immunity is the "recessive," factor. On self fertilization the hybrids produce seed from which appear susceptible and immune offspring in the proportion of 3 to 1. The immune seeds may, then, be selected out and breed true to immunity for successive generations. Other examples could be cited which show that from impure ancestors a permanently pure breed with regard to a certain quality may be sifted out.

EUGENICS.

The term "eugenics" relates to the improved breeding of the human race. The recent advances which have been made in the knowledge of heredity have awakened interest in the possible artificial improvement of the human race, an idea which dates back to Spartan civilization. Statistics would seem to show that the human race, though rapidly increasing in quantity, is as regards quality tending to breed downwards rather than upwards. It has been shown that there is a greater increase of population among the less desirable element of humanity than among the more elevated strata, and it has also been stated that in all probability the heritable characters of the better element will not eventually be able to dominate the less desirable characters of the lower element. Eugenists foresee an inevitable gradual deterioration of the human race. To prevent this future disaster propositions have been made aiming toward a strict regulation of marriages by law in order to prevent the propagation of unfit individuals. The present complex systems of education and betterment of the human race relate only to the improvement of individuals as they exist, but as the individual transmits only the inborn characters of his germ-plasm, each new individual starts where his parents began and the labors of the preceding generation, though improving his environment, have been of no influence in bettering his natural heritage. As Punnett says: "Education is to man what manure is to the pea. The educated are in themselves the better for it, but their experience will alter not one jot the irrevocable nature of their offspring. Permanent progress is a question of breeding rather than of pedagogics; a matter of gametes, not of training. As our knowledge of heredity clears, and the mists of superstition are dispelled, there grows upon us with an ever-increasing and relentless force the conviction that the creature is not made but born."

Although the average individual in contemplating the progress which the human race appears to be making fails to be greatly impressed with the fears of the more enthusiastic eugenists that the human stock is in a process of mental and physical deterioration, nevertheless it must be granted that there is great reasonableness in many of their views purely from a philanthropic standpoint. It would seem reasonable and feasible even with our present ideas of marriage and human liberty to prevent by law the propagation of criminals, imbeciles, the insane and the actively tubercular and syphilitic. The idea of improving the human race by proper breeding does not in any way conflict with the present ideas of combatting disease and of bettering conditions of the under classes by education and hygienic science. The eugenist believes that such education and careful nurture when applied to the under-average strata of humanity must be coupled with restrictions as to the propagation of their kind in order not to produce eventually an overwhelming amount of deficient stock. It is inevitable that in the course of time eugenistic laws restricting the marriage of the unfit will be enacted, though to what extent it is impossible at present to foresee. A few laws of this nature already exist and prove the feasibility of the movement. When these laws become more general, as in all probability they will within the present generation, the grave responsibility of deciding between the fit and the unfit will rest upon the shoulders of the medical profession, and for that reason it becomes incumbent on the physician to familiarize himself with the important and rapidly progressing science of heredity.

POST-OPERATIVE PSYCHOSES.*

BY JAMES G. MUMFORD, M.D., BOSTON.

SOME years ago I had occasion to look up a large consecutive group of patients operated upon at the Massachusetts General Hospital seven and nine years previously. The purpose of this research was to ascertain what might be their mental

* A paper read before the Philadelphia College of Physicians, Nov. 2, 1910.

condition in relation to the operation, and their present effectiveness as compared with their effectiveness previously. The result of this research impressed me with the fact that we, as surgeons, are regarding too little, perhaps, that condition which Goldthwait has called the ultimate prognosis.

The experienced surgeon of reflective temperament probably considers the psychic elements in his cases, but I doubt if we are aware always how deeply significant those elements may be in controlling the return to health of a surgical patient. Rather are we wont to accept the patient from the hands of his physician; to shrug, perhaps, at what we are pleased to call his neurotic state; to proceed with the operation, if the obvious lesion warrants it; then, with an anatomical cure established, to shift the patient back upon the weary physician for the tedious struggle to health.

I do not maintain that we should refuse to operate upon such discouraging cases. On the contrary, I believe, as Dr. J. W. White long ago taught, that such operations — the operation *per se* — do great good and are important therapeutic measures. My thesis is that we should appreciate clearly the types of individuals liable to suffer from post-operative psychic disturbances, and the surprisingly large number of such persons, and that we should perform the operations of intelligent purpose; and, most of all, that we should recognize our ability to aid in the after-treatment and should bear our share of its responsibility. A competent and experienced dentist has recently stated that he can do little efficient dental work, on his best patients even, within a year after they have experienced any surgical operation. Their psychic equilibrium is so unsettled that they shrink from the slightest manipulation, and must be carried over the year by mild palliative measures.

Let us consider for a moment the significance of certain clinical terms. What is the meaning of the words *cure*, *anatomical cure*, *psychical result*? I take it that a cure is the important end of all therapeutic endeavor. A perfect cure is the *summum bonum*, but is it not true that a large proportion of our cures are relative only? The man with a disabling, recurrent appendicitis is absolutely cured of all pain and digestive disturbance through the removal of his appendix. The man with gangrene of the foot is relatively cured by amputation, though he be left maimed and halting. The woman with an ovarian cyst enjoys an anatomical cure when the tumor has been excised and the wound has healed kindly and soundly, though an unessential organ has been removed.

All these are clinical cures, are cures from the surgeon's point of view; but just here there enters into the problem an element of wide-reaching metaphysical significance. The ills of life, like all the so-called facts of life, are in direct relation and are proportionate to our experiences. The man who has just lost his appendix, if he lacks poise and clear vision, feels that he has been through a grievous crisis, that he has suffered a great calamity in the operation, that the sanctity of his vitals has been violated and that he can never again be what he was. Many persons hold that view, I find. The man who has lost his foot may find little comfort in his freedom from pain and impending death; his old life is gone; he must readjust himself to new circumstances of existence; his relations to his environment must be recast; he must limp, a cripple, through the remainder of his life, bearing with him an unsightly stump and a grievous scar to fret and distress him. The woman whose ovary was removed, useless though that ovary may have been, believes herself to have been unsexed. She has heard tales of changes of temperament, of coarsening features, of mannish tendencies, or perhaps she thinks a full set of ovaries essential to sound health and the bearing of womanly cares. She looks forward to some mysterious, ill-defined change in herself, or to invalidism, and the reassuring farewell words of the surgeon fail to turn her from the expected melancholy course. Strong character and optimism are needed to overcome these tendencies of environment and condition, unless aid be brought from outside sources.

How, then, shall we define a *cure*? I protest that a cure consists only in returning a man to that state of mental and physical health which shall enable him to live his life, to accomplish his wonted work, to adapt himself to his environment in vigor of body and in freedom from pain, with his normal functions undisturbed, with his mind unclouded, buoyant, assertive. That is the perfect cure, but it is a cure not easy of attainment. A more common and reasonable cure is a state of relative comfort and efficiency, with little pain and distress, with infrequent anxiety, with renewed, if imperfect, confidence in the bodily powers.

By the term *anatomical cure* we imply a sound wound healing and a restoration of the bodily functions, so far as such restoration may be compatible with the loss of, or damage to, members and organs.

Psychical results are related to the subjective mind. Their bearing upon the cure concerns the patient, not in proportion to anatomical perfection or potential physical and intellectual capacity, but rather to what he himself feels to be his perfection or capacity; and just in so far as his objective intelligence is feeble, or has become enfeebled, just so far is he fated, on the one hand, to remain a wreck, or, on the other hand, to refit his shattered existence. We must teach ourselves to look to the ultimate prognosis; it is not what we are, it is what we think ourselves to be; that is the sum total of the old argument.

I have spoken of the enfeeblement of the objective intelligence. Such enfeeblement has commonly been referred to as a neurotic condition, and has been regarded often as a state of mind for which the patient is in large measure responsible. In the language of the street, we speak of such persons as lacking in nerve or in pluck, and we are wont to assume towards them an attitude of more or less modified contempt. I believe that

such an attitude on our part is in many instances unjustified, and that through the researches of Crile and his associates we may find excellent anatomical reasons for this depressed mental condition. It would be unprofitable for me here to rehearse the striking and instructive experiments conducted in Crile's laboratories, but one may profitably glance at and sum up some of his conclusions: In a word, he finds that animals and patients, the victims of both mental and physical assaults, suffer quite similar degenerative changes in the structure of the nerve cells in all parts of the brain, and in their reaction to the Nissl stain as well. These changes in the nerve cells include changes in the absolute size of the cells, in the size reaction of the nucleus and plasma, in the membrane surrounding the cell, in the membrane surrounding the nucleus, and finally in the general contour of the cell itself. The cell increases in bulk — from a slight variation to eight times the normal even. In the normal cell there is a definite relation between the size of the nucleus and the remainder of the cell. After operative assault or mental shock the nucleus becomes relatively larger. In the normal cell the surrounding membrane, as well as the membrane surrounding the nucleus, always presents an unbroken continuity. After assault these membranes may be extensively ruptured, so that the cell becomes greatly distorted. In extreme cases the cell loses completely its contour and presents the appearance of a disorganized mass of protoplasm. Furthermore, there are certain notable changes in these cells in their relation to staining. When first assaulted they show an increase in the amount of Nissl stain which they are capable of absorbing; later, as the degree of shock is increased, the amount of reaction to the stain diminishes, so that in the final stages little or no staining is found. Crile observes, however, that in fatal cases, even, all of the cells are not invariably thus altered.

Observe, then, this striking conclusion; on morphological grounds, when shock has broken down the nucleus, the nucleolus and the cell body, so that there remains a mere mass of protoplasm, we must regard the cell as almost certainly dead and incapable of regeneration. The gravity of any physical or mental shock in a given case is indicated, accordingly, by the percentage of brain cells which are thus broken down and virtually killed. The damage done by purely physical trauma is manifest in the destruction of cells in the cortex, in the cerebellum and in the medulla. The cells of the spinal cord are modified little or not at all.

Hertwig, Howard and others, in their studies of unicellular organisms, have shown that in fatigue, overwork and starvation the principal change in the cell is in the nucleus-plasma relation. Crile and his workers have shown that after various physical damage and disease the brain cells obey the same law of change. They find the same changes present as the result of overwork, anemia, infections, drug poisons, shock, fear and anxiety. In acute anemia — and the same is true of fear, fright and worry — we find brain changes varying from temporary hyperchromatism through every stage down to the death of the cell itself. The potential energy of the cell is soon used up. If the effort of the organism does not result in an efficient circulation through the brain and in consequent restimulation of the cell, the patient must suffer collapse, permanent impairment and possibly death. This is a fact of great clinical importance.

Allow me to rehearse an instructive laboratory operation on the intestines by Crile, which resulted in extensive damage to the cells of the cerebral cortex. One can well see that such secondary damage to the cortex might result in prolonged, or even in permanent, impairment of the intellectual and moral vigor of the individual. In a study of intestinal gangrene Crile found that after a certain number of hours of total exclusion of the blood supply the intestine became gangrenous. On his releasing the obstruction the animals soon died, even with the re-establishment of the circulation. If the circulation was not re-established, the animals died also, but later. Even when a preliminary entero-enterostomy had been made, and the isolated coil of intestine was used for the experiment, still death occurred. As a rule there was no peritonitis, and death took place in from twelve to twenty-four hours. If a complete resection of the gangrenous segment was made, death nevertheless occurred in about the same time, but by his making an external drain in the loop of intestine he saved the animal. These results were explained at once by injecting a very small quantity of the juice of the gangrenous coil subcutaneously into a sound animal. Even when the material was injected by a hypodermic needle into the lumen of the uncontaminated bowel, serious illness or death followed, the symptoms being precisely those which resulted from resection for gangrene of the bowel in man. As the experimenter remarks, the coincident widespread impairment of the animal's brain cells told the entire story. Undoubtedly, even at the time of operation in man for gangrene of the bowel, a sufficient amount of toxins has already been absorbed and fixed in the brain cells to cause death; or if there have not been toxins enough, death is made more certain through the amount of poison squeezed into the circulation by manipulation of the gangrenous gut. Patients become severely ill, or die, or remain neurotic invalids, not from the immediate damage to the traumatized part, therefore, but through the more or less permanent damage to the cerebral cortex, as the result of the absorption of toxins. Such an infection as this suggests the rôle which infection plays in ultimate surgical risks. It explains also the slow convalescence in cases of ruptured appendix, with peritonitis, as compared with clean cases. Is it not probable, therefore, that the gross lesions in the abdomen are of less importance to the patient, for life or for perfect recovery, than are the microscopic lesions in the brain?

We have seen, accordingly, and our experience teaches, that many persons subject to physical and mental assaults — to what we call trauma-

tism and to shock — receive serious mental impressions, which can be demonstrated clinically through searching our records, and can be demonstrated anatomically through the examination of the brains of experimental animals and of patients who have died as a result of some form of physical or mental shock. The clinical evidence of disturbed mental equilibrium is familiar to all surgeons, and my researches show me that such mental disturbance is especially liable to ensue after operations on the generative organs of both men and women when those organs have not been actually removed, but have been so tampered with that the patient lives on in dread of their loss at some future time. For example, operations for varicocele and hydrocele are followed by more pronounced and prolonged neuroses than is the operation of orchidectomy. The operations of suspension of the uterus or repair of the perineum frequently leave behind them trains of mental depression more serious than do the operation of ovariotomy, or even of hysterectomy. The explanation in this case seems to be that those deprived of important organs are able to readjust themselves to a positive calamity more readily than are those patients who continue an existence of anxiety regarding a possible future calamity.

A series of investigations by Crile is now in progress on the effects of disturbed functionating of the ductless glands, and so far as this investigation has gone we seem justified in assuming the hypothesis that the ductless glands, — the thyroid, the hypophysis, the suprarenals and the ovaries, — when overstimulated, bring about directly a disturbance or partial destruction of the nerve cells of the brain. We are familiar with the physiological fact that the ductless glands are capable of stimulation through what we call mental impressions, so that, to take a concrete example, we illustrate the circle in some such fashion as this: Excessive fright or anxiety may be the initial cause for a development of the thyroid leading to Graves' disease; Graves' disease results in a more or less continuous intoxication of the whole organism; these toxins bring about a progressive disorganization of certain nerve cells in the brain, and the more advanced becomes this disorganization, the more long-continued or permanent becomes the depressing effect upon what we call the mind as well as upon the functions and the physical capacity of the individual.

In view of this situation, it behooves surgeons to provide in every way possible against adding physical and mental traumata to their patients. This proposition in itself opens a field of wide speculation and interest and of the greatest practical importance. We must endeavor to guard against mental shock by surrounding the patient with appropriate psychic influences, and to guard against physical shock by limiting our operative manipulations to the least possible traumata of the parts involved; and we must employ our anesthetics judiciously and appropriately. Our conduct of convalescence must be made more painstaking, more optimistic and more prolonged. We must impress upon the patient the certainty of his return to perfect health; we must eliminate a needless repetition of painful dressings, which so frequently lead through summation to a depressing dread of the surgeon's visit; and after the wound is healed and the patient leaves his bed we should continue, through ourselves, our associates and the patient's family physician, a constant and sustained attitude of optimism and encouragement to take up and practice the familiar duties and experiences of a well-regulated and normal life.

Clinical Department.

A CASE OF MYXO-FIBROSARCOMA ORIGINATING IN THE GREAT OMENTUM WITH INVOLVEMENT OF THE BLADDER AND SMALL INTESTINE.

BY HUGH CABOT, M.D., BOSTON.

THIS case is reported on account of its rather unusual character and as showing how apparently hopeless growths may at times be found curable by operation.

H. F., Jew, twenty-seven years. Came to the Massachusetts General Hospital Nov. 1, 1909, on account of hematuria. One year ago noticed blood in the urine for a few days. Since that time has had transient attacks of hematuria without pain or bladder irritation. Four months ago first noticed a tumor in the lower abdomen the size of a hen's egg. This has grown rapidly up to the present time. Feels perfectly well and thinks he has lost no weight.

Physical examination. — Thin, poorly developed young man. Examination entirely negative except for abdomen, where there is a tumor rising from the pelvis, filling the space between the umbilicus and pubes and much resembling a uterine fibroid. Its surface was roughly lobulated and it was slightly movable from side to side. Not tender to pressure. Rectal examination negative.

Urinary examination. — Bloody, acid, albumen slight trace. Sediment: Blood and occasional squamous cells.

Cystoscopy. — Bladder holds 9 oz. Mucous membrane is normal except on the roof, where a mass protrudes into the bladder showing a deep cleft in its center, which is red and ulcerated.

Nov. 16. Operation. Six-inch median incision. The tumor proved to be a solid lobulated mass, the size of a child's head, covered by the great omentum, from which it obtained its blood supply. Its lower portion was adherent to the dome of the bladder, while at its upper and right side a portion of the small intestine just above the ileocecal valve was included in the growth. The omentum was tied off in sections along the lower border of the transverse colon and divided, allowing the tumor to be delivered from the abdomen. The small intestine was then clamped, allowing a liberal margin above and below the growth, and divided, leaving a piece of the intestine about eight inches long adherent to the tumor, which was then free except for its attachment to the bladder.

A piece of the dome of the bladder about three inches in diameter was then removed, thus allowing a liberal margin about the growth. The bladder was closed with interrupted catgut sutures through the mucous mem-

brane and muscular coat, and a continuous suture through the peritoneum.

The divided ends of the small intestine were united by end-to-end suture in two layers, the inner with catgut and the outer of Pagenstecher. The gap in the mesentory closed by suture.

A somewhat adherent appendix was then removed and the abdomen closed in layers, leaving a small cigarette drain in pelvis. The bladder was drained with an inlying soft rubber catheter.

There was some reaction on the second day after operation, with moderate distention, some vomiting and a rather rapid pulse. This quickly subsided and he made a rapid recovery. Catheter was removed on the fourth day and bladder gave no trouble.

Feb. 5, 1910. Patient reports to-day having been at work for six weeks. He seems to be entirely well. Urine is normal, scar firm.

Pathological report. — A deeply multilobuated soft, semi-opaque growth 15 cm. in diameter. On one side was a pouch from the bladder 3 cm. deep about which was thickened fibrous tissue. The peritoneum was separated for a considerable distance from the bladder so as to include an area of 5 by 15 cm. in width with the other pouch as a center. Over a considerable portion of the tumor the omentum was thinned out and dipped deeply in between the lobules. On the opposite side from the bladder the tumor was attached to the small intestine by a pedicle 5 by 7.5 cm. along the surface of the intestine. There were several nodules under the peritoneum which had not broken through the mucous membrane. Eleven centimeters of the small intestine had been excised after the growth was removed.

Section of the growth was homogeneous, grayish and semi-translucent.

Microscopic examination showed bundles of elongated spindle-shaped cells alternating with bundles of semi-fibrous character. In places the cells had the shape and appearance of smooth muscular fibers.

Myxo-fibrosarcoma.

Appendix slightly thickened, otherwise not remarkable.

Reports of Societies.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

MEETING OF WEDNESDAY, NOV. 2, 1910.

The President, DR. GEORGE E. DE SCHWEINITZ, in the chair.

CONCERNING NERVOUS DISTURBANCES FOLLOWING SURGICAL OPERATIONS AND ANESTHESIAS.

DR. S. WEIR MITCHELL: In a case of grave hysteria following operation we must consider the patient as a gun already loaded, and that the surgeon merely pulls the trigger. The proper man might know that the gun is loaded. This raises the question whether it is not desirable in many cases to prepare the patient for the operation more often than our surgical brothers seem to think is needed? Not only the risks of death are to be considered, but the possibility of increasing a preceding condition disease. Many physicians have felt that there is necessity for more strictly dealing with the before and after of surgical cases. I shall limit myself to the consideration of the effect on bodily resistance caused by diet and point out the extraordinary effect on the irritability of the bladder produced by a strictly milk diet. So satisfied was Sir James Paget upon this point that he never did a grave operation on the bladder without putting the patient under a fortnight of milk treatment. I am tempted to say that no operation ought to be done without obedience to the rule in St. Bartholomew's Hospital in London, that no surgeon should ever dare to operate on a patient except after consultation with two physicians. Personally, I should not be selfish enough to insist on two, if I were one.

POST-OPERATIVE PSYCHOSES.[1]

DR. JAMES G. MUMFORD, Boston: The frequency of post-operative psychoses is shown by the careful study of cases seven and nine years after operation, taken from consecutive reports in hospital records. The significance of the words *cure*, *anatomical cure* and *psychical results* is discussed. The attempt is made to show that long-continued mental and psychical disturbances following operations are due to demonstrable microscopic changes in certain nerve cells of the brain. The significance of these nerve-cell changes is discussed, together with the method of their production and reasonable measures which may be taken to limit such changes.

THE DIAGNOSIS OF THE POST-OPERATIVE PSYCHOSES.

DR. J. CHALMERS DACOSTA: All sorts of mental disturbance may follow a surgical operation. It is certain that genuine insanity may arise after an operation, though it is seldom met with. Post-operative insanity is more common in women than in men and less common in children than in adults. Contributory causes are pain, insomnia and shock. In all cases of post-operative insanity there is predisposition, hereditary or acquired. A normal, stable brain will probably never go insane after operation unless that operation attack the brain, testicles or ovaries. The anesthetic is usually the exciting cause in insanity coming on immediately after the operation. The commonest type of post-operative insanity is confusional insanity. Fear and worry are two important causal factors. Ante-operation fear may become a post-operative phobia, yet I do not believe that fear or sudden fright is usually responsible for post-operative insanity. Most people go to the operating room with reasonable calmness, many with heroic courage, and some with satisfaction at the prospect. Delirium may be mistaken for insanity, and is far more common, from intoxication or infection, than organic brain disease. The entire subject of post-operative psychoses is one of extreme interest and importance.

POST-OPERATIVE INSANITIES.

DR. EDWARD N. BRUSH, of Towson, Md.: It may be assumed that there is no such thing as post-operative insanity *per se*. Insanity follows operations sometimes, but it manifests itself in various forms. The personal and family history in a given case are so difficult to obtain that we are not at all sure how far mental instability plays a part. This naturally arises from the lack of clinical experience in psychiatry on the part of many observers of these cases. Quite a large proportion of post-operative insanities are due to sepsis, not necessarily from faulty technic on the part of the surgeon. I have knowledge of a woman of unstable mental equilibrium who became insane after the administration of gas for the extraction of teeth and who remained insane for several months. Before we can study intelligently post-operative mental disturbances we must have the histories of our patients carefully recorded. From the lack of this knowledge the post-operative insanity is often erroneously attributed to the operation when in reality the condition may have been present preceding operation.

[1] The paper is printed in full in this issue of the JOURNAL, see p. 838.

DISCUSSION.

Dr. Howard A. Kelly, Baltimore (discussion presented by manuscript in Dr. Kelly's absence): Post-operative psychoses I believe are due to the mental shock of the operation *per se* and not necessarily to any particular kind of operation. The duration and severity of the procedure are minor factors. The condition is due rather to the attitude of intense expectancy, even of dread, inspired by a new and untried force with which the patient feels she has to cope. It is important that the physician should be able to inspire the patient with confidence sufficiently to enable her to feel that he is a moral support. The conditions after operation should be as natural as possible and the patient should be out in the sunlight upon the porch when practicable. Treatment should be prophylactic in determining the predisposing factors. The utmost care should be taken to minimize the unpleasantness of the operation.

Dr. Edward Martin: I think every surgeon in the room feels that when Dr. Mitchell said, "The surgeon pulled the trigger," he practically covered the whole subject.

We do not recognize that a perfectly healthy individual in good mental health can be made insane by any form of surgical intervention practiced at the present day. We do recognize certain post-operative mental disturbances as rather common. We see the type of depression which we call "hospitalism," of which the patient is cured by being sent out of the hospital. We see the type of homesickness, and again the patient is cured by being sent home. We do not see the type mentioned by Dr. Mumford in which the patient is depressed by the thought of loss of organs, and broods upon a physical deformity.

Dr. Francis X. Dercum: The great rôle played by neuropathy in post-operative mental disturbances should discourage operation in such subjects except under circumstances of grave necessity.

Dr. John K. Mitchell: Of 344 cases of general mental or nervous disturbances, there were only 31 cases which could be called post-operative. There seemed to be no relation between the severity of the operation and the severity of the mental disturbance. Fright, I feel sure, plays a larger part than is generally attributed to it. There are good surgical reasons for getting a patient out of bed as soon as possible, but these troubles would be less frequent if the period of rest in bed were increased and general treatment instituted. Should the question of surgical treatment of a neurasthenic patient arise, much more than ordinary care must be observed in deciding upon operation.

Dr. Charles K. Mills: Of many serious cranial operations under my observation I can recall perhaps only two or three in which insanity has followed the procedure. There have been very few also following operations upon the spinal cord. In my experience these insanities have occurred in women of a certain temperament and of a certain predisposition rather than in the neurasthenic type.

Dr. S. Weir Mitchell, closing: The question arises concerning the result of the use of local anesthesia which has become so fashionable in some circles. I hear of abdominal operations done under local anesthesia. I think to have the interior of one's abdomen exposed to one's own view would tend as much as possible to produce some of the insanities of which we have been speaking. It is a fact that occasionally insanities have been cured by grave operations. One such case was an amputation. Another was an attempt on a man's part to cut his throat. The man bled almost to the point of death, but his life was saved, and he recovered from his insanity. I don't recommend the method. The greatest of surgeons known to me is the surgeon called "War," and I have seen many cases in which sudden delirium or sudden delusion followed instantly upon a gunshot wound. One case was that of a colonel who, after being shot, cried to his men to run, that the rebels were upon them. He fell to his face, was delirious for some time, but, after amputation of his arm, he returned to the regiment that evening. Another case was that of an officer in the Mexican War, a man of well-known courage. A ball struck his heel; he limped up and down the line calling to his men to run, that everybody was going to die, and for hours he was in a condition of the wildest maniacal excitement. This passed away within forty-eight hours. He asked for a court of inquiry, which, of course, was denied a man so well known for courage.

Book Reviews.

Founders' Week Memorial Volume. Edited by Frederick P. Henry, A.M., M.D. Published by the city of Philadelphia in commemoration of the two hundred and twenty-fifth anniversary of its founding. Philadelphia: 1909.

This volume contains an account of the celebration of the two hundred and twenty-fifth anniversary of the founding of the city of Philadelphia, and "histories of its principal scientific institutions, medical colleges and hospitals." It is a compliment to the editor, not lack of appreciation of his labors, to say that the most interesting part of his work is his epigrammatic preface. The book is a useful compilation of valuable historic data about the many charitable, scientific and medical institutions and enterprises which have justly made Philadelphia famous in the past, and still distinguish her in the present. The illustrations, though not beautiful, are well adapted to their purpose of supplying information. The volume should be a serviceable work of reference for those interested in the history of the city and her activities.

Practical Points in Nursing. For Nurses in Private Practice. With an Appendix containing Rules for Feeding the Sick; Receipts for Invalid Foods and Beverages; Weights and Measures; Dose List; and a Full Glossary of Medical Terms and Nursing Treatment. By Emily A. M. Stoney. Fourth edition, thoroughly revised. Containing 97 text illustrations and 8 colored and half-tone plates. Philadelphia and London: W. B. Saunders Company. 1910.

This new edition of Miss Stoney's well-known book on nursing presents a large amount of fresh material incorporated with the excellent substance of the original. The illustrations are numerous and in the main good. The volume should continue to be a popular and valuable textbook for training-schools and for nurses in private work.

Diseases of the Colon and Their Surgical Treatment. (Founded on the Jacksonian Essay for 1909.) By P. Lockhart Mummery, F.R.C.S. Eng., B.A., M.B., B.C. Cantab.; Jacksonian Prizeman and late Hunterian Professor, Royal

College of Surgeons; Senior Assistant Surgeon, St. Mark's Hospital for Cancer, Fistula and Other Diseases of the Rectum, etc. Illustrated by colored and other plates and numerous figures in the text, many of which are reproduced from the author's sketches. New York: William Wood & Co. 1910.

This little book of three hundred and seventeen closely printed pages is founded upon the author's Jacksonian prize essay, awarded by the Royal College of Surgeons in 1909. It is a most useful and informing handbook. The subject of diseases of the colon is not altogether so recently developed as he implies in his preface. Nevertheless, much bad work is still being done in colon surgery, and much misinformation still is current regarding this organ. Mummery takes up his subject systematically, and deals with the colon's anatomy, functions and diseases in proper sequence, winding up with excellent chapters on colon operations. He is not in accord with those writers who regard the colon as of small importance to the organism. He reminds us that the absorption of water takes place mainly in the colon, so that elimination of the colon is wont to result in chronic diarrhea and a chronic thirst. He points out also the danger of leaving blind pouches when operating on the colon, since these pouches, through retro-peristalsis, become filled with hardened fecal masses which act as a source of auto-intoxication and mechanical injury.

Among a multitude of interesting paragraphs we read of the best methods of examining the colon; of post-operative complications; of such lesions as kinking, relieved by properly applied massage; of ptosis and its treatment; much of mucous colitis, for which the author advocates appendicostomy; of antero-spasm; of diverticulitis, which is forcing itself more and more on our attention; much of chronic constipation, in regard to which he discusses Arbuthnot Lane's method of ablation of the colon, and with a note of distrust; and at length, of the great subject of tumors of the colon. The book is admirably written, is extremely suggestive and is well worth study alike by physicians and by surgeons.

Physiology and Pathology of the Semicircular Canals. Being an Excerpt of the Clinical Studies of Dr. Robert Barany, with Notes and Addenda gathered from the Vienna Clinica. By ADOLPH E. IBERSHOFF, M.D., and a Foreword by ROBERT S. COPELAND, M.D. Pp. 64. New York: Paul B. Hoeber.

This is a small book of 64 pages. The title and the following extract from the foreword accurately set forth the nature and the purpose of the book: "Since the publication by Ewald and Hoegyes of their epoch-making experiments on the semicircular canals of animals, and the discovery of the underlying laws of labyrinthine physiology, extensive researches have been conducted at the clinics of Vienna and Berlin on the human labyrinth. While the latter have been supplemental to the classical work of the above-named pioneers, they have served to reduce the subject to a practical basis and to evolve a new and valuable method of diagnosis of conditions hitherto obscure. Nystagmus, which until recent years has been associated almost entirely with congenital or early acquired optical defects, or in an indefinate way with lesions of the inner ear, has become one of the most important aids in differential diagnosis, and greatly amplified the scope and efficiency of the aurist.

"With the exception of a few contributions to our medical journals by men who have recently visited the Vienna clinica, this is the first attempt to present the subject in detail to the English-speaking profession."

After discussing the anatomy and the physiology of the semicircular canals, the writer takes up nystagmus and describes the methods of determining it in the normal and in the pathological labyrinth. The tests by which nystagmus can be elicited, namely, the caloric tests and the turning tests, are clearly given and their physiology clearly explained. The subject of labyrinthine vertigo is also given concisely and clearly.

The differential diagnosis of the labyrinthine conditions and the operative measures indicated are given. The book ends with a set of tables condensed from Mackenzie. These give in parallel columns the differential points necessary in distinguishing labyrinthine suppuration, peri-labyrinthitis, neuritis of the eight nerve and cerebellar abscess.

This book is a timely and valuable one. As the writer says, it is one of the first, if not the first, to give this puzzling subject in English. The usefulness of the book would be increased and the subject made more complete if the writer had added a discussion of nystagmus and vertigo in diseases of the cerebellum.

Dawn of the Fourth Era in Surgery, and Other Short Articles. By ROBERT T. MORRIS, M.D., Professor of Surgery, New York Post-Graduate Medical School and Hospital. 12mo. Pp. 145. Philadelphia and London: W. B. Saunders Company. 1910.

Morris's writing is always stimulating and suggestive. He has sometimes been criticised for undue vigor of statement, for exaggerating minor matters and for loudly crying down methods and teachings which do not meet with his hasty and somewhat boisterous sympathies. These criticisms may possibly express the views of impatient conventionalists only. At any rate, the little book before us is full of good reading. The author has collected in a convenient pocket-volume his most important journal essays of the past five years: that paper which he calls the Physiologic Era in Surgery, his description of various diagnostic points on the abdominal wall, the papers on the appendix, on surgical cleanliness, et cetera. The essays are written in a popular and picturesque style, and for the larger medical public. Doubtless they may at times lead astray the unwary and inexperienced, but who admits himself to be inexperienced or unwary?

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OUR HETEROGENEOUS URBANIZED POPULATION.

The work of the census is nearing completion, and though it is still too soon to draw definite conclusions, certain inferences from it seem fairly warrantable. The total population of the United States, including the Philippine Islands and Porto Rico, is approximately 104 millions; that of the United States alone is about 93 million, as against 76 million ten years ago, representing an increase of about 22%. This sounds gratifying; but when it is remembered that this increase is largely by annexation and immigration, that our native birth-rate is rapidly declining, and our shores filled with swarming alien hordes not fundamentally in sympathy with our racial institutions and ideals, the prospect seems less pleasing. Our country is to-day in the situation of a highly gorged anaconda, replete with heterogeneous material. Can this indiscriminate mass be assimilated? Can our racial genius so leaven the nations as to fashion them all to our form and substance? These are the questions which we face with our unabsorbed and seemingly unabsorbable millions. Nothing but the spirit which can solve these "in the teeth of all the schools, will save us at the last."

Another very striking aspect of our growth in the past ten years is the increase of large cities. We now have 50 cities with a population of 100,000 or more, and nearly a third of our people live in cities of over 25,000. New York City alone contains more people than the rest of New York state. This urbanization of population is not peculiar to the United States. It is characteristic of all modern civilizations. With it goes all that city life implies of bad hygienic environment, nervous wear and tear, and moral degradation. With it also go all the advantages and opportunities for progress and splendid achievement which are possible only in corporate urban society. The conclusion is one neither of elation nor of pessimism. The result of the census shows that we are following natural paths of evolution. If we would have a high civilization, we must be prepared to pay for it, and it can be purchased only at the cost of an urbanized population which makes its necessary activities possible. Man's instinct for aggregation is perhaps representative of the primitive impulse that brought the myriad component cells of his being into symbiosis. Moreover, there are positive elements of encouragement. If our population is urbanized, it is also suburbanized. Our cities have spread their limits proportionately more than they have swelled their numbers, with the result that many now who are officially city-dwellers have many of the blessings of country life. This combination of the two is, perhaps, the keynote of our solution. So far as hygienic environment goes, too, our cities are fully as healthful as many country districts, as is proved by their water supplies, their watchful prophylaxis of disease, their low death-rates. The alertness of the medical profession is one of our greatest guarantees of safety under conditions that might otherwise become hazardous. Altogether, then, the prospect is one of encouragement, and in meeting it, it behooves us to remember that our profession has a greater opportunity for service in America, with her urbanized people and her unassimilated millions, than in any other country in the world.

THE PROPHYLAXIS OF CROUPOUS PNEUMONIA.

The pneumonia season is at hand. This disease keeps on claiming an enormous and increasing number of victims. It constitutes about 2% of all internal diseases and is responsible for nearly 10% of all deaths in the United States to-day. The mortality for tens of thousands of cases remains where it was one hundred years ago — between 20 and 25%. The day is probably coming when we shall have a specific for pneumonia, but until that day comes we must fight the disease as we have in the past, and we can hardly expect a decrease in mortality.

In one respect, however, we can improve on the past, and that is in the matter of prophylaxis. Although we cannot cure more cases than formerly, we can many times prevent the occurrence of the disease. In many cases of pneumococcus pneumonia there is a history of recent infection,

generally severe, somewhere in the respiratory tract — a bad "cold in the head" or a follicular tonsillitis, laryngitis or bronchitis. The patient recovers, perhaps without being obliged to give up any of his ordinary duties, and seems perfectly well to himself, his family and his physician. But he may be harboring the pneumococcus all the time, and after his resistance has been lowered by business worry or long hours of work during the holiday season, by the frightful dust of the snowless streets and finally, perhaps, by careless or unavoidable exposure on a cold or wet night, the deadly micro-organism has his chance. We ought to take more seriously the cases of acute respiratory infection which come under our observation, especially between November and June, when most cases of pneumonia occur. A case of acute bronchitis should not be allowed to pass without a sputum examination. If pneumococci are present, the patient should be kept in bed as long as there is the slightest fever, and after that he should be treated as a convalescent from pneumonia. He has had a pneumococcus infection, and, after all, pneumonia itself is only a pneumococcus infection with local manifestations in the lung.

A still better way to prevent pneumonia is to avoid the previous infection of the upper air passages. People who live in city streets should cleanse the nose, mouth and throat every night as a routine measure. The pneumococcus, according to Musser and Norris, has been isolated from the throats of 50 out of 80 normal individuals. Wells demonstrated it in the respiratory passages of 62 out of 135 persons examined. Convalescents from pneumonia may carry virulent organisms in their throats for weeks or even months. The chief source of the pneumococcus is the sputum of the pneumonia patient. Woods found that the organism could live in moist sputum as long as two weeks. When the sputum becomes dry, pneumococci can be easily distributed on dust particles in the air. The patient, in coughing, sneezing or talking, expels into the air "droplets" which may contain pneumococci. The Medical Commission for the Investigation of Acute Respiratory Diseases in New York finds that infection may be acquired by the inhalation of dried sputum or of freshly exhaled droplets suspended in the air of the sick room, or by contact with utensils used by pneumonia patients. According to Woods, the danger from infected sputum can be avoided by ample illumination (sunlight) and ventilation of the sick room and by refraining from dry sweeping and dusting. Sputum cups should be insisted upon. The best way of disinfecting the sputum is by keeping a strong solution of sodium hydrate in the cup. Corrosive sublimate and carbolic acid do not disinfect the central portion. The patient should be isolated from all except those taking care of him, and articles which may be contaminated and which cannot be cleaned by cloths dampened with a disinfectant should be removed from the patient's vicinity. Isolation in hospital wards is desirable. A physician should never pass from a pneumonia patient to a patient with some other disease without washing his hands.

HOSPITAL BUREAU OF STANDARDS AND SUPPLIES.

THE recently published first annual report of the Executive Committee of the Hospital Bureau of Standards and Supplies presents a statement of the work of the Bureau during the first seven months of its existence, ending Sept. 30, 1910. This new and interesting organization was established last spring in New York for the purpose of securing to hospitals "the advantages of co-operation in establishing uniform standards as to quality and kind of supplies ordinarily used therein and of purchasing the same in accordance with definite specifications under continuing or other general agreements, and for the purpose of promoting the economic and efficient administration of such hospitals."

Five New York hospitals entered this co-operative association, to which nine others have since been admitted. The Bureau has already formed 21 agreements, of which 17 are still in force, covering such articles of supply as ice, coal, gauze, incandescent lamps, bottles, pins, meat, adhesive plaster, toilet paper, paint, blankets, coffee, towels and alcohol, and already has shown a substantial saving in the purchase of such articles above the cost of administering the Bureau.

The project certainly seems one of great value and efficiency. Its continued success depends on the number of institutions which become affiliated with it, since each new member reduces the expense of maintenance for the rest. It is purposed to establish a non-resident membership for institutions outside New York City. The Bureau affords admirable illustration of the benefits of intelligent co-operation, and the widening of its usefulness should result in the establishment of similar associations among hospitals in other sections of the country.

IMMUNITY OF ANIMALS TO POISONS.

The varying susceptibility of different animals to the several vegetable and mineral poisons is well known. Dogs tolerate large quantities of morphia, and elephants eat codeia with apparent impunity. A large trick elephant, executed in New York last week for having killed her keeper, lived forty-four minutes after swallowing 500 gr. of potassium cyanide. Nor is this tolerance solely a matter of proportionate bulk, because the hedgehog is also highly resistant to cyanic poisons. Moreover, this fortunate animal has a high degree of immunity to the toxins of diphtheria and tetanus, and to snake venom. There is opportunity for considerable investigation and perhaps valuable discovery in the comparative study of animal sera and immunity.

MEDICAL NOTES.

Pellagra in South Carolina. — Report from Spartanburg, S. C., states that of 332 deaths in that city thus far this year, 21 have been due to pellagra.

Epidemic Conjunctivitis in Virginia Military Institute. — It is reported from Lexington, Va., that the Virginia Military Institute in that city has been closed until Jan. 4, 1911, on account of epidemic conjunctivitis among its pupils. The nature of the infecting agent is not stated.

Bubonic Plague in Manchuria. — Report from St. Petersburg states that bubonic plague is now epidemic throughout Manchuria. Rigid precautions are being observed along the frontier to prevent entrance of the infection into Siberia.

Illness of Queen Elizabeth of Belgium. — It is reported from Brussels that the illness of Elizabeth, Queen of the Belgians, which was at first supposed to be bronchitis, has now been diagnosticated as typhoid fever. Her majesty is said to be progressing favorably.

Smallpox in Michigan. — Report from Lapeer, Mich., states that about Nov. 6 smallpox became epidemic among the inmates of the State Home for Feeble Minded in that city, since which time there have been 30 cases and 14 deaths of the disease. The institution is under quarantine, enforced by a military guard.

Cholera in Italy and Canada. — During the week ending Nov. 26, 29 new cases and only 4 deaths of Asiatic cholera were reported in Italy, where the epidemic seems to be distinctly subsiding. The Russian suspect, detained at Quebec, Canada, to whom we refered in last week's issue of the Journal, is said to have proved a genuine case of cholera, but is recovering.

Death of a Cretin in Oregon. — From Canyonville, Ore., is reported the death, on Nov. 21, of a girl thirteen years old and weighing only fourteen pounds, presumably a cretin, who had not enjoyed the therapeutic advantages of thyroid extract.

Death from Headache Powders. — The recently reported simultaneous sudden death in Brooklyn, N. Y., on Nov. 25, of two women with signs of acute poisoning, after taking headache powders procured of two different druggists, re-emphasizes the dangers of such remedies obtained without prescription. An investigation is being made of the contents and place of manufacture of the powders.

Cinematographs of Tuberculosis. — The National Association for the Study and Prevention of Tuberculosis has made arrangement for the simultaneous exhibition this week, in a number of moving picture theaters throughout the country, of a series of films illustrating the modes in which tuberculosis is transmitted and the methods by which it may be combatted.

Some Charitable Bequests. — The will of the late Mrs. R. G. Dun, who died recently at Hot Springs, W. Va., was filed for probate on Nov. 22 at Narragansett Pier, R. I. Among several public charitable bequests it contained one of $20,000 to the Orphan Asylum of New York City, and one of $5,000 to the Home for Blind Babies at Bay Ridge, N. J.

Gift of Land for a Tuberculosis Sanatorium. — It was announced last week at Colorado Springs, Colo., that James K. Polk Taylor of that city has given a tract of 480 acres of land at Calhan, Colo., to the Charles Sumner Tuberculosis Association as a site for a National Tuberculosis Sanatorium for negroes, which is to be erected at a contemplated cost of three hundred thousand dollars. Mr. Taylor was born a slave, but since his emancipation has become a prosperous landowner in the West.

Appeal for North Shore Babies' Hospital. — An appeal to the public is made by the officers of the North Shore Babies' Hospital for money which is urgently needed for immediate repairs and improvements in the diet kitchen, laundry

and bathroom. This free institution does a valuable charitable work, and its needs should not be unheeded by those who are able to give.

RELATIONS OF ANIMALS TO HUMAN TUBERCULOSIS. — In an address last week before the Boston Scientific Society, Dr. Edwin H. Schorer described the varieties of tuberculosis in animals, other than man, and particularly those animals, like cattle, dogs, cats and parrots, with which man comes into more or less close personal contact. He emphasized the importance of this relation in that it affords opportunity for transmission of latent forms of the disease, if not of direct infection.

LECTURES BEFORE THE NURSES' CLUB. — At the regular fortnightly meeting of the Nurses' Club of Boston, this evening, Dec. 1, Dr. Cleaveland Floyd will deliver an address on "Newer Methods of Treating Pulmonary Diseases." At the meeting on Dec. 15, Dr. Charles R. C. Borden will speak on "Diseases of the Ear, Nose and Throat, and their Influence on the General Health." The public is cordially invited to these lectures, which will be given at 8 P.M. in the rooms of the club at 755 Boylston Street.

CONTINUANCE OF THE TYPHOID EPIDEMIC AT ANNAPOLIS. — During the week ending Nov. 26, three more new cases of typhoid fever were reported at the United States Naval Academy at Annapolis, making a total of twenty students now ill with the disease. There have been no deaths, and all the patients are said to be progressing well. It is believed that the source of the infection has been traced to a temporary extra supply of milk which was used at the Academy from Oct. 19 to Nov. 9. The occurrence of this epidemic should give weight to the Surgeon-General's recent recommendation that anti-typhoid inoculation be made compulsory in the army.

CUT RATES IN PROPRIETARY MEDICINES. — A suit is now pending before the United States Supreme Court involving the legality of "cut rates" for proprietary medicines. The suit was originally brought before the United States Circuit Court by a company at Elkhart, Ind., which undertook to restrain the sale of its medicines at reduced prices by a firm in Cincinnati, Ohio. The desired injunction was refused, and this decision was sustained by the Circuit Court of Appeals. The suit, which has now been appealed to the Supreme Court, is based on a series of contracts by which the manufacturers attempt to control the prices of their goods. The decision of this question will have an important bearing on the problem of "cut rates" in all proprietary medicines.

INHIBITION OF A PSEUDO-MEDICAL COLLEGE. — Under the law forbidding the use of the word "college" by an unchartered institution of learning, the New York State Education Department issued on Nov. 25 an injunction against the so-called "American College of Science" in Rochester, N. Y., an establishment which has been conferring unauthorized degrees in mesmerism, hypnotism and personal magnetism. This action was taken on complaint by the consul-general from Guatemala that several graduates of this institution were practising in his country. In not desiring their presence, the inhabitants of Guatemala seem to have been more sensible than some of our own citizens. It is to be hoped that the injunction may serve to check at least one of the forms of dangerous pseudo-medical charlatanism which are rampant in the land.

BOSTON AND NEW ENGLAND.

ACUTE INFECTIOUS DISEASES IN BOSTON. — For the week ending at noon, Nov. 16, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 41, scarlatina 28, typhoid fever 9, measles 20, smallpox 0, tuberculosis 67.

The death-rate of the reported deaths for the week ending Nov. 16, 1910, was 16.56.

BOSTON MORTALITY STATISTICS. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Nov. 19, 1910, was 211, against 174 the corresponding week of last year, showing an increase of 37 deaths, and making the death-rate for the week, 16.33. Of this number 107 were males and 104 were females; 204 were white and 7 colored; 118 were born in the United States, 92 in foreign countries and 1 unknown; 48 were of American parentage, 139 of foreign parentage and 24 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 42 cases and 0 deaths; scarlatina, 19 cases and 0 deaths; typhoid fever, 9 cases and 4 deaths; measles, 22 cases and 0 deaths; tuberculosis, 50 cases and 18 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 33, whooping cough 0, heart disease 32, bronchitis 5. There were 14 deaths from violent causes. The number of children who died under one year was 36; the number under five years, 49. The number of persons who died over sixty

years of age was 71. The deaths in public institutions were 81. Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following were non-residents: Diphtheria, 1 case. Consumption, 1 death. Scarlet fever, 1 case. Anterior poliomyelitis, 1 case.

Deducting deaths of non-residents, the total is 183 and the death-rate is then 14.16.

Arrests for Promiscuous Spitting. — Prosecution of the so-called "spit war" is still proceeding vigorously in Boston. During the week ending Nov. 26, 63 arrests for illegal expectoration were made in the city, and nearly all the prisoners were fined two dollars each. Ten of them, being unable to pay the fine or furnish bail, were obliged to spend one or more days in jail.

Deportation of a Case of Trachoma. — In September last, an Armenian immigrant, who had entered this country from Halifax, N. S., in July, was arrested at Boston, found to have trachoma, and ordered deported. In the interim, she had married an American citizen, and now on this basis claims immunity from deportation. Whatever the technical merits of her case, it is to be hoped that she will not be allowed to become a menace to others by remaining at large with an infection of such serious nature.

Punishment for Illegal Sale of Cocaine. — The prisoners, whose recent arrest in Roxbury for illegal sale of cocaine we chronicled in the issue of the Journal for Nov. 17, were tried last week in the local district and were each sentenced to imprisonment for terms varying from one month to four months. Several of them appealed and were held in bonds of three hundred or four hundred dollars. It is to be hoped that their punishment may be not greater than they can bear, but severe enough to act as a deterrent to them and to others in the future.

Two Centenarians. — Mrs. Delima Beaudry, who died last week at Woonsocket, R. I., is said to have been born on Nov. 25, 1809, at St. Anne de la Parade, P. Q., Canada, the eldest of a large family of children. She was twice married, and by her first husband had sixteen children, of whom six, together with all her own younger sisters and brothers, survive her.

Mr. Hubbard Blakeslee of Ridgefield, Conn., locally reputed to be one hundred and three years old, was burned to death on Nov. 24 in a barn at Southport, Conn., where he was staying in charge of a prize stallion and a drove of hogs. The accidental upsetting of an oil stove is supposed to have been the cause of the disaster. It seems hard that a man of his advanced years should meet death by violent rather than natural means.

An Ancient Peacock. — Man is not the only animal that sometimes lives to great age. The longevity of elephants and parrots is proverbial. Report from Sulphur Well, Metcalfe County, Ky., states that one of the farmers of that district possesses a peacock known to have been alive in 1800 and still in vigorous health.

A Lamentable Instance of Dishonesty. — Dishonesty among members of the medical profession is always exceptionally lamentable, dishonorable and unpardonable, for they have greater occasion than any other class of men to learn the value and sanctity and prevailing greatness of truth, and are doubly bound to practise the principles which they recognize. It is with the greatest regret that we learn that three graduates of the class of 1897 in dentistry in Harvard University, an institution dedicated to Truth, have been blacklisted by the Harvard Athletic Association for selling to speculators football tickets which they had themselves purchased under an express stipulation not so to dispose of them. There can be no question as to their deliberate dishonesty. They should have been beyond such mercenary temptation. Their conduct is a disgrace to their profession. They deserve the ignominy which attaches to their punishment.

NEW YORK.

Department of Bacteriology at Museum of Natural History. — A department of bacteriology has recently been inaugurated at the American Museum of Natural History on Manhattan Square.

Lecture on Public Health. — On Nov. 21 the lecture in the public course at Columbia University on "Public Health Protection" was by Dr. Simon Flexner, of the Rockefeller Institute. His subject was "The Rise of Bacteriology," and in concluding his discourse he remarked: "In no other natural science has practical achievenent followed more quickly and surely upon what in the beginning was thought to be abstract knowledge."

Safety Devices. — A permanent exhibition of safety devices, under the auspices of the American Museum of Safety, was formally opened on Nov. 21 in the Engineering Societies Building on

Thirty-ninth Street, near Fifth Avenue, and on this occasion an illustrated lecture was given by Dr. W. H. Tolman, the director of the museum, who has recently returned from a study of similar institutions in Europe. It is the hope of the founders eventually to make it equal to the great museum of safety in Berlin. It will be the aim not only to encourage the development of safety devices, but also to develop sanitary appliances tending to reduce the death-rate among workmen in the various trades.

SALE OF PROPERTY OF SOCIETY FOR RELIEF OF RUPTURED AND CRIPPLED. — The New York Society for the Relief of the Ruptured and Crippled has sold its hospital property on Lexington Avenue, extending from Forty-second to Forty-third Street, for $1,350,000 to the New York Central Railroad Company, which by this purchase acquires the final piece of property required to complete its plans for the enlargement of the Grand Central Station and yards. By the terms of the sale the hospital will not vacate its buildings for a year, by which time it is expected that a new hospital, in a less central location, will be ready for occupancy. It is also purposed to have a country annex for convalescent patients. The Society for the Relief of the Ruptured and Crippled was founded in 1863, largely through the instrumentality of the late Dr. James Knight, who remained at the head of its hospital until his death. In 1867 it purchased the large property just sold and erected the building at the Forty-second Street corner, and the adjoining building fronting on Forty-third Street was constructed fifteen years ago.

PAGE LAW AND PHYSICAL EXAMINATION OF WOMEN. — That part of the Page law for the inferior criminal courts, passed by the last legislature, which provides for the physical examination of women, has been declared unconstitutional by Justice Bischoff, of the New York Supreme Court, in an opinion handed down on Nov. 25 in *habeas corpus* proceedings brought to release a woman confined in the workhouse. The writ was granted on the ground that the statute directs the detention of the accused without due process of law, in that the sentence is made to depend upon the report of a physical examination without the opportunity for a hearing upon the facts entering into the report. The statute, which went into effect on Sept. 1, provides that women, on conviction, may be held for any time short of a year within the discretion of the magistrate.

DEATH OF "QUEEN." — It took forty-four minutes to kill a female elephant with 600 gr. of potassium cyanide, at the winter quarters of a circus in Jersey City, on Nov. 25. It was determined to execute "Queen," as she was called, for the vicious killing of one of her keepers, and the poison was administered in six capsules, which were put into three pails of "bran mash." The elephant, which weighed 7,650 lb., was one of the largest ever exhibited in America, and was believed to be nearly ninety years old.

Current Literature.

MEDICAL RECORD.

Nov. 19, 1910.

1. MAGNUS-LEVY, A. *Chemical Problems in Diabetes.*
2. *STANTON, E. M., AND KRIDA, A. *The Causes of Death from Shock by Commercial Electric Currents, and the Treatment of the Same.*
3. MEARS, J. E. *The Use of Thiosinamin in the Treatment of Cicatricial Formations following Burns.*
4. KAPLAN, D. M. *Concerning the Restoration of Inhibitory Qualities in Liver Extracts.*
5. MITCHELL, J. R. *A New Theory of Eclampsia.*

2. Stanton and Krida write a valuable paper on the subject of electric shock, reviewing the literature and reporting their experiments on dogs. They find that the two great causes of death are cardiac fibrillation and respiratory paralysis. Low-tension currents usually kill by producing fibrillary contractions of the heart, in which the individual muscle fibers contract in an utterly incoördinate manner. As the tension is increased, the effect on the heart becomes less pronounced and the effect on the central nervous system more and more certain, so that with high-tension currents death is more likely to be caused by respiratory failure. Cardiac fibrillation is always fatal. In cases of simple respiratory paralysis, the patient may be kept alive by artificial respiration until the nervous system recovers from the effects of the shock. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

Nov. 19, 1910.

1. STEVENS, G. T. *A Series of Studies of Nervous Affections in Relation to the Adjustments of the Eyes.*
2. GORDON, A. *Pathogenesis of the Toe Phenomenon.*
3. INGLIS, D., KLINGMAN, T., AND BALLIN, M. *Extramedullary Spinal Cord Glioma.*
4. YOUNG, A. D. *The Proper Method of Administering Ether.*
5. FRESCOLN, L. D. *Anesthesia Dangers.*
6. WATSON, L. F. *Local Anesthesia in General Surgery.*
7. SALLOM, M. *The Determination of the Dose of Stovaine in Spinal Anesthesia by Blood-Pressure Observations.*
8. MACWHINNIE, A. M. *Tonsil-Grasping Forceps.*
9. LEVIN, N. P. *What is the Direct Cause of the Seizures of Epilepsy?*
10. BELL, F. M. *Reveries of a Young Practitioner.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Nov. 19, 1910.

1. JONAS, A. F. *Operative Treatment of Simple Fractures.*
2. DUNHAM, J. D. *Clinical Results of Gastro-Enterostomy for Non-Malignant Diseases.*
3. STERN, H. *Blood Letting in Children.*
4. NELSON, R. M. *An Original Method for Prevention of Perforation in Submucous Resection.*
5. LESPINASSE, V. D., FISHER, G. C., AND EISENSTAEDT, J. *Practical Mechanical Method of End-to-End Anastomosis of Blood Vessels, using Absorbable Magnesium Rings.*

6. *Pilcher, J. T. *Absence of Hydrochloric Acid with Blood in Stomach Secretions as a Symptom of Chronic Gastritis.*
7. Barrett, C. W. *Place of Hebosteotomy as an Aid to Delivery.*
8. *Litchy, M. J. *Influence of Perigastric Lesions on Gastric Secretions. A Study Based on Clinical and Experimental Observation.*
9. *Skoog, A. L. *Treatment of Acute Anterior Poliomyelitis.*
10. Rous, P. *Metastases and Tumor Immunity with a Transmissible Avian Neoplasm.*
11. Minor, C. L. *Diagnosis and Treatment of the Earlier Changes in the Larynx in Pulmonary Tuberculosis.*
12. Foster, G. B. *Antityphoid Vaccination. An Instance Illustrating Its Efficacy.*

6. Pilcher, from the examination of the gastric contents in four thousand cases, believes that there is a definite entity presented in the stomachs of patients suffering from various intra-abdominal and extra-abdominal pathologic conditions which is characterized by the absence of hydrochloric acid and the presence of "occult" blood. This condition is probably produced by a nervous reflex inhibiting first the production of free hydrochloric acid to only a moderate degree, but enough to allow the increased growth of pathologic bacteria, such as the streptococcus and colon group. These act as direct irritants in conjunction with such primary irritative factors as gallstones, appendicitis, pancreatitis, and produce an ulcerative erosion of the mucous membrane which gives the "occult" blood found in these cases. These are, therefore, not cases of "achylia gastrica," as shown by the prompt return to normal when operative relief from the primary extragastric condition is effected. Such cases occur in about one in every fifteen stomach cases.

8. Litchy also bears out Pilcher's observations in a series of experimental observations on dogs, in which perigastric lesions were produced in the gall bladder and appendix, or pouch of the cecum, and were followed or accompanied by a hypo-secretion of hydrochloric acid and the presence of "occult" blood. Litchy also found a decrease of acidity during starvation and an increase following excitement.

9. Skoog advises lumbar puncture, both for diagnosis and relief of symptoms in the early stages of acute poliomyelitis, especially when there is any tendency to meningeal embarrassment. He also uses hexamethylenamin, 0.12 to 0.24 gm. doses, during this stage, and in other non-infected children in the same family, as a prophylactic. He believes that rest is of greatest importance and if rigidly enforced may abort some cases of paralysis. He also quarantines all cases and urges that it should be made a reportable disease throughout the United States.

[E. H. R.]

The American Journal of the Medical Sciences.

October, 1910.

1. *McCrae, T. *Dilatation of the Aorta.*
2. Stengel, A., and Pepper, W. *Heart Block, with an Indication of Genuine Hemisystole.*
3. *Eshner, A. A. *The Treatment of Aneurysm of the Aorta by the Introduction of Wire and the Passage of a Galvanic Current.*
4. Clattor, T. A., and Merrill, W. H. *Orthodiagraphy in Pathological Conditions of the Heart and Aorta.*
5. Libman, E., and Celler, H. L. *The Etiology of Subacute Infective Endocarditis.*
6. *Edwards, A. R. *Syphilitic Febrile Pylephlebitis, with Remarks on Syphilitic Fever and Aberrant Types of Hepatic Syphilis.*
7. Einhorn, M. *Stretching of the Cardia in the Treatment of Cardiospasm and Idiopathic Dilatation of the Esophagus.*
8. Sewall, H. *A Preliminary Note on Medical Uses of Rectal Infusions.*
9. *Rachford, B. K. *The X-Ray Treatment of Status Lymphaticus, with Inferences drawn therefrom concerning the Physiology of the Thymus Gland.*
10. Rudolf, R. D., and Cole, C. E. C. *A Case of Splenomegaly associated with Marked Anemia of the Pernicious Type.*
11. Camac, C. N. B., and Milne, L. S. *The Spinal Cord Lesions in Two Cases of Pernicious Anemia.*

1. McCrae discusses the subject of diffuse dilatation of the aorta as illustrated by a series of sixty cases. Two main groups of cases occur, the first following acute infectious diseases, notably rheumatic fever, and the second having its etiology in the causes of arteriosclerosis and aneurysm, although syphilis probably plays a less prominent rôle than in true aneurysm. Clinically the condition may exist without symptoms, or with symptoms which may be explained by coexistent myocardial or valvular disease, but many cases complain of dyspnea and thoracic pain of varying degree. Pressure symptoms and signs are common, but rarely severe. The chief physical signs are visible pulsation in the upper interspaces, dullness over the upper sternum and changes observed by means of the x-ray. The importance of recognition of this condition as distinguished from aneurysm lies in the much more favorable prognosis of the diffuse dilatation.

3. Eshner reviews the various methods that have been used to induce thrombosis in aneurysmal cavities with special reference to wiring and electrolysis. He reports 2 cases and has collected 38 from literature. He concludes that while aneurysm of the aorta is essentially a fatal disorder, in sacculated forms wiring and electrolysis is a simple and safe procedure and has led to satisfactory results in a majority of instances where its use has been reported.

6. Edwards reports a case of febrile pylephlebitis which promptly recovered when given antisyphilitic treatment. From a study of literature he finds a number of descriptions of syphilitic conditions simulating septic disorders of the liver.

9. Rachford has treated two cases of status lymphaticus by means of x-rays with distinct improvement. The thymus gland, which was distinctly large to percussion, became smaller and the thymic asthma disappeared.

[F. W. P.]

The Archives of Internal Medicine.

October, 1910.

1. *Hamman, L. *The Heart Muscle in Typhoid Fever.*
2. Hirschfelder, A. D. *The Functional Disturbances in Paroxysmal Tachycardia.*
3. *Wood, H. C., and Hofer, C. A. *An Experimental Study of the Pharmacology of Ergot.*
4. Wentworth, A. H. *The Utilization of Milk-Fat by an Atrophic Infant.*
5. *Fleisher, M. S., and Loeb, L. *Further Investigations in Experimental Myocarditis.*
6. Longcope, W. T., and McClintock, A. T. *The Effect of Permanent Constriction of the Splanchnic Arteries and the Association of Cardiac Hypertrophy with Arteriosclerosis.*
7. White, W. C., and Van Norman, K. H. *An Individual Quantitative Index to Tuberculin Dosage in Treatment.*

1. Hamman reports a study of the heart-muscle in forty-three fatal cases of typhoid fever. He compares this with the clinical histories of the same patients, and finds that, although there were changes in the heart-muscle in every case, there was no direct relation between the severity of the pathological changes and the clinical manifestations of the disease. Irregularity of rhythm and the physical signs of beginning dilatation occurring during the course of an infectious disease are, Hamman thinks, fairly certain signs of some cardiac lesion. In the cases which he studied, he frequently met with peri-arteritis and endarteritis in the large and medium-sized branches of the coronary arteries, and from this he concluded that the acute infections may have a late deleterious effect upon the circulatory system, even if they do not affect it during the acute attack.

3. From their study of ergot, Wood and Hofer conclude that ergot is a stimulant to all the unstriped muscle tissue of the body, hence it has a stimulant effect on the arterial muscles and probably on the heart. The active principle they believe to be an alkaloid — hydro-ergotinin — which, in combination with a resinous body, forms sphacelotoxin. The percentage of sphacelotoxin varies accurately with the physiological activity of different specimens of ergot.

Fluid extract of ergot deteriorates so rapidly that even under the most favorable conditions there is a loss of strength approximating 10% a month, and if the drug is exposed to the air, the loss is even greater.

5. Fleisher and Loeb, by injecting spartein or caffeine and adrenalin into rabbits, produced a condition of overwork for the heart-muscle which resulted first in edema of the muscle, later in small areas of fibrosis. The site of this lesion at the base of the ventricle they think points to a purely mechanical explanation for the change, instead of pointing to the theory that the lesion is due to lack of nutrition of the muscle fibers involved. In order to apply this theory to man, it would be interesting to know whether the immediate effect of the injection upon the general circulation of the rabbit is more or less severe than the effect of athletic feats or "strength stunts" upon the circulation of man. [G. G. S.]

ANNALS OF SURGERY.

OCTOBER, 1910.

1. *POOL, E. H., AND MCCLURE, R. D. *Transfusion by Carrel's End-to-End Suture Method.*
2. GOODMAN, C. *Blood Transfusion in Hemophilia.*
3. *CARREL, A. *Graft of the Vena Cava on the Abdominal Aorta.*
4. *BLAIR, V. P., AND MCGUIGAN, H. *A Suggestion for the Treatment of Air Embolism.*
5. FARR, C. E. *Preservation of the Submaxillary Branch of the Facial Nerve in Operation on the Neck.*
6. TOREK, F. *Anesthol Poisoning causing Acute Yellow Atrophy of Liver after Operation for Ileocolic Intussusception.*
7. SPEESE, J. *The Surgical Aspect of Epulis and Sarcoma of the Jaw.*
8. *VON EBERTS, E. M. *The Use of Differential Pressure in the Treatment of Empyema.*
9. *MAYLARD, A. E., AND ANDERSON, J. *Primary Sarcoma of the Stomach.*
10. CORNER, E. M. *The Function of the Appendix and the Origin of Appendicitis.*
11. *BARTLETT, W. *A Simple Method of Suturing all Hollow Viscera.*
12. *DAVIS, C. B. *The Recto-Sigmoidal Arterial Anastomosis.*
13. *SCUDDER, C. L. *The Bone Metastases of Hypernephroma.*
14. HAUBOLD, H. A. *Plastic Repair of the Thumb.*
15. CRANDON, L. R. G. *Wright's Solution of Sodium Citrate and Sodium Chloride for Drainage.*
16. SWEET, J. E. *The Relation of the Ductless Glands to Surgery.*

1. Pool and McClure have in the last year performed twelve transfusions by the end-to-end suture method of Carrel on ten patients. Many records of the hemoglobin, red and white cell counts, pulse-rate and blood pressure were made. The cases were secondary anemias of various causes, except one of gas poisoning and one of septic endocarditis and septicemia. Both these cases died; the first from extensive destruction of brain cells, the latter from her weak heart, which was unable to tolerate the increased burden of the transfused blood. Four cases (probable hemophilia, a severe anemia with high color index in which three transfusions were done, papilloma of the bladder, and infected uterine fibroid with pyemia) were apparently raised from the grave.

3. Carrel reports the successful resection of the abdominal aorta repaired by a graft consisting of a somewhat larger section of the vena cava in three animals. All were allowed to walk and eat as usual after a few hours. The deaths were completely independent of the operations (one killed by chloroform ten months after operation owing to the development of a pyelonephritis; another died apparently of old age three months after operation, and the third lived in perfect health for fourteen months, then died in a few days of pneumonia). The condition of the aorta and venous segment were studied. The anastomoses were excellent. The venous wall reacted against the arterial blood pressure by thickening its wall (an increase in connective tissue, probable increase in muscular fibers, and occasional increase in elastic fibers, but not observed in these experiments).

4. Blair and McGuigan have, on dogs and cats, experimentally produced air embolism and tried various measures for resuscitation. Some animals succumbed after the injection of very small quantities of air. Other animals recovered without treatment after the injection of much larger quantities of air. There was always a fall of blood pressure, dyspnea and restlessness. Respiration always stopped before the heart, owing to the ineffectiveness of the heart-beat in pumping blood to the respiratory center. Cardiac massage alone failed to remove air from the heart. The injection of fluid to fill partially the right heart and sweep the air into the pulmonary circulation failed because the weakened heart could not tolerate the burden of volumes of fluid sufficient to accomplish this result. Fluid plus an instantaneous powerful cardiac stimulant was tried. The authors suggest for the human 2 ccm. of 1:1,000 adrenalin solution injected directly into the right ventricle accompanied by saline solution. They do not state the amount of saline, but used in their animals 40 to 100 ccm. The strain of the injection may be lessened by simultaneous bleeding from a peripheral vessel. The Schafer method of artificial respiration is recommended when respiration ceases.

8. Von Eberts describes an airtight dressing and drainage device for use after rib resection in the treatment of empyema to favor the expansion of the lung and to demonstrate the daily amount of discharge.

9. Maylard and Anderson present two unusual cases of primary gastric sarcoma, one a unilocular cystic tumor with long pedicle, without stomach symptoms, and mistaken for an ovarian cyst.

11. Bartlett describes a continuous, single-row suture embracing all coats suitable for the anastomosis of all hollow viscera. It has been used exclusively by the author for two years with perfect satisfaction.

12. Davis has investigated the rectosigmoidal anastomosis in twenty-one subjects, in some by dissection of the vessels, in others by x-ray pictures of the vessels injected with a starch-lead-oxide mass. The female showed no variations peculiar to her sex. The anastomotic loop between the sigmoid and superior hemorrhoidal was found on an average 1.5 cm. below the promontory of the sacrum (in one case it was 5 cm. below). In several cases bifurcation of the superior hemorrhoidal occurred before the sigmoidal loop joined the rectal supply, in which cases ligation immediately above the loop (Hartman) would be dangerous. In the majority of cases Davis confirmed the wisdom of clamping vessels as far from the rectum as possible when operating by the sacral route, for the loop usually lay close to the bowel, but in some cases the loop arises so far from the bowel that the observance of such a rule would be disastrous. Two cases showed no loop.

13. Scudder completes the record of a case previously reported.[1] An amputation at the shoulder-joint had been done for sarcoma of the humerus. Microscopic examination of the removed tumor showed it to be hypernephroma. While still under the anesthetic a slight enlargement of the left kidney was made out. This was symptomless. Nephrectomy was urged on the ground that no other metastases could be found but was refused. Almost five years later death occurred, and a complete autopsy showed no local return and no other metastases. This case may be added to the series of Albrecht (Hochenegg's clinic) of hypernephroma with solitary bone metastasis. [T. W. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 43.

OCT. 27, 1910.

1. WEBER, L. W. *Treatment of Morphinism.*
2. *LOEFFLER, F. *A New Method for Successful Staining and Detection of Rare Tubercle Bacilli.*
3. EBSTEIN, W. *Treatment of Hay Fever.*
4. *MUNK, F. *The Effect of the Treatment with "606" in Syphilis upon the Wassermann Reaction.*
5. HIRSCHBERG, M. *Test for Functional Ability of the Pancreas.*
6. *ASCOLI, A. *The Meiostagmine Reaction in Foot and Mouth Disease.*
7. WIDEROE, S. *The Anatomical Reciprocity of the Organs of Internal Secretion.*
8. POLLAK, L. *A Case of Copper Sulphate Poisoning with Peculiar Blood Picture.*

[1] Ann. Surg., December, 1906, p. 851.

9. Pechowitsch, G. *Influence of Creeping Exercises on Lordotic Albuminuria.*
10. v. Poppen, A. *Diseases of the Conjunctiva in Cases of Graves' Disease with Exophthalmos.*
11. Dreuw. *The Treatment of Itching Dermatitis with Warm Moving Air.*
12. Schlesinger, A. *Advances in the Realm of Clinical Surgery.*
13. Schall, M. *Technical Improvements in the Field of Medicine.*

2. Loeffler recommends a new method for detecting small numbers of tubercle bacilli. It is a modification of the antiformin method, and consists in dissolving with antiformin and then centrifugalizing after the addition of a mixture of alcohol and chloroform. He gives the technic in detail.

4. Munk, as a result of some experimental work on rabbits, has come to the conclusion that the new Ehrlich preparation does not affect the Wassermann reaction. Whatever it is that the spirochete produce in the serum to give the positive reaction seems to be produced also by the spirochete after destruction by the new preparation.

6. This author found that the blood serum of animals attacked with foot and mouth disease showed on the addition of an extract of the virus a specific diminution of surface tension, so that there were more drops in a given volume. This test seems to last for some time after the attack. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 41.

Oct. 11, 1910.

1. Dibbelt, W. *Disturbances of the Metabolism of Lime in Rachitis.* (To be concluded.)
2. *Beneke. *Rupture of the Tentorium at Birth and Tension of the Dura in Chronic Cerebral Diseases.*
3. Grube. *Mechanics of Birth of the Head and Protection of the Perineum.*
4. Ascoli, M., and Izar, G. *Technic of the Meiostagmin Reaction in Malignant Tumors.*
5. *Baermann, G., and Wetter, N. *The Wassermann Reaction in the Tropics.*
6. Kepinow, L. *The Simplified Wassermann Reaction by the Method of v. Dungern and Hirschfeld.*
7. Engelhorn, E. *Results of Treatment for Nervous Conditions due to Gynecological Disturbances.*
8. Frühwald, R. *Puncture Treatment of Epididymitis Gonorrhoica.*
9. Schwartz and Flemming. *Studies on Guinea Pigs of the Ehrlich-Hata Preparation.*
10. Ehlers. *Ehrlich's "606" for Leprosy.*
11. Fessler, J. *A Non-Irritating Method of Drainage for Wounds.*

2. Beneke advances the view that in infants with open fontanelles tension on the dura is of great importance in both acute and chronic cerebral diseases. A sudden lateral compression at birth may rupture the tentorium and may result in sudden death, protracted asphyxia or other mild or severe symptoms. Chronic increase of tension may be brought about by habitually laying the infant on its side. This increase of tension is due to compression of the longitudinal sinus by the weight of the head, and it may lead to chronic internal hydrocephalus or to hypertrophy of the brain.

5. The writer, working in Sumatra, obtained positive Wassermann reactions in large percentages of frambesia and leprosy, and in a considerable number of cases of malaria. One group of malarial cases having strong positive reactions before treatment continued to show them after the fever was gone. These were regarded as probably syphilitic. In other cases an incomplete reaction was present before treatment was begun, but disappeared entirely in a few days. [G. C. S.]

Berliner Klinische Wochenschrift. No. 44.

Oct. 31, 1910.

1. Senator, H. *Address at the Semi-Centennial Celebration of the Berlin Medical Society.*
2. Blochmann. *Diagnosis of Nasal Diphtheria in Infants.*
3. Field, E. *A New Method of Direct Proof of Free Acid in the Stomach.*
4. Zypkin, S. M. *Acute Myeloid Leukemia. A Case of Green Coloring of the Bone Marrow.* (To be concluded.)
5. Emmerich, M. *"Iodine Cachexia" in Arteriosclerosis.*
6. *Királyfi, G. *The Retrojugular Glands in the Early Diagnosis of Experimental Tuberculosis in the Guinea Pig.*
7. Levy-Dorn, M. *A Simple Scale for the Size of the Normal Heart in the X-Ray Picture.*
8. Frühwald, R., and Weiler, F. *The v. Dungern Modification of the Wassermann Reaction.*
9. Schlesinger, A. *A Simple Method of Intravenous Anesthesia.*
10. Aronson, H. *Concerning a Few Debated Points in the Biology of the Tubercle Bacillus.*
11. Bauer, A. *X-Ray Illumination without the Screen.*

6. The author has found that the earliest evidence of experimental tuberculosis in the guinea pig is in a pair of glands which lie behind the jugular vein. These glands he has found consistently enlarged and the seat of tubercular lesions from the eighth to the fourteenth day after an injection of tubercular material, while evidence of disease in other parts of the body does not manifest itself until after the lapse of from three to five weeks. The author describes his technic and the article includes an illustration. [J. L. H.]

Zeitschrift für Klinische Medizin. Bd. 71.

Heft 1 and 2.

1. Falta, W. *Glycosuria and Fatty Stools in Basedow's Disease; also on Röntgen-Ray Treatment in this Disease.*
2. Falta, W., and Schweeger, O. *On the Interrelation of Glands with Internal Secretion. Chemotaxis.*
3. *Mayerle, E. *Metabolism in Artificial Hyperthyroidism.*
4. *Holzknecht, G., and Olbert, D. *Atony of the Esophagus.*
5. *Obrastzow, W. P., and Straschesko, N. D. *Thrombosis of the Coronary Arteries of the Heart.*
6. Schueffner, W. *Pseudotyphus of Deli.*
7. Stoerk, O. *Electrocardiograms.*

3. Working with dogs, Mayerle finds that with repeated similar doses of thyroid extract hyperthyroidism comes on gradually and shows itself by (1) a negative nitrogen balance, i. e., a storing of nitrogen; (2) an increased output of water; and (3) increased burning of fats.

Loss of weight occurs if (*a*) there is not reserve absorption enough to compensate for loss; (*b*) the demand of the body is supplied by an easily assimilable substance, such as pure albumin.

4. The authors describe atony of the esophagus as a condition of the esophagus in which soft food is hindered in its passage, while fluids and large masses are passed along in a normal manner.

They classify thirteen cases under this head, excluding from the classification such conditions as paralysis of the esophagus, esophagismus and cardiospasm. The diagnosis depends upon x-ray findings, backed up by negative results with the esophageal sound. Normally soft solid food is waved down the esophagus in a few seconds by regularly following peristaltic waves, showing by fluoroscope as approximately four distinct masses; in conditions of atony the food lies, a thin pillar, the whole length of the esophagus, peristalsis being insufficient to break it up. That the condition is not one of spasm is shown by giving water, whereat the whole mass quickly glides into the stomach.

Most patients showing atony are neurotic, as a rule exhibiting signs and symptoms of an hysterical character. Atony may also be a temporary disturbance in organic nervous disease, may be the result of local pressure, as, for example, by the heart, or may be a manifestation of general weakness, and it is naturally one component of a sluggish gastro-enteric tract.

Symptomatically dysphagia may be complained of, but more frequently the condition is not brought to light without questioning. Its diagnosis, as said, depends upon x-ray examination with bismuth, the technic of which is given.

5. The authors report three cases of coronary thrombosis with autopsy, and two cases without, and review several others. Symptoms were found to be of three types: (1) Pain was present in all of the cases, in two exhibiting radiation into neck, head and left arm; attacks were of five- or ten-minute intervals, with remissions at first, later becoming continuous to death: a status anginosus. (2) Dyspnea in two was very marked, accompanied by Cheyne-Stokes respiration, so-called status dyspnoeicus. (3) A sense of pressure in the epigastrium, status gastralgicus. All forms may be accompanied by nausea and vomiting. Signs: Cold and cyanotic skin; weak but usually regular heart action, though rapid; first sound often doubled, but no murmurs. There is evidence of peripheral anemia, venesection in one case causing no flow, and accompanying internal congestion, as shown by an enlarged liver.

History of previous anginal attacks was the rule. As for the duration of terminal attacks, three lasted a week, two less than forty-eight hours.

The essential difference between the diagnosis of coronary thrombosis and angina pectoris lies in the prolonged character of the pain in the former, be it status anginosus, status asthmaticus or status gastralgicus. [J. B. A.]

DEUTSCHE ZEITSCHRIFT FÜR CHIRURGIE. BD. 106.

AUGUST — SEPTEMBER, 1910.

1. *BURCKHARDT, H. *Bacteriologic Investigations on Surgical Tuberculoses. A Contribution to the Question of the Difference of Tuberculosis in Man and in Animals.*
2. KÖRBER, K. *Injuries to the Semilunar Cartilages of the Knee-Joint.*
3. KÖHLER, O. *Isolated Evulsion of the Crucial Ligaments of the Knee-Joint.*
4. *GANGITANO, F. *Peritonitis and Abdominal Phlebosclerosis with Desquamative Endotheliosis of Traumatic Origin.*
5. KRAUTZ, W. *The Treatment of Typical Radial Fracture.*
6. MATSUOKA, M. *Joint Disease in Tabes Dorsalis.*
7. *DILG, P. *Contribution to the Knowledge of Congenital Hypertrophic Pyloric Stenosis of Infants and Its Treatment.*
8. DANN, W. *Intestinal Stenoses Produced by Secondary Carcinomata.*
9. KAUSCH, W. *Resection of the Bodies of the Lumbar Vertebræ.*
10. ESAU. *Contributions on Appendicitis, Especially Differential Diagnosis.*
11. *TAVEL, E. *Technic and Indications of Endothyreopexy.*
12. MAKKAS, M. *Bilateral Inguinal Hernia of the Uterus.*
13. STIERLIN, E. *Movable Cecum as Cause of Many Cases of So-Called Chronic Appendicitis. The Results of Colopexy.*
14. KRÜGER. *Cosmetic Operation for Tuberculosis of the Cervical Lymph Nodes.*
15. *V. SCHILLER, K., AND LOBSTEIN, L. *The Value of the Simple Continuous Vessel Suture, including the Entire Vascular Wall.*
16. EICHMEYER, W. *Brief Report on 120 Operations on the Biliary System Performed during the Past Year.*
17. LOPARO, P. *Endothelioma Developing on a Dermoid Nevus.*
18. JIANU, A. *Decompressive Craniectomy.*
19. JIANU, A. *Colo-Ilio-Cecal Hernia.*
20. SOLIERI, S. *Blood Cysts of the Spleen.*
21. ELS, H. *An Avulsion-Fracture of the Tibialis Anticus Insertion.*
22. KNOKE. *Contribution on Inward Dislocation of the Foot.*
23. SUDECK, P. *Speech Canula after Total Extirpation of the Larynx.*
24. SUDECK, P. *Symmetrical Neurotic Gangrene after Lumbar Anesthesia.*
25. SUDECK, P. *Fibrous Pachymeningitis.*
26. SUDECK, P. *Observations on High Extirpation of the Rectum.*

1. From an extensive series of experimental inoculations in animals, and from a bacteriologic study of 49 cases of various forms of human surgical tuberculosis, Burckhardt reaches the conclusion that the tuberculosis of cattle plays only a very subordinate part in the production of tuberculosis in man and that the most available means for combatting tuberculosis should be directed primarily to the prevention of infection from human sources.

4. On the basis of a case of his own observation, and of similar cases which he cites from the literature, Gangitano describes as a clinical entity a cordition of diffuse chronic peritonitis following trauma and associated with serious vascular lesions, especially of the venous system under the form of phlebosclerosis. The course is slow and progresses with ascites, so that it is not always differentiable from traumatic cirrhosis of the liver. With the extension of the peritoneal lesions, other abdominal organs may be involved. Associated with the phlebosclerosis may be a desquamation of the vascular endothelium, which the author regards as representing in all probability an irritative mechanical lesion following the peculiar conditions of the vessel walls produced by the disease process.

7. Dilg reports a case of congenital infantile pyloric stenosis successfully treated by operation, but in his discussion of the literature makes no reference to the work done on this subject by Scudder, Murphy and other American surgeons.

11. Tavel reports six cases of non-malignant goiter successfully treated by endothyreopexy, a procedure first described by Gangolphe. As a result of his experience, the author advocates the operation in complete bilateral degeneration of the thyroid, in recurrent struma after unilateral extirpation when there is paralysis of the inferior laryngeal or when the remaining part of the gland is degenerated, and in bilateral compression of the trachea when after extirpation of one side further prolongation of the operation is inadvisable. The technic consists of (1) provisional or permanent ligation of the superior thyroid and possibly central ligation of the inferior; (2) mobilization of the gland; (3) enucleation or partial resection thereof; (4) isolation and suture of the stump in a pocket between the sterno-cleido-mastoid and the skin, with stitches through the fascia and the tendinous portion of the muscle; and (5) drainage and suture of the skin.

15. The authors, presenting the results of their research in experimental vascular surgery, recommend the use of a simple continuous silk suture, including all the coats of the vessel, in the repair of traumatic vascular defects. By this means they obtained 40% of successes in arterial suture and 60% in venous. Small arteries and large veins gave better results than large arteries and small veins. In losses of vascular substance up to 2 cm. in extent, they advise mobilization and approximation of the ends and union by circular suture; but if the loss exceeds this amount, they prefer vessel transplantation. Six months after the termination of their experiments they had observed no formation of aneurysm at the site of a suture. [R. M. G.]

BULLETTINO DELLE SCIENZE MEDICHE.

SEPTEMBER, 1910.

1. FORNI, G. *The Anatomic and Histologic Alterations in Experimental Exclusion of the Small Intestine.* (Preliminary note).
2. LAVERMICOCCA, A. *Behavior of Fat and of Glycogen in the Cartilages following Section of the Nerves.* (Preliminary note.)
3. OLLINO, G. *Variations of the Hematologic Formula in Animals Splenectomized and Treated with Quinine.* (Preliminary note.)
4. SERRA, A. *Experimental Researches on Necrosis of the Bones following Freezing of the Limbs.* (Preliminary note.)
5. *UGOLINI, G. *The Alterations of the Testicle following Section of Its Nerves.* (Preliminary note.)
6. BOSELLINI, P. L. *Lymphodermia and Mycosis Fungoides.*

5. From a microscopic study of the testicles of adult rabbits before and at varying intervals after section of the

nerves supplying them, Ugolini finds a decrease of the spermatogenic and an increase of the interstitial cells of the gland following such section. In the event of unilateral section there is compensatory hypertrophy of the remaining side. [R. M. G.]

Miscellany.

LIGHT LABOR FOR CONSUMPTIVES.

In one of our daily papers there recently appeared the following item relative to the value of light labor in the treatment of pulmonary tuberculosis:

"An interesting matter wherein English institutions differ quite a little from those in this country is the arrangement of some kind of light labor for tubercular patients. The Frimley Sanitarium of Middlesex is an example of this method. The patient on arrival is given the easiest kind of work, such as the carrying of a light basket of stones a certain distance each day, preceded perhaps by some regulated amount of walk. If this work produces a rise of temperature and reaction, the patient is put to bed with absolute rest. It is found that the anti-tuberculin generated by this rise of temperature has usually made the patient more resistant, so he is able then to do the work that caused the temperature. On resuming work the amount of his labor is gradually increased until before the patients leave the hospital it is no unusual thing for them to be able to labor six hours a day with pick and shovel. The patients have done extensive landscape gardening about the grounds and have built an excellent concrete reservoir. They take care of the animals about the place and do a great deal of the work about the house. It is believed that the morale of such patients is higher than that of those taking the cure of absolute rest."

A few days later there appeared as a reply in the same paper, a letter by Dr. Arthur T. Cabot, chairman of the trustees of the Massachusetts Hospitals for Consumptives, the concluding paragraphs of which seem also to deserve republication:

"It will doubtless be of interest to your readers to know that the trustees of the Massachusetts Hospitals for Consumptives, who have under their charge the four sanatoria, containing eight hundred beds, in this state, have from the outset fully recognized the important part that work plays in promoting the cure of consumption. Following in the footsteps of Dr. Paterson, who did pioneer work in systematizing the introduction of this treatment and in pointing out the scientific basis on which it rests, they have encouraged their superintendents to introduce it in the institutions under their charge.

"The superintendents met with some difficulty at first owing to the mistaken idea among the patients that rest is the important factor in treatment for those who were comparatively well, just as it admittedly is for those who are very sick and feverish.

"This error is rapidly disappearing under patient explanation, and the convalescents now have occupations adapted to their strength, which promote their cure and put them in fit physical condition to take up their ordinary habits of life when they leave the sanatorium.

"It is greatly to be hoped that the local boards of health and anti-tuberculosis societies will keep a watch over the arrested cases that go out of these institutions; will see that they get work suited to their condition and that they continue the open-air life which is of such importance in preventing a relapse.

"Whether this work is done thoroughly or not depends largely on the people. They must see that the anti-tuberculosis associations and committees have enough funds to enable them to employ nurses to keep up a supervision of these cases, and they must make sure that active men enlightened in matters of hygiene are selected for the boards of health."

For an interesting and somewhat detailed account of the system in vogue at Frimley we refer readers to our Paris Letter of Feb. 10, 1908.

AMERICAN SOCIETY OF MEDICAL SOCIOLOGY.

The American Society of Medical Sociology has recently been formed in New York by a number of physicians "for the purpose of investigating the social causes of disease and other problems of a medico-social nature." Dr. Abraham Jacobi has been elected honorary president of the society, Dr. William J. Robinson its president, and Dr. James P. Warbasse vice-president.

Among the topics already suggested for study by this society are occupation and trade diseases, the relation between the stress of modern life and the increase of insanity, food adulterations and their influence on health, tuberculosis as an economic disease, the probable causes of cancer, the alcohol problem, the causes and prevention of infant mortality, the causes and control of quackery, marriage and divorce, eugenics, race suicide and venereal disease. Many of these, it will be observed, are already under investigation by more limited special societies.

Correspondence.

THE ADVISABILITY OF THE ESTABLISHMENT OF A STATE HOSPITAL FOR CASES OF NERVOUS BREAKDOWN.

Boston, Nov. 27, 1910.

Mr. Editor: In the issue of the Journal of Nov. 24, there appears a short article entitled "Desirability of a State Psychopathic Hospital," in which the writer seems to have confused the suggested state hospital for cases of nervous breakdown, in regard to the advisability of which the hearing was held, with the Boston Psychopathic Hospital which the state has already voted to establish in connection with the Boston State Hospital. The suggested hospital for cases of nervous breakdown, while it might admit cases of border-line psychoses, would include more especially those cases of nervous exhaustion which have been known to the profession under the names of neurasthenia and psychasthenia, and would not intentionally contain any insane.

I enclose a copy of the resolve under which the commission was created.

Very truly yours,

William N. Bullard, M.D.,
Secretary of the Commission

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, Nov. 19, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	0
Chicago	632	159	Pittsfield	5	—
Philadelphia	—	—	Brookline	5	—
St. Louis	—	—	Gloucester	9	1
Baltimore	—	—	North Adams	8	1
Cleveland	—	—	Northampton	7	1
Buffalo	—	—	Chicopee	5	2
Pittsburg	—	—	Medford	3	—
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster	3	1
Washington	—	—	Hyde Park	8	1
Providence	—	—	Melrose	1	0
Boston	211	49	Newburyport	5	—
Worcester	35	10	Revere	4	1
Fall River	34	11	Westfield	5	2
Cambridge	34	8	Woburn	2	1
Lowell	42	15	Peabody	—	—
New Bedford	34	11	Marlboro	2	0
Lynn	27	8	Attleboro	2	1
Springfield	36	5	Adams	3	1
Lawrence	25	10	Clinton	2	1
Somerville	22	4	Gardner	2	1
Brockton	8	2	Milford	—	—
Holyoke	15	10	Watertown	1	0
Malden	9	1	Plymouth	—	—
Chelsea	9	—	Southbridge	1	—
Newton	7	1	Weymouth	1	—
Salem	6	1	Framingham	3	1
Haverhill	12	—	Wakefield	2	—
Fitchburg	—	—	Webster	0	—
Everett	7	2	Arlington	1	—
Quincy	—	—	Greenfield	1	—
Taunton	17	4			

LIST OF CHANGES OF STATIONS AND DUTIES OF COMMISSIONED AND OTHER OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE FOR THE SEVEN DAYS ENDED NOV. 16, 1910.

GASSAWAY, J. M., surgeon. Leave granted Oct. 14, 1910, amended to read twenty-four days from Oct. 7, 1910.

WHITE, J. H., surgeon. Granted ten days' leave of absence from Nov. 11, 1910.

NYDEGGER, J. A., surgeon. Granted one month's leave of absence from Nov. 10, 1910, on account of sickness.

SPRAGUE, E. K., surgeon. Leave of absence granted Oct. 14, 1910, amended to read four days from Oct. 28, 1910.

GRUBBS, S. B., passed assistant surgeon. Granted twenty-one days' leave of absence from Nov. 7, 1910, on account of sickness.

FOSTER, M. H., passed assistant surgeon. Granted seven days' leave of absence from Oct. 3, 1910, under paragraph 191, Service Regulations.

KORN, W. A., passed assistant surgeon. Directed to proceed to Pittsburg, Pa., upon special temporary duty. Nov. 7, 1910.

EARLE, B. H., passed assistant surgeon. Granted three days' leave of absence en route to station.

ROBERTS, NORMAN, passed assistant surgeon. Granted two days' leave of absence from Nov. 7, 1910, under paragraph 191, Service Regulations.

SMITH, F. C., passed assistant surgeon. Granted seven days' leave of absence from Nov. 3, 1910, under paragraph 191, Service Regulations.

SPRATT, R. D., passed assistant surgeon. Granted seven days' leave of absence from Oct. 14, 1910, under paragraph 191, Service Regulations.

COFFEE, JOSEPH H., acting assistant surgeon. Granted ten days' leave of absence from Nov. 5, 1910.

HAMILTON, H. J., acting assistant surgeon. Granted four days' leave of absence from Nov. 4, 1910.

SCHUSTER, B. L., acting assistant surgeon. Granted twenty-two days' leave of absence from Nov. 7, 1910.

STUART, A. F., acting assistant surgeon. Leave of absence granted for thirty days from Oct. 1, 1910, amended to read thirty days from Oct. 4, 1910.

WALKER, T. D., acting assistant surgeon. Granted eleven days' leave of absence with pay and one day's absence without pay from Nov. 7, 1910.

WALKLEY, W. S., acting assistant surgeon. Granted two days' leave of absence from Nov. 4, 1910.

WETMORE, W. O., acting assistant surgeon. Granted two days' leave of absence, Oct. 10 and Oct. 30, 1910, under paragraph 210, Service Regulations.

WHITE, R. C., acting assistant surgeon. Granted thirty days' leave of absence from Nov. 7, 1910.

SCOTT, E. B., pharmacist. Granted four days' leave of absence, without pay, from Nov. 9, 1910.

TROXLER, R. F., pharmacist. Granted one day's leave of absence, Oct. 30, 1910, under paragraph 210, Service Regulations.

HOLT, E. M., pharmacist. Granted two days' leave of absence from Nov. 7, 1910, under paragraph 210, Service Regulations.

STIER, CARL, pharmacist. Granted one day's leave of absence, Oct. 31, 1910, under paragraph 210, Service Regulations.

RECENT DEATHS.

DR. FREDERICK LARKIN, a retired physician of Randolph, Cattaraugus County, N. Y., died on Nov. 24, at the age of ninety-seven years.

DR. JOSEPHUS REGUS, who died last week at Rochester, N. Y., was born in 1832. He was a dentist by profession, but was also well known as a student and inventor of rapid-fire ordnance.

DR. ALVAH C. VAN SYCKLE, of Hackettstown, N. J., died suddenly from cardiac disease, on Nov. 22, while attending a meeting of the Warren County Medical Society. He was a prominent citizen of Hackettstown and had served as mayor of the city.

DR. DUDLEY PAGE COTTON, who died at Roxbury last week, was born in the Barbadoes, West Indies, in 1849. He was educated at St. Paul's School, Concord, N. H., and at Trinity College, Hartford, Conn., from which he received the degree of A.M. in 1871. Subsequently he studied medicine at the University of Edinburgh, Scotland, and served for a time at the Royal Maternity Hospital in that city. On account of ill health he never undertook the general practise of his profession, but became a student and traveler. He lived for many years in London, and also at Dresden, Germany. He is survived by two sisters and four brothers. He was unmarried.

DR. STEPHEN GUERNSEY COOK, of New York, died on Nov. 21, in the eightieth year of his age. He was born in Dutchess County, New York, and was graduated from the medical department of the University of the City of New York in 1857. During the Civil War he served as surgeon in a Dutchess County regiment, and at the close of the war located in New York. He was appointed a police surgeon in 1873, and for many years was president of the police surgeons' board. He was one of the founders and incorporators of the Medical Association of the Greater City of New York, and at the time of his death was president of the West Side Savings Bank.

DR. WILLIAM ROBERT BROSS, of New York, medical director of the Equitable Life Assurance Society, died from cerebral apoplexy, on Nov. 21, at his residence at Babylon, Long Island. He was a native of New York City and fifty-six years of age, and was graduated from the College of Physicians and Surgeons in 1881. Going to Central America, he served for several years as port health officer at Port Limon, Costa Rica, and later as consulting commissioner on yellow fever in South America. Dr. Bross joined the staff of the Equitable Life as assistant to Dr. Edward Lambert, the medical director, in 1889, and at the latter's death was appointed senior medical director.

JOHNS HOPKINS HOSPITAL

Original Articles.

"WHAT MEDICAL SOCIETIES CAN DO FOR THE HEALTH OF THE PEOPLE." *

BY JOHN RITCHIE, JR., BOSTON.

THE question has been asked of me, "What can a Medical Society do for the health of the people?" This question I am going to try to answer in part this evening, and from the point of view of the layman. And worse than this even, like the reviewer of a book who lets no peep into its pages prejudice his mind with facts, I have not sought to know the precise purposes of the Suffolk District Medical Society, and have asked for no glance at its constitution or by-laws, but have constructed my own society, and this from the layman's point of view as to what such a society should be.

While I was a member of the Board of Health there were times when it seemed to me as if the influence and authority that such a society ought to wield might have been an important factor towards the rational consideration of important questions.

For a point of beginning, let me present to you the status of the health of Boston, for that is the locality in which we all are interested and in which the work of a local society would begin. The lantern slides will present a general view of health conditions past and present and will afford an opportunity to note in a way where advances are needed and where they may be made.

Let me say here at the outset that Boston has no occasion to be cast down in the least about its health conditions. There has been some wild statement now and then that it is not in line with other great cities in the country and that radical changes ought to be made in the methods, and it has even been suggested that if this city is to be abreast of its sister cities in the country it will be necessary to import some sanitary leader to show Boston physicians what to do. Of course there may not be foundation to such statements, but they have been current in the newspapers, and it has even been stated that a former mayor was in Washington on precisely such an errand.

It would need much more than an evening to follow out the figures that establish the condition of the health of Boston in its comparison with those of other cities. This is not a sum in simple subtraction; it is quite a complicated problem, and the editor who wrote for a Boston paper, "The health of Boston is mediocre; not so good as that of Chicago or New York," would have difficulty in getting a true statistical basis for so sweeping a statement. A society of this kind should, it seems to me, have a true knowledge of the health figures of its home city.

With reference to the imported sanitary leader, I shall have more to say anon, but it seems to me that here is precisely the kind of question that an authoritative local society could consider intelligently and with which it ought to be thoroughly competent to deal, if it is willing to devote sufficient time to it, in the interests of the public good.

But to come to the sanitary story of Boston. Here are a few diagrams presenting some of the larger conditions, prepared by me for my own personal study.

[There followed then a series of five lantern projections presenting graphic diagrams of the vital statistics of Boston. These were the general and steady decline in the mortality-rate from all causes, the great decline in the death-rate for the common infectious diseases, the decrease in deaths from tuberculosis and the status of infantile mortality, i. e., of children of less than one year of age.]

Here, then, are the health conditions of Boston; what can a society like this do to improve the record? It is evident that it must come among the refinements of mortality work, for the coarser problems have all been considered, and with a success that you may judge of by the diagrams. Now what is there in the way of betterments to a pretty good condition that a society like this can help effect?

And I would like to interpolate here that this condition of health rates is due to the good judgment of the helmsman who has guided for more than a third of a century the actions of the Board, and it is creditable that in that time no serious mistake has been made. There has been lots of adverse criticism on the part of the press and individuals, and what has been done has not always had the full approval, in fact, has evoked the opposition of some medical men, but when from a secure future one has looked back on the course of the Boston Board of Health, it will be evident that almost every important sanitary advance for the country has had its initial point in Boston. I can say this without self-praise, for my brief relationship with the Board was too short for me to leave an impress on its actions or to be entitled to much of any credit for its good works.

It is perfectly true that Boston seems at times to be behind some other cities, but there are two things here to be remembered: that a good health officer must be conservative and not be carried away by the fads of the moment, and, again, that Boston is spending but thirty-three cents per capita per annum for its health, while other cities have found the means to expend much more.

There is the story in which you gentlemen, as physicians, ought to have interest and pride, for it is upon you, in the final analysis, that the responsibility must rest. It is true that there is a Board of Health, and it may seem to be wielding despotic power and be arbitrary, but it can act only with the support of the intelligent men of its community; its work on the whole cannot be maintained above the standard of the medical men and the citizens who support it. The function of a Board of Health, in a number of aspects, is admirably stated in the June Bulletin of the Massachusetts State Board, which says, "The medical profession must remember that the Board of Health acts only as the agent of the

* Read at the meeting of the Suffolk District Medical Society, Oct. 29, 1910.

profession in assembling the data provided by them, and depends upon them for their willing co-operation."

Now, gentlemen, there is the nub of the whole matter, and in ratio to the faithfulness with which you perform your part, the success of the whole will be assured. And here my own personal opinion comes in, that while the counsel and aid of individual physicians is always given to the officials, still it seems to me that it ought to be a function of just such societies as this to give the same kind of support better and more forcefully and with a stronger impression on the public.

In my humble opinion a great and representative society like this ought to be a support to those who are in the leading health places. It ought to know what is being done; it ought to be in touch with the work; it ought to know something of the financial requirements. It ought to be ready and willing to give its advice when advice is needed, and also its firm support. It ought to be able to give an opinion from which all petty and personal conditions have been eliminated, and it ought not to be slow in coming forward with that opinion when the opinion is timely.

A group of public officers finds itself subject to all kinds of attacks and from many quarters; a group of health officers in particular is subject to such attacks. In Boston there have been times when the Board of Health has had its work and its methods called into question by those who had no knowledge or appreciation of the true facts, but who are persistent in their warfare. Where the work has been as faithful and as creditable as it has been here, criticism of the kind is wicked, for constant dropping will wear the stone. Inertness on the part of medical men, inactivity of societies that might have given authoritative support to the right, are responsible in part for this.

Now let us get to direct consideration of some of the matters that have thus far been merely suggested. There is the membership of the Board of Health. It is most important, and yet, so far as concerted action by medical men is concerned, it has been practically neglected. Occasionally some progressive physician individually recommends or supports his man. It is true that, as a principle, medical bodies have no place in politics, but the Board of Health of a municipality ought to be far above politics. It has responsibilities that transcend the usual considerations and demand the services of the best men. This fact will be appreciated by the people just in ratio to the extent that medical men themselves appreciate it. If they are themselves watchful of the best health interests of the community, they will have the right to be watchful over the personnel of the group of men who have the health of the community in their keeping.

I believe that it is possible for a society like this, the segregation of the best thought in the medical work of a great city, so to speak that it will make itself heard; and, being heard, impossible to be ignored. A society like this, it seems to me, ought to abandon the principle, not to speak till spoken to and not to give advice till asked, but should be ready to present its opinions well digested and matured at the proper time.

There has been a great deal of talk backwards and forwards about importing a sanitarian for the chairman of the Board of Health, of a single head, of reorganizing, and divers other radical changes. These are all of them, it seems to me, matters in which a society like this ought to be a leader and a maker of opinion. It ought to formulate its own opinion first, and this ought to be expressed.

The proposition to import a chairman, it seems to me, is an important one for just such a society to discuss. Here was a slap in the face to the whole medical profession of Boston, an assertion that, notwithstanding its Institute of Technology, its medical schools and its thousands of skilled physicians and sanitarians, there was no one among them all competent to be chief medical and sanitary executive. Other places are pulling away from Boston men to put at the head of important sanitary work, and Boston has lost such leaders as Hill, Rickards and Slack, and no one has said "Boo." Then, when seemingly through the authority of an executive it was said, "We propose to seek elsewhere for a sanitarian, for Boston has none competent," the whole medical fraternity pocketed the affront. To me as a layman the situation was extraordinary and I watched the columns of the medical journals for some sort of reply.

There are a good many questions pertaining to public health that come to be subjects for legislative consideration. I think that here a society like this could work much benefit by telling the truth. Last year there was a discussion about meat from tuberculous cows. There was a good deal of misinformation abroad; it was a question where the definitions were antiquated, where new ones are necessary and where distinctions are not well understood by the laity, who freely discuss and act on such things, and there were opportunities for misinterpretations. A few men stood forth for the right as they understood it before legislative committees, but they were individuals and voiced only their own personal opinions. A society like this, it seems to me, could have clarified the matter and, with a reputation behind it, could have formulated an opinion that no legislature could misunderstand.

I do not know that the Suffolk District Medical Society is yet in a position to do this, because it may not have yet acquired that reputation in its own country as a prophet and adviser that would make its opinion acceptable. But I know that it has all the factors to such a reputation. Is it not your duty to your home city, that, being such a society, with such possibilities, you exercise what are your rights? Other societies do such things, and some of them are now quoted far and wide. You can, if you wish, become the authority for a country by no means limited by your own Suffolk district.

A little while ago it was the question of the quality of the milk supply of the city of Boston. You know, and I know, that, by the standard of

cities of its class, it is good. I know that it is probably as good as that of any large city in the country and difficult to improve save at greatly increased cost.

Now in this movement a leader has arisen who is anxious to put into force a system of inspection of the farms, "so that," he is quoted in the newspapers as holding, "the germs of infectious disease may be kept out of the supply." Supposing that a great society could say officially that until a physician can be maintained at every milk-producing farm, there is a possibility that infection may creep in at any time, the situation would certainly be clearer. No matter what it said, if it had the authority behind it and the confidence of the community, it would have influence for the right.

Suppose a society with reputation and authority had said, "The ultimate test of the quality of a milk supply is the infantile mortality; Boston heads the list of cities in this country in this respect," would it not have been a statement not to be disputed? But if I say it, and I have said it with all the force that I, personally, have been able to carry, I am but a man, conceited in his own ideas.

Just now it is the question of pasteurization of milk. There is here a problem in sanitation for which at the moment I see but one solution. I believe a proper pasteurization to be the only present means out of the difficulty of milk infection. It is going to meet with opposition; it is probable that medical men are not to-day nearly a unit in opinion, but it is a question of the very close future. This society ought to be formulating its opinion. It can have the advice of milk experts, it can get anything in the way of precise information that it wishes, and with these in hand it can have an opinion. This will not be the diversity that individuals cannot avoid, but one with the authority of a strong medical body behind it. In New York the experiment in milk has been made. It is said that Strauss was driven from his position by the opposition of a newspaper. If his position is truly a right one, and there had been a calm and authoritative medical society to back him, public opinion would also have been to the support of Strauss, and the backward step need not have been taken.

Thus far the considerations have been in the group that might be termed larger public questions, in which a medical society might stand as an adviser to the executive and law-making authorities of commonwealth and municipality, and incidentally aid in the education of the people. Let us now turn to a consideration of some of the matters wherein an association like this may help in the educating of its own members, by the presentation to them and to other members of the profession of certain plain duties towards the improvement of the public health.

I wish now to speak on a matter pretty directly connected with the diagrams — that of reporting. As is evident from the diminution of infectious diseases, the coarser methods of work have been pretty well tried out, and the advance of the future must be along lines of refinement. The reporting of cases is the most important present need in the warfare against infectious disease. It is the most essential feature in the fight at the bedside, which is the proper place for the battle as waged in these times. Philosophically considered, infectious diseases would absolutely cease could all the cases be isolated, and while this is impossible in practise, it is the desire of health officers to approach as nearly to this condition as may be possible. Here the authorities are absolutely at the mercy of the physician, for while there are laws compelling notification, it seems rather hard to make criminals of reputable physicians for what they, themselves, regard a peccadillo. And again, it is not so easy to press to conviction in a matter where the evidence is so technical and in which only the grossest violation could not be defended through lack of exact diagnosis or some such subterfuge. Notification seems to be, so far as many physicians are concerned, a matter in which personal opinion is entitled to much weight. I have had a good medical man whisper in my ear about the nonsensical notion of making further demands on the time of the physician by increasing the number of notifiable diseases. As the result of many factors, notification, while it is improving year by year, is not so well or so fully carried forward as it should be. The improvement must be by the education of the physician. There are many factors towards neglect; for example, the patient is a tuberculate, the family feels, as families usually feel, that it is a kind of disgrace, the individual shrinks from publicity and the physician fails to notify.

Here is a work in which a society like this can help enormously by creating an *esprit du corps*. The society as a society does not question the fact that notification is wise; it knows that no disease is added to the list without a great deal of consideration and discussion by the authorities. Individuals hastily question all these things, and, acting on their own impulses, anxious, perhaps, to please their clients, neglect notification. A society can help materially in improving the health conditions by making it popular to notify.

Anterior poliomyelitis is a notifiable disease and has been so for about eighteen months. It seems to be very imperfectly reported in Boston to the local Board of Health. Boston, in the second half of 1909, had 35 cases reported. The State Board of Health reports in the whole of 1909, in Boston, 299 cases. There is a discrepancy here. I have not thought it worth while to spend time locating this obvious neglect to notify. It is new to physicians, they are not used to reporting it, the state has wished especial information and has issued special circulars, and in notifying the state it is probable that physicians have thought themselves to be doing their whole duty. But in this there is needed a little bit of education. The fundamental notification is by law to be given to the local board, and the Boston Board of Health ought to bear on its books through notification from physicians all the cases within its limits. What the state or the individual chooses to carry

on as a special investigation should not interfere with the legal notification.

Especial attention has this very week been directed by the typhoid committee of the Massachusetts Association of Boards of Health to the need of strict practise of notification. It is too often the case that the disease is taken as a matter of course, and little attention paid to it. The plea of the committee is broader than merely notification, and goes directly to urge treatment of typhoid fever as an infectious disease, and to have it recognized by physicians and boards of health for what it really is, — a great menace to the public health.

Incidental to notification, there is the care with which it is done, and thoughtful physicians may aid the authorities materially. The cards used in this city request certain facts about the disease and the patient and also the name of the milk dealer. There is nothing asked that is not of immediate importance, no fact that the physician may not easily get. Yet many cards are received deficient in some of the particulars. You can readily see how important the milk supply is, yet it is frequently omitted. You can see that if three or four cases of typhoid occurred on the route of the same milk dealer, they would attract instant attention and would demand precedence in examination, but the same three or four cases might not get correlated for some hours if the name of the milkman should be omitted from one or two of the cards.

Thoughtfulness on the part of physicians is important, since they are on the ground some time before it is possible for the public health officials to have information of any kind. There are things that a thoughtful man can do that may prove of service; for example, to select an obvious one, to immunize other children in a family in which diphtheria is found.

Early notification of births is another important matter and failure to give it at all is the weak link in the registry system in the country. If there is any thing in which American physicians in general need to be spurred on to their plain duty, it is in the notification of birth. As a matter of fact, this country, priding itself on its intelligence and its advancement, is practically without birth statistics. Chicago gets perhaps 65%, and Baltimore less than 45, while whole districts are exceedingly deficient. Such a condition of statistics is not creditable.

Boston is so much better than so many places, with its estimated 95% registered, that it might seem as if nothing further is to be said, the more so since it is estimated by the registrar that the registry of births attended by physicians is only 1% short. The recent school rule requiring birth certificates for all new scholars will probably make this small deficiency still less.

But in the advancement that leads to such good total percentage of registration, new chances to improve the public health open, and Boston can better its general health through bettering the health of its infants by quicker notification. The figure above given is that within the limits of the law, which allows the physician till the fifth of the succeeding month in which to send in his notification, but this is not nearly soon enough. If infantile blindness is to be prevented, the treatment must come immediately after birth. The physician who delays his notification runs risks for the child. It is well known that such things as the ignorance or carelessness of mothers is responsible for many infants' deaths. The whole infant situation would be bettered enormously could there be immediate inspection of the child and a proper system of education for the mother. It is as easy to send a birth notice from the letter box at the corner before visiting the next patient as it is to send it a week or two later, and this promptness is being more and more recognized as an essential factor to good health. And there is more in this than merely the infants' lives. Newsholme has traced, you will all remember, at the sanitary meeting in Brighton last month, that there is an intimate relation between the infantile mortality and the total death-rate. Everything that makes to save the lives of children of less than one year of age makes also for the saving of lives in all age periods.

It is important further to attend pretty closely to all kinds of registering that are required. The value of the statistics depend, in part, upon the faithfulness of the physicians in the different localities. To-day it is out of the question in the United States to make comparisons statistically of one city with another save during the limited times that an official census covers. Indeed, it is not always easy to compare the statistics of a city at different times with one another. The influence of a local society may be limited, it is true, to its own domain, but its example is never lost on similar societies. I think it perfectly possible for a society like this to bear a hand towards the raising of the statistical moral tone in other places. It is to be regretted that this tone is so low in this country, for statisticians must, perforce, be men of intelligence, but it is true beyond the question that commercial aspects of health figures are considered and eliminations are made for the benefit of the place, which hopes to attract trade or travel on account of its healthfulness. I question whether any medical society in the country has raised its voice against the immorality of "boosted" population figures or incomplete or manipulated returns on which the published rates are based. America has much to learn towards the improvement of its vital statistics, and societies like this can help greatly in establishing a healthy statistical tone in the community.

Incidentally I may say that there is much to be done in the way of unification of matters relating to the health. There is much need of the standardization of many factors. No two health reports in the country present the same data or in the same form, and it is often very difficult to find in a report the figures that another report will blazon forth on the first page. There is much looseness in terminology, many differences in spelling, while specialists delight in the use of the newest terms in their own divisions, which may readily not be

in the Bertillon list or in the latest of medical dictionaries. There is very much to do in the way of such standardization, but it is a minor matter compared with so many others that I will not argue it just now.

Isolation is another important matter wherein physicians need a good deal of education. The child is well to the eye of the parent; he feels his confinement and is restless; he is anxious to get out of doors, to play with his fellows, but the time that experience has shown to be within the danger line to others from him has not passed. Pressure is brought to bear upon the physician, and he in his turn seeks to have the isolation terminated. The officials are firm, and there is ill-feeling and the authorities are declared to be arbitrary.

Now this is all a matter that ought to be pretty easy to determine, for the time for isolation for the different diseases ought to be well established and the symptoms known that suggest the release. If these things are wrongly figured, then by all means establish some other and more correct standard, but whatever may be the standard that medical authorities establish, let the individual physicians observe it. A society like this, by discussing such matters, by bringing the reasons to the attention of the physician, will give him an artificial backbone if he needs it, or may perhaps show him in a different light the righteousness of the conventional proceeding and make him see for himself the propriety of isolation to the agreed-upon limit.

So much for the higher education of the physician. Let us turn our attention for a few moments to matters in which the physician may help in the education of the people. One important side of this work is necessary because the public is quick to acquire ideas of certain kinds. There is an inherent fear of epidemics, and on the slightest pretext the people are alarmed and a panic results. Only this week there has been voiced at a meeting in Boston a plea that physicians shall bear a hand in allaying the panic over infant paralysis. There are similar occasions from time to time over diphtheria and other diseases. A calm and authoritative statement by a medical society circulated by the physicians and the press would be all-sufficient to induce the return of a sane and reasonable condition of the public mind.

One of the matters in which the information of the public will presently be necessary is disinfection. To the layman, it is the outward and smellable sign of a process of purification, and wherever the odor of its chemicals is to be detected, there is faith in a good work going on. From the brick that wastes away in a couple of months to the more formidable formaldehyde processes, the "disinfectants" come in enormous variety. For most of them undoubtedly soap and elbow-grease would be a more efficient substitute. The practise of disinfecting rooms and large spaces after sickness has grown up and is much in vogue. Is it necessary and effective, or is it, like sewer-gas, a relic left by the wayside by knowledge in its progress? It is costly; should it be used in selected cases? Here is a matter that is now in the air, and the balance seems to be settling against the large use of the process in rooms and houses. It is expected by the people, and if it is no longer useful, the people must be informed. Is it not a duty, in these advanced times, of a society like this to foresee the situation? It is in a position to catch the whisperings, and it might gather the threads of information, and, if a change is coming, it could help spread the news.

And in the same category is the typhoidal oyster. Fear of germs has robbed thousands of our citizens of a delectable food. For years no one has hinted otherwise than that the oyster and typhoid fever were linked in unquestioned brotherhood. At this moment the balance is turning, sanitarians are looking at the facts and questioning any real relationship save in a very few extraordinary instances. It is due to the people, when the time is ripe, that the decision, whether affirmative or negative, be given to the world in an authoritative way. Not by any mere paragraph in the newspaper picked up by the reporter or his necessarily hasty and superficial digest of a technical report, but by plain statements in plain English, backed by the name of a well-known medical society.

And as for the "typhoid fly," he has had a remarkable and sensational run in which medical men and bacteriologists have not hesitated to make of him a scapegoat and pile on his back all the ills that flesh is heir to. But I do not believe that in a well-sewered city, disposing fairly well of its sewage, he cuts much figure in the dissemination of disease. Perhaps some tuberculosis may be carried by him here. But although I speak of the fly in this way, I am not taking his part, for he is a filthy beast equally at home in dining-room or muck-heap, and carrying the filth of street or alley to the food. Get rid of the fly by all means, but not under false and sensational pretenses. Fight him for what he is, a filthy nuisance.

Two most important technical processes related to public health are vaccination and animal experimentation. The former has its inveterate enemies who leave no stone unturned to oppose it and succeed in enlisting under their standard bodies of medical agnostics and even medical anarchists, so that together a good numerical showing can be made. Hardly a year passes without some anti-vaccination bill presented to the legislature. Usually The Massachusetts Medical Society presents a speaker in its defense, but in my opinion a much better showing should be made. In these enlightened times it would seem as if so evident a matter needed no backing, but the fact remains that there is an aggressive and persistent opposition which may best be met by an equally active support.

In all probability there is no other subject in medical work that is less well understood by the people than animal experimentation, which is always opposed by bitter antagonists, who are able to draw on the sympathies of tender-hearted

people and secure their support. The unfortunate name that has for years been attached to it is against it from the point of view of the people. With the possibility of such an exhibition as that recently on view in New York City, said by those who have visited it to be inaccurate in presentation and misleading in deduction, medical societies should take it to heart that animal experimentation is to-day in need of all the support it can get. It would be unfortunate to have a law passed in our state forbidding the use of animals for experiment, including the diagnostic work, yet such a condition seems by no means beyond the bounds of possibility. I am of the opinion that such societies as this should be heard, and with no uncertain sound whenever opportunity permits, when so much is dependent and the opposition can present so formidable a front. Then through the members a proper view of the science can be given authoritatively to the people.

Now there are a goodly number of things that will benefit the public health all about us, in which public opinion must be formed. The drinking cup has been abolished in Massachusetts. It was not because any medical society recognized the danger and asked for the abolition, but purely through other influences. Medical men, of course, gave their opinions, but, as a matter of fact, the movement followed by some months or a year such a movement in the West. It is rather too bad that it could not have originated here, and it would have if there had been strong, influential medical societies interested and active and realizing the importance of the change.

There are a number of improvements of this kind that the country needs. For myself, I can think of no sanitary abomination more in need of reform than the railway closet. One can hardly credit that in a civilized community we have permitted it to exist so long, yet it is only the occasional individual voice that is raised against it. Its dangers are not unknown, for at a few localities the doors are locked while passing over some watershed that is used for the supply of a city. Let me picture it for you: A little box, probably unventilated unless by a window, which modesty seldom permits to be opened. No water flushes the hopper, which retains its filth perhaps to the end of the journey. The dejecta fall to the roadbed below, or catch on the chains by the way and by ingenious devices like this are spread far and wide. No water is convenient with which to wash the hands that not unlikely have come in contact with infectious matter. Just outside the door, on whose handle perhaps a few germs are left for the benefit of the next comer, there is the water tank. The individual fresh from his devotions to Cloaca grasps the handle — more germs — and drinks from the universal cup, if he be outside of Massachusetts or Kansas. I do not need to say another word, gentlemen. The railway closet, distributing its wastes over miles of roadbed, must go, and I think you are the kind of organization that can soonest make it go.

I wish for a moment to refer to a matter which it seems to me is worthy of attention as affecting the health of the larger communities of the country. In the superficial glance that I have been able to give over the sanitary needs of the country I have been particularly struck by the seeming lack of the study of tropical disease. This would seem to be one of the more important gaps in medical work in the country, where year after year some new foreign disease from the warm latitudes is found to be homed. There is pellagra and the hookworm, and no one knows what may be the next one to be found well established. With the present state of knowledge on the part of general practitioners, the chance of diagnosing such ailments, even in institutions, is not large, yet the discovery of the cases is important. It is very true that the unsewered and even un-outhoused condition of the South has given opportunity for parasites to make hosts of a barefooted people to an extent that in the North will probably never be possible, but the facts show that there has been much unrecognized tropical sickness in the countries of outdoor life, and if present conditions continue there will be much more. This is a living question of the near future and one that societies of this kind can well take up, for it involves large questions in matters pertaining to the education of the physicians who in their distribution over the country must infallibly come into contact with imported and ordinarily unfamiliar disease.

One cannot close the story of what societies and physicians stimulated by their associations can do for the education of the people without a word about sex hygiene. The false modesty precluding public mention of this matter, which has prevailed far back of the memory of any one here present, seems now to be on the point of giving way. Public-spirited men and women are leading the movement to present definite and trustworthy information in lieu of the older method of dissemination on the street corners with the air of secrecy by those who had no right to be teachers. To-day it would seem as if it is the layman who is in the forefront of the work. Does not this belong to the physician, fitted by his training and by his knowledge of the nature and extent of the dangers?

And directly in the matter of specific disease, there seems to be an important place for the physician as a public educator. He is not likely to take the initiative unless there is behind him the confidence and support of his confrères. A society furnishes these elements. And further still, although the enormous consequence of such diseases in the morbidity and mortality of the community is acknowledged, and although means of treatment have been devised, there is still to be worked out the practical way of presenting the whole matter to the people. This will, of course, be eventually worked out by the cut-and-try method that has in the past built up the sanitary systems. But are we not in another age? Is it not time to work in quicker fashion? Is there not here an opportunity for the many minds of a society, or, in fact, of many societies, to focus

themselves on the problem and reach much more easily the methods that shall be of the quickest benefit to man?

And last of all there comes the question of the attitude of medical men towards the press, which is a matter for which the time is ripe, I think, for consideration. With the insistent progressiveness, not to say inquisitiveness, of the newspaper, and its resources, and the conservativeness of the physician, it is an irresistible force meeting an immovable body. But I do not believe the situation quite so desperate, and think that a society like this is thoroughly competent to discuss the subject and to arrive at a ground where the essential matters of consequence in medical discovery may be given to the people in an interesting and trustworthy manner.

EXPERIMENTS ON TRANSMISSION OF BACTERIA BY FLIES WITH SPECIAL RELATION TO AN EPIDEMIC OF BACILLARY DYSENTERY AT THE WORCESTER STATE HOSPITAL, MASSACHUSETTS, 1910.*

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THIS investigation of an epidemic of bacillary dysentery at the Worcester State Hospital occurring in July and August, 1910, has been approached to first ascertain the causative organism;

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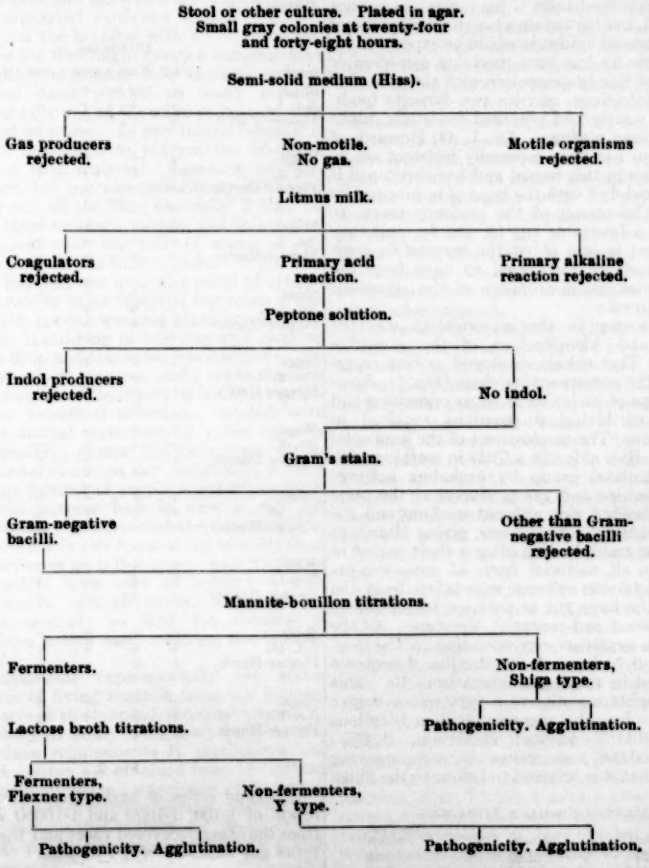


FIG. 1.

second, the method of transmission from case to case, and, third, prophylactic measures against such transmission.

Our epidemic, consisting of 136 cases, resembled in type of incidence and spread that of the Danvers State Hospital, Massachusetts, 1909. The incidence was gradual and the spread scattering and irregular, no one ward or set of wards suffering in marked disproportion. This lack of the explosive type of outbreak applies against the theory of a water supply infection. The hospital receives its water from the Worcester city supply and such a source of infection can be practically ruled out by the lack of concomitant outbreak in the city. Milk infection may also be excluded on the grounds of lack of explosive incidence and by the fact that only certain of the diet cases receive raw milk and that no apparent relation exists between those on a raw milk diet and the cases infected. The infection of raw foodstuffs, i. e., vegetables, cannot be excluded, but here again a heavier incidence and more widespread epidemic would be expected.

The house fly has been receiving considerable attention of late in connection with the spread of intestinal infections, and its two favorite foods, i. e., fecal matter and prepared foodstuffs, make it a dangerous medium. Dr. L. O. Howard, of Washington, has been especially insistent on its potentialities in this regard and has christened it the "typhoid fly" with the hope of impressing its danger. The season of the epidemic seems to have been a favorable one for the fly, and they were present in and about the hospital in great numbers and are considered to have been the chief cause of the distribution of the organisms from case to case.

The first step in the investigation was the isolation and identification of the causative organism. The technic employed is best represented by the accompanying chart (Fig. 1), showing the steps of exclusion of other organisms and the data of biological reactions required in identification. The employment of the semi-solid medium of Hiss aids not a little in working with all the intestinal group by excluding actively motile organisms and gas producers at the same step. It also is a rich nutrient medium and the growth is usually a heavy one, giving abundant material for transplanting after a short period of growth. In all, material from 15 cases was examined. In 5 the cultures were taken from the lesions of the large gut at autopsy, in the others from the blood and mucus of the stools. Of the 15 cases an organism corresponding to the morphology and biology of the Bacillus dysenteriæ was isolated in varying numbers from 10. This organism splits mannite to a very minor degree as shown by the mannite-bouillon titrations (average, 0.11% acidity; maximum, 0.30%; minimum, 0.00%, as shown in accompanying chart), so that it is believed to belong to the Shiga type.

MANNITE-BOUILLON TITRATIONS.

Case.	Control.	Mannite.	Per Cent. Acidity.
1	2.30	2.40	0.10
2	2.32	2.37	0.05
3	2.10	2.13	0.03
4	No B. dysenteriæ recovered.		
5	2.00	2.30	0.30
6	No B. dysenteriæ recovered.		
7	No B. dysenteriæ recovered.		
8	2.31	2.40	0.09
9	2.32	2.41	0.09
10	2.26	2.37	0.11
11	No B. dysenteriæ recovered.		
12	No B. dysenteriæ recovered.		
13	2.30	2.30	0.00
14	2.32	2.41	0.09
15	2.19	2.43	0.24

The results of a parallel series of agglutination tests give evidence that the organism belongs to the Shiga type (Fig. 2). These tests were made with the blood of a recovered case and are parallelled in each instance with a test in the same dilution of a stock Shiga and a stock Flexner-Harris type.

	DILUTIONS.					
Organism.	1-100.	1-500.	1-1000.	1-5000	1-10,000.	1-50,000.
Shiga.	+	+	+	−	−	−
No. 1.	+	+	+	+	−	−
Flexner-Harris.	+	+	−	−	−	−
Shiga.	+	+	+	+	−	−
No. 2.	+	+	+	+	−	−
Flexner-Harris.	+	−	−	−	−	−
Shiga.	+	+	+	−	−	−
No. 3.	+	+	+	+	−	−
Flexner-Harris.	+	+	−	−	−	−
Shiga.	+	+	−	−	−	−
No. 5.	+	+	+	−	−	−
Flexner-Harris.	+	−	−	−	−	−
Shiga.	+	+	+	+	+	−
No. 8.	+	+	+	+	−	−
Flexner-Harris.	+	+	+	−	−	−
Shiga.	+	+	−	−	−	−
No. 9.	+	+	+	−	−	−
Flexner-Harris.	+	−	−	−	−	−
Shiga.	+	+	−	−	−	−
No. 10.	+	+	+	−	−	−
Flexner-Harris.	=	−	−	=	=	=
Shiga.	+	+	+	−	−	−
No. 13.	+	+	+	+	−	−
Flexner-Harris.	+	+	+	−	−	−
Shiga.	+	+	+	−	−	−
No. 14.	+	+	+	+	−	−
Flexner-Harris.	+	+	−	−	−	−
Shiga.	+	+	+	+	−	−
No. 15.*	+	+	+	+	+	+
Flexner-Harris.	+	+	−	−	−	−

FIG. 2.

A second series of agglutinations run in a dilution of 1-100, 1-1000 and 1-10000 with serum from ten other recovered cases and the two stock types gave the following reactions.

*Autogenous.

Case.	1–100. Shiga.	1–100. Flexner-Harris.	1–1,000. Shiga.	1–1,000. Flexner-Harris.	1–10,000. Shiga.	1–10,000. Flexner-Harris.
A	+	–	+	–	–	–
B	+	+	+	–	?	–
C	?	–	–	–	–	–
D	+	+	–	–	–	–
E	+	–	+	–	–	–
F	+	+	+	–	+	–
G	–	+	–	+	–	–
H	+	+	–	–	–	–
I	+	–	+	–	–	–
J	+	+	–	–	–	–

The second point of attack was an effort to find some tangible evidence of the mode of transmission. Recent literature on epidemiology is convincing of the point that the fly is a factor to be considered in the spread of the intestinal diseases, especially in those epidemics where the incidence is gradual rather than explosive and the cases occur here and there throughout a neighborhood or in separated wards of a hospital.

A survey of the hospital with a view to determining how the flies might become contaminated with dysentery organisms from carriers or from unrecognized cases yielded so many possible sources that only one of the more prominent ones was selected as a test. In any insane hospital it is well-nigh impossible to prevent the access of flies to some fecal material. Screening methods are of value, but are also notoriously inefficient in keeping out all the flies, especially if they be present in large numbers outside, and this factor, in conjunction with the filth of many of the patients in such an institution, makes the problem an almost hopeless one from this point of attack. At the Worcester State Hospital one room of the laundry with special washing machines is given over to the laundering of bedding and clothing soiled with filth, and this room was selected as one of the most prolific sources of fly contamination with fecal material. The reports of bacillus carriers in all the intestinal infections, coupled with the almost annual occurrence of a few cases of severe dysentery, render the occurrence of infected material in almost any assortment of feces from a large number of people so readily possible that for the purpose here in view it was not deemed necessary to show that there was actually material present in this room of the laundry from either a carrier or an active case. As a matter of fact, the active cases were all isolated in well-screened wards, and all stools, bedding, etc., disinfected carefully so that the chances of material from active cases reaching the laundry were small.

To demonstrate experimentally the actual transference of living bacteria from the laundry to other parts of the hospital, recourse was had to a non-pathogenic easily recognized bacillus, and to fulfill these requirements B. prodigiosus was chosen. A culture was obtained from Dr. Arthur M. Worthington, of the Department of Bacteriology of the Harvard Medical School, and we wish here to express our thanks therefor.[1] Bouillon cultures of B. prodigiosus were exposed on a high shelf in the laundry room above mentioned, on sterile gauze pads in sterile china saucers, and renewed daily during the experiment. Sterile wire fly traps baited with sterile sugar syrup were then set in a number of wards and the scullery room off the kitchen and each day's catch taken to the laboratory and allowed access to a surface of agar in a large crystallizing dish. These fly plates were then kept at room temperature and observed at twenty-four, forty-eight and seventy-two hours for the occurrence of red colonies. Fig. 3 gives an idea of the relation of the laundry room to the kitchen and wards and indicates the place of planting and wards from which flies were taken for examination. All of the saucers after exposure for twenty-four hours were found to be heavily fly-specked, and to make a rough estimate of the number of flies which had visited the plant and were in all probability contaminated, the specks on one were counted. The count resulted in the figure 115 for one plate for a twenty-four-hour exposure. Some observation of the fly while feeding has shown that while many flies defecate while feeding, the majority do not at any one meal. Of a number watched, it was found that only about one out of six defecated during their meal, so that the 115 specks, excluding a second trip by individual flies, may be taken to very roughly mean 690 flies which visited the bait and probably become contaminated with B. prodigiosus in twenty-four hours. The plants were renewed in six days, so that in all, on the above estimate, about 4,000 flies may be assumed as carrying the organism. These figures are not given as at all accurate, but merely a deductive estimate of the number exposed.

The results were striking. The first plant made in the laundry was on Aug. 24 and on the 25th flies were taken in a sterile net from the laundry and scullery room of the kitchen. Plates from both of these catches were rapidly overgrown by a spreading organism and had to be discarded. On the 26th, however, two days after the original plant, plates from flies taken in traps in both the kitchen and in the nearest ward dining room, Lincoln 1, showed unmistakable prodigiosus colonies. From the kitchen trap 18 flies were taken, and the plates showed three positive colonies. The Lincoln 1 trap yielded 19 flies and the plates two positive colonies.

On the 27th, the third day after the first plant, plates from flies trapped in Lincoln 1 and Folsom 2 both yielded prodigiosus colonies. The Lincoln 1 plate was made from a catch of 17 flies and showed four positive colonies. Only three flies were taken from the Folsom 2 trap, but of the colonies resulting, one was a prodigiosus.

On the fourth day of the experiment the remaining two wards from which daily catches of flies were made showed the test organism. Thayer 2 represented by ten flies showed three positive colonies, while Phillip 4 gave a plate which was dotted over here and there with almost as many prodigiosus colonies as those of other kinds. This result was so out of proportion to the other findings that it was repeated on the 30th, and on the

[1] We wish also to thank Dr. B. L. Arms for some chromogens which he furnished, but which were not employed in the experiments.

same day a trap was set for the first time in another ward, Salisbury 1. The plate from Phillip 4 on this day made by 12 flies yielded five positive colonies, which is more in accord with the other results. The Salisbury plate from 17 flies showed three colonies of prodigiosus. The very heavy growth on the plate from Phillip 4 on the 29th may have been a result of contamination of the syrup bait by one of the earlier caught flies and a consequent tracking in by later catches. This factor, of course, cannot be excluded in any of the traps, but the mere presence of B. prodigiosus in traps which were sterilized before each setting and baited with sterile syrup gives evidence of the presence of at least one fly which had visited the laundry unless by this time the spread of the organisms from the original plant with consequent growth in other places might have given new sources of supply from which organisms could be carried.

The fact remains, however, that the organism was recovered from the kitchen and from every one of the five wards in which traps were set within six days from the original plant, and while growth in the syrup bait contaminated by an early entrant or growth, in other places than the laundry, planted by flies from there and relayed by other flies to the wards, might preclude any quantitative conclusions, the qualitative results are unaffected.

The appended chart, Fig. 3, gives an idea of the relation of the various points of recovery to the original plant and serves to emphasize the tremendous bearing such bacillary fly transmission may have on any of the intestinal diseases and, in fact, in many other infective processes. The dated crosses in the laundry represent the time of planting and renewal of the original culture. The dated empty circles represent the traps set which yielded negative results. The dated circles containing crosses indicate the traps from which flies were taken which on culture showed B. prodigiosus. Approximate distances are indicated on the diagram.

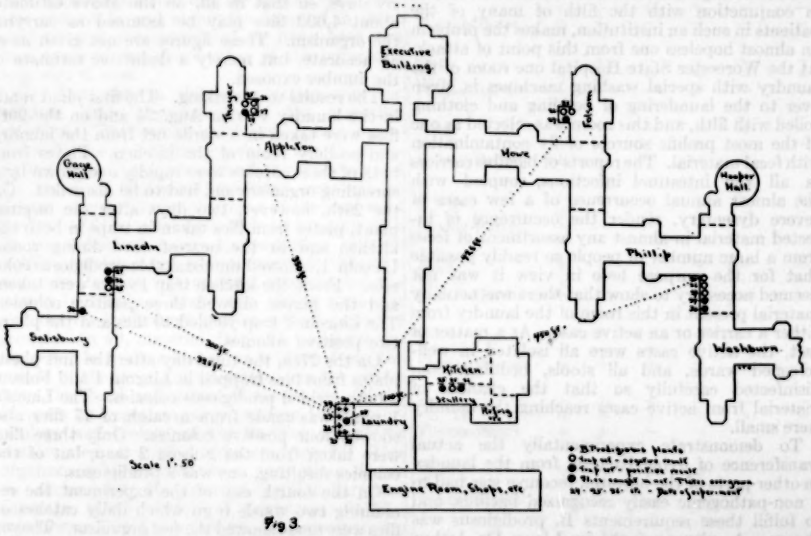


Fig 3.

The third line of attack aimed at prophylaxis against the fly's activity as a transmitter, and the subject permits of three methods of approach. First, Keep the flies away from all fecal matter; second, Keep the flies away from all foodstuffs; and third, Eliminate the fly.

The first method, that of keeping the flies away from fecal matter, is nowadays attempted in almost every institution or large community by the proper disposal of sewage, but the problem in institutions for the care of the insane is rendered so much more difficult by the filthy habits of many of the patients that such sources cannot be prevented even with the best of care and training of nurses and attendants. It may be well to emphasize here, however, the great importance of doing away with all the removable sources of such contamination and of screening all places where fecal accumulations are unavoidable so as to reduce, as far as possible, the danger by this means.

The second method, i. e., keeping the flies away from the food, is also tried almost everywhere by the usual screen and fly-paper method, but with anything but satisfactory results. The ease with which flies, when present outside in great numbers, find entrance to a screened room is remarkable, and little can be expected from this method in seasons when the crop is large. All of the ward dining rooms of the Worcester State Hospital are

thoroughly screened and yet all of the flies used in the prodigiosus experiments here reported were caught in traps placed in the dining rooms.

The third method, eliminating the fly, promises much better, however. Dr. L. O. Howard, in the bulletins of the Bureau of Entomology, Department of Agriculture, calls especial attention to the frequence of horse manure as a breeding place of the "typhoid fly," as he has called it.

He quotes the work of Newstead, in Liverpool, and Forbes, in Illinois, as proving the breeding of flies in spent hops, ash pits, paunches of slaughtered cattle, tallow vats, miscellaneous garbage, etc., but states that commonly the eggs are laid upon horse manure.

Howard has found that in Washington the female fly lays about 120 eggs and that ten days are required for the larval and pupal stages. The egg hatches in eight hours after it is laid and the young larva molts at the end of the first day, again at the end of the second day and enters the puparium stage at the end of the fifth. Five more days are past in the chrysalis stage, and at the end of the tenth day the adult issues.

The Worcester State Hospital, like practically all such institutions, stands in the center of fairly large grounds, and the absence of any probable neighboring fly source renders the problem of elimination easy of approach. Under such conditions the fly crop can be considered as practically all home-grown, and care of the breeding places in such surroundings ought to result in a great reduction if not the ideal condition of elimination of the fly.

With these considerations in view, a survey was made of the grounds to identify the chief breeding places. This is an easy matter, as a rule, as the maggots and puparia are readily found in great numbers in places suited for their growth. That the fly produces maggots is a fact recognized by every one, but the converse, i. e., that the maggot is necessary to produce a fly, seems to have received less acknowledgment. One hears quite frequently the remark that the flies are breeding in a building, but a question as to the presence of maggots in such building is generally sufficient to point out the error.

The search was first applied to the horse-manure piles following Dr. Howard's findings. There are only two such accumulations on the hospital grounds. One, at the stable, is in a large masonry pit which is drained below and covered so that, while it is not fly-proof, it is dark and dry. An afternoon's search through this pile with a pitch-fork failed to reveal a single maggot or puparium, while it did show that the manure was molding or heating rapidly. A subsequent examination of two other piles away from the hospital where the manure was kept dry and in the dark showed the same condition of rapid heating and molding and the same dearth of fly larvæ. The second horse-manure pile on the hospital grounds is at the farm barn. Here the manure is dropped through floor traps and when a pile has accumulated is taken to the part of the barn where the cow manure is collected and mixed with that. Here were found a considerable number of larvæ and puparia, but they were by no means in numbers sufficient to account for the swarms around the buildings. The larvæ were found more frequent in that part of the pile consisting of pure horse manure, while, as the other end of the barn was approached, where the proportion of cow manure was higher, the number of maggots was noticeably less until the pure cow manure was reached, where the larvæ were very few. This finding accords with Howard's statement that while the house fly will oviposit on cow manure, he has never been able to rear it in this substance, and also suggests that if horse manure be mixed with a sufficient bulk of cow manure, its efficiency as a breeding place for the house fly will be lowered at least, and possibly the breeding may be entirely prevented in this way.

Having, then, practically excluded the two horse manure piles, the search was extended. The pigpen was next examined and here was found a condition more in accord with the numbers of flies, though hardly sufficient by itself. The piles of pig manure mixed with the straw bedding, etc., were kept outside the piggery building and exposed to the air and rain and were found to be badly infested.

One ounce of this material was taken from a point a few inches below the surface where the chrysalides were thickly clustered, and from it were taken 868 puparia.

Another prolific source was found in piles of spent hops and barley malt, brewery waste, which had been hauled in for use as fertilizer. The hops show a tendency to mold rapidly and apparently do not favor the breeding of the fly as does the looser barley malt. This material proves an excellent food for the larvæ, and in those parts of the piles where there was an abundance of moisture the maggot content was astonishing. One ounce from the richest portion of one such pile yielded 1,018 maggots. The first observation of these brewery waste piles was made at a time of the summer when there had been considerable rain and the piles were damp throughout, while in places the material was well saturated. At one place where there was a layer six or eight inches deep of soggy barley over the ground the mass was simply crawling with maggots, while a visit after six days of continued dry weather showed that this layer had dried out fairly well and that the maggots had practically all disappeared, and the puparia which were found in the neighborhood were by no means numerous enough to account for all the larvæ previously seen. I take it that this means that a large proportion of moisture is required for the greatest activity, and would suggest the experiment of roofing and draining such piles to determine whether they might not thus be kept until such time as they are needed for spreading and yet rendered innocuous.

Spreading on the ground, or, better, plowing in, of all vegetable waste seems the easiest method of caring for such material, and where these methods are followed once a week, so as to allow no accumulation to stand long enough to hatch

its quota, the nuisance ought to be well in check.

Howard has experimented with the treatment of manure piles to stop the breeding of flies, and his conclusions are that chloride of lime in the proportion of one pound to eight quarts of manure makes an effective treatment. His method is to keep the manure in a closed bin or receptacle and sprinkle each day's accession with a small shovelful of chloride of lime and to have the bin emptied every week for distribution on the gardens, etc.

In order to make a rough comparative estimate of the degree of activity of the fly in the various breeding places, one pound of material from each was taken to the laboratory and kept in screen-covered glass jars to await the hatching. Immediate counts of the larvæ and pupa would probably have given more accurate results, as the media varied in their reactions to the lack of moisture, and probably all of the figures are lower than would have been the case had the material remained undisturbed in the pile. By keeping the manure, however, for the ten-day interval, the flies hatched could be observed in order to form an estimate of the proportion of the house fly — Musca domestica — to the other species reared in the various media. In each instance the sample pound was taken to represent as nearly as possible the average content. The results were as follows.

Source of material.	Musca domestica	Other species.
Stable manure pile,	0	0
Farm barn, horse end,	77	0
Farm barn, mixed,	19	1
Farm barn, cow end,	1	3
Piggery manure pile,	361	5
Spent hops,	129	1
Barley malt,	539	2

The identification of species was carried no further than an observation of size and general appearance, and a determination of the presence or absence of flattened mouth parts.

Though these figures cannot be given as exactly representing the probable output per pound, yet they show the preponderance of the typhoid fly over other species and speak strongly for the necessity of cleaning out all such breeding places. If the house fly can transmit a culture of B. prodigiosus within six days to the screened dining rooms of as many wards, and if one ounce of vegetable waste can contain 1,018 maggots, it will certainly prove worth while to take care of the tons of such material which are apt to be found at any such institution which has not undertaken a fly extermination crusade.

Conclusions. An organism conforming to the Shiga type of B. dysenteriæ was recovered from 10 out of 15 cases examined.

B. prodigiosus planted in the laundry was recovered from flies caught in traps in the scullery and five screened ward dining rooms at an interval of from two to six days after the original plant.

It proves impracticable in most insane hospitals to keep the flies from access to fecal matter and from food when they are present outside in large numbers and, therefore, the best prophylaxis against fly-borne epidemics is in cleaning up the breeding places of the fly to reduce its numbers or eradicate it.

The typhoid fly — Musca domestica — breeds in tremendous numbers in decaying vegetable waste of varying sorts, and a search for maggot-infested places with subsequent attention thereto offers the best line of attack.

The house fly's egg to adult cycle is ten days, so that vegetable waste should be cared for at least once a week during fly season.

Horse manure may be treated by chemical means, but it is probable that, if it is kept dry and in the dark, but little breeding will take place. Mixing with many times its bulk of cow manure may prove effective.

When possible, all waste material should be plowed into the land without accumulating. Spreading over the land will probably suffice to reduce the pest markedly.

In hospitals surrounded by considerable ground it is probable that the great majority of the flies are home grown, and the extermination of their breeding places is an object which cannot be overlooked.

REPORT OF A STUDY OF BROWN-SÉQUARD'S EPILEPSY IN THE GUINEA PIG.

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IN general, epilepsies are classified as idiopathic and organic, the former to include those cases where no cause is known, and the latter those in which a definite pathogenesis is found. Post-mortem findings may reveal conditions not recognized during life. Of the cases coming to autopsy at this hospital, e. g., from April, 1909, to August, 1910, 54% show gross lesions associated with the nervous system. Since epilepsy in the guinea pig is organic in type, and the course and severity of the disease may be controlled as it cannot be in the human subject, the study upon which this report is based was taken up and carried on in detail.

First in 1850,[1] and in subsequent papers,[2,3,4] Brown-Séquard published his observations on a condition which he had found following various injuries to the spinal cord or to the sciatic nerve of the guinea pig. This was a tendency to convulsions which he considered analogous to epilepsy in man. The convulsions might occur spontaneously, but more often could be induced only by irritation of the skin over a definite area on the face, neck and shoulder, corresponding to the side on which the cord or nerve was injured. Trophic changes and anesthesia of the "epileptogenous zone," increase in nasal secretion on the affected side, and occasionally corneal affections, were reported as accompaniments of the convulsive condition.

A further observation, and one which has been extensively cited as demonstrating the transmission of acquired characteristics in mammals, was the observation that the young of epileptic

animals might themselves become epileptic sometime after birth. But the fact has not been generally emphasized, that the so-called hereditary cases never occurred apart from other abnormality.

Brown-Séquard himself says:[5] "This inherited epilepsy I have never observed in other animals than those which had also inherited absence of toes." In the work of Charrin[6] and Prévost,[7] both found that simple amputation of a part of an extremity resulted in the development of the epileptic attack. There seems here to be a possibility that the deformity in the offspring in Brown-Séquard's cases was due to pre-natal or very early post-natal injury, bringing about a condition which would produce the same result as simple amputation of part of an extremity. The work of Brown-Séquard has since been repeated, in part at least, by a number of investigators,[8,9,10,11] some of whom have been able to confirm many, but not all, of his findings, and this question of transmission has been one of variance.

The work of this report was undertaken to observe more particularly the transmission from parent to offspring of the "epileptic" and associated conditions. It has been continued during a period of eighteen months, and is based on observations made on 195 animals. Of this number, 68 were subjected to a lesion of the sciatic nerve. The remainder were the normal animals used, and the succeeding generations. They were mainly the common smooth-haired variety, though a few rough-haired angoras were included. A large, light, well-ventilated basement room was used for their quarters, and cages of one-half inch mesh wire screen 13 by 18 by 18 in. were made for this special purpose. The frame of the cage was of zinc, and a zinc tray was made to slip in and out of the bottom of the cage in drawer-fashion to aid in cleanliness. The front was hinged to form a door, and half of the top could be lifted to admit food if desired. Sawdust was used in the bottom of the cages, and these were given weekly thorough cleanings, the tray being washed out with Sulpho-napthol and abundant hot water. The principal food was hay, or green grass in summer, oats, and carrots or beets. With four or six animals in a cage, quite a large number may be kept clean and comfortable in a relatively small space and can be conveniently arranged.

In carrying out the work, the following points have been particularly considered:

I. The requisite injury of the nervous system.
II. The development of the scratch reflex.
III. The development of the convulsion.
IV. Age relation to time of development of the convulsive tendency.
V. The zone of irritation.
  a. Extent of the area.
  b. Changes occurring in the area.
VI. The convulsion.
  a. Detail of the attack.
  b. Frequency.
  c. Severity.
  d. Duration of convulsability.
VII. The effect of convulsion
  a. On nutrition.
  b. On reproduction.
  c. On length of life.
VIII. Study of offspring
  a. Of normal female and epileptic male.
  b. Of normal male and epileptic female.
  c. Of both epileptic parents.
  d. Of second generation.
IX. Summary.

I. THE REQUISITE INJURY.

It has been well demonstrated by Brown-Séquard[1,2,3,4,5] and others,[8,9,10,11] that various injuries of the cord or larger nerves result in the possibility of exciting convulsions by stimulating certain well-defined areas of the skin. Resection of the sciatic nerve was chosen in this case as it causes less disability in the animal and produces almost unvarying results. Both nerves were divided in 55 of the cases, and only one in the remaining 13.

The neurotomy was in every instance done under full ether anesthesia, the entire operation requiring hardly more than five minutes after anesthesia was established.

The technic was as follows:[12] An incision about 1 cm. in length was made just behind the great trochanter and carried through skin and muscle. The sides of the incision being drawn apart, the nerve is seen as a glistening white band which can be elevated and divided. Resection rather than simple division was done to prevent reunion of the approximated ends. A single stitch suffices to close the wound, which heals immediately. It can be scarcely detected on the second day.

II. THE SCRATCH REFLEX.

After a period varying from five to thirty-three days, the average being eighteen days, following the division of the nerve, there develops, on irritation of the specific zone, a rhythmical scratching movement with the hind leg of the corresponding side.[14] This appears to correspond quite definitely with the scratch reflex in the spinal dog described by Sherrington.[15]

"In the dog, when the spinal cord has been transected in the neck, the scratch or scalptor reflex becomes in a few months prominent. A stimulus applied to any point within a large saddle-shaped field of skin excites a scratching movement of the hind leg. The movement is rhythmic alternate flexion and extension at hip, knee and ankle. Each flexion recurs at a frequency of about four times per second. The stimuli provocative of it are mechanical, such as tickling the skin or pulling lightly on a hair. The receptive nerve endings which generate the reflex lie in the surface layer of the skin about the roots of the hairs."

The body is bent with the convexity away from the affected side and the scratching foot approximates the point irritated. The foot movement continues only during the time of irritation. This phase probably represents what has been termed by some the incomplete convulsion, but differs quite definitely from the complete attack of which it always forms a part.

III. THE DEVELOPMENT OF THE CONVULSION.

In this series, the complete convulsion developed in periods varying between ten days and three months and seventeen days, the average being one month and nine days after the division of the nerve and averaging eighteen days after the appearance of the scratch reflex. In the beginning the attack is usually very brief. On irritation the scratch-reflex first appears and the animal falls on the side with the eyes closed, only for an instant, almost immediately gaining its feet and appearing quite normal. Of the 68 animals operated upon, only 2 failed to develop the complete convulsion. These were black and tan angoras, a female and an offspring. Division of the nerve was first done on the older animal on Sept. 17, with no result. Consequently the operation was repeated and was done also on the younger, on Jan. 4. The older showed the typical trophic changes, with development of the scratch reflex on Jan. 28, the younger not showing the reflex until March 1, and neither has had a complete convulsion during the period of six months subsequent to operation. Thus 97% developed the complete convulsive attack, 3% demonstrating only the scratch-reflex.

Nowhere in the literature have we been able to find any exact statistics of the results obtained by Brown-Séquard. He says that of 67 guinea pigs in which the sciatic nerve had been cut, all except a few developed the "complete attack." Bramwell and Graham-Brown,[18] in their series on 41 animals, report that one quarter showed fully developed convulsions, two thirds the scratch reflex and one third negative. Of 100 animals operated upon by Obersteiner, almost all — which is quite indefinite — developed the complete attack.

Gutnikow, in Obersteiner's laboratory, operated on 40 animals, only 6 of which developed convulsions.

Karplus, some years later, also working under Obersteiner, among 30 animals operated upon, obtained no complete results and was obliged to give up further observations. Evidence is sufficient, however, to show that, in general, division of the sciatic nerve will result in convulsions.

IV. AGE RELATION TO DEVELOPMENT OF CONVULSION.

It has been claimed that age, judging by the body weight of the animal, determines the time of development of the convulsive tendency, and also the severity of the attack. In the series of 58 animals observed by Bramwell and Graham-Brown,[18] in which only 10 developed the complete attack and 8 of these weighed over 650 gm., "they drew the conclusion that the age of the animal at the time of the operation, as approximately judged by its weight, appeared to be a factor of importance in determining the subsequent development of the complete Brown-Séquard fit." This is probably true in a degree. That is to say, large, well-nourished animals over eight months of age do react more quickly and definitely than those in the first few months of life. Among the latter, however, a difference of a month or two seems not to be significant. Of 4 animals in this series operated at the same time, 2 were over four months of age, one was two months, and one only one month old. The youngest developed convulsions a week before any of the others and only thirty-three days after the operation. This would go to show that age is not necessarily a determinant in the development of convulsions.

V. THE ZONE OF IRRITATION.

a. Extent of the Area.

The convulsions following injury to the sciatic nerve were in no case spontaneous, but were produced by mechanical irritation of the so-called "epileptogenous" zone. This is an area of the skin covering the side of the face, neck and extending slightly beyond the posterior limit of the scapula. Light molding of the skin between the thumb and forefinger is quite sufficient to induce a reaction. More extensive manipulations or sharp pinching are not effective. In the most sensitive animals, touching the hair on the back of the neck, or holding the animal by the shoulders, will produce a convulsion. In this way, the attacks may appear spontaneous; when several animals are in a cage together, simply being brushed against serves to cause an attack.

In most cases, close observation shows the first area to become sensitive is the skin over the lower jaw and sometimes just beneath the eye on the affected side. There is apparent anesthesia at this point, and this extends progressively over the neck and shoulders, until nearly the anterior half of the body, on the side of the divided nerve, becomes sensitive.

b. Changes Occurring in the Area.

Concurrent with the beginning anesthesia and the development of the scratch reflex, there appears a trophic change in the zone of irritation. Parasites accumulate upon it; the hair becomes dry and breaks off or falls out, leaving the skin quite bare, or it may be there is only a thinning of the hair, while the outer limit of the zone is marked by a narrow band about 0.5 cm. in width where the hair is entirely fallen out. In some instances, this stripe of skin may ulcerate and slough away, followed by formation of dense scar tissue. Graham-Brown noticed that this zone became more sensitive after cessation of convulsions than the corresponding area on the opposite unaffected side. As the operation on this series of animals was bilateral in most cases, observations on this point could be made only on very few, but in these the hyperesthesia was quite apparent.

VI. THE CONVULSION.

The first step in the production of a convulsion is the irritation of the "epileptogenous" area. This excites the scratch reflex, which always precedes the complete convulsion. In this phase, the body is curved toward the irritated side, the hind foot approximates the point irritated with a rhythmical scratching movement and the muscles

in the back of the neck are contracted, raising the nose above the plane of the body. After from six to ten strokes of the foot the animal falls on its back with the eyes closed and all muscles in a state of tonic contraction, the thorax is fixed and the legs flexed. Following this there is clonic spasm of the extremities, especially noticeable in the forelegs and feet; the head is drawn from side to side; the lower jaw is rapidly lowered and raised with a sharp biting action and the abdominal muscles contract and relax, causing alternate flexion and extension of the body. Recovery from a single convulsion is almost immediate and the animal gains its feet. There is often some transient spasm of groups of muscles about the back of the neck and shoulders, or rubbing the nose with the forefeet. In prolonged attacks, periods of dullness followed. In very susceptible cases, the tonic phase may begin almost immediately on irritation, and here the animal does not fall on its back, but the convulsion takes place while in a crouching position. The single attack is usually quite brief, lasting from fifteen to thirty seconds, sometimes less. It may, however, be repeated successively many times, simulating a typical status epilepticus. One case observed passed from one severe convulsion into another, with scarcely any interval, the entire series lasting over three minutes. The question has arisen whether the complete attack is accompanied by a real loss of sensibility or consciousness as reported by Brown-Séquard. This, of course, is most difficult to determine, but it can be asserted that the animal is incapable of voluntary movements and does not respond to any of the ordinary external stimuli involving the touch or pain sense, or that of hearing.

a. Frequency.

In nearly all the animals of this series, convulsions could be elicited at any time and repeatedly, the zone of irritation rarely losing its power to bring out the reflex for at least five or six successive attempts. There were a few among the less susceptible, however, that would react only once, and then a considerable period had to be allowed to elapse before irritation would produce a complete convulsion.

b. Severity.

The severity of the attack varies widely with the individual animals. In general it is true that those which develop the convulsions most quickly show the most pronounced reaction. Mature and well-nourished animals have been ordinarily observed to be subject to the most severe attacks, which proved to be the case in this series.

c. Duration of Convulsability.

The period during which convulsions may be excited is a variable one. Brown-Séquard found them more difficult to induce after the fourth month. The average in these animals was somewhat longer. During six months, daily attacks could be produced in the greater number, and some animals were still sensitive a year after the first complete convulsions. It is to be seen that those cases in which daily or frequent stimulation has been given over a considerable period remain "epileptic" longer than those which have been excited to fewer convulsions. The state of nutrition of the animal also seems to be a contributing factor, as many that have lost in weight following the development of the convulsive tendency have also ceased to respond to irritation. Isolation and special feeding to restore good physical condition has, in most cases, brought about a return of convulsability. There appears here a similarity to the human subject, in whom restricted diet lessens the frequency of the epileptic attacks. Another very evident factor in determining the production of convulsions in the guinea pig has been the birth of young. Following this there was frequently a complete cessation, which, however, was not always permanent. This may also have a relation to the state of nutrition.

VII. THE EFFECT OF CONVULSIONS.

a. On Nutrition.

Convulsions often repeated over a considerable period of time bring about a marked general malnutrition, regardless of the abundance or quality of food given. This condition, in turn, acts to inhibit convulsability, which returns, however, on improvement of the general physical condition of the animal and is in no way influenced by the intermission.

b. On Reproductivity.

One of the most marked results of frequent convulsions is the lessened reproduction. This was also noted by Sommer [10] in his observation. These animals, ordinarily so prolific, produced so few young that, for a time, it seemed as though work with later generations would be impossible. Matters were complicated by the fact that the few young born were not alive at birth and the mother died in a day or two, showing marked emaciation. In the cases examined, cultures from the heart's blood showed a staphylococcus septicemia. This came to be so serious a matter that the convulsions were omitted, with very evidently good results. The young were born alive and strong and the adult animals lived to rear their offspring. This seemed to indicate that death following the birth of young, as well as that of the young themselves, was not due directly to the injury to the nerve, but rather occurred as a result of frequent convulsions. This was tried out further in fresh animals. The unilateral operation was done on ten young females, all of which became epileptic in course of time. These were stimulated to convulsions until the complete, severe, typical attack was assured. Following this, only very infrequent convulsions were brought on, with the result that the animals remained in far better physical condition, although there was a slight falling off, and those which bore young showed no abnormality. Here we have phenomena pointing to disturbed metabolism varying in gravity with the frequency and severity of the convulsions.

VIII. STUDY OF OFFSPRING.

The observation of the young as well as that of the adults proved a time-consuming study, as it was desired to find if any showed either induced or spontaneous convulsions. Four types were considered successively.

I. Offspring of epileptic male and normal female.
II. Offspring of normal male and epileptic female.
III. Offspring of both epileptic male and epileptic female.
IV. Offspring of animals of the second generation.

Brown-Séquard [5] reported having seen in the young of epileptic guinea pigs the development of epilepsy some time after birth, but, as already noted, this occurred only in those having a defect of the hind limbs. He could recall definitely only 13 cases of all the offspring observed in which this condition existed. He says, "Most likely what is transmitted is the morbid state of the nervous system."

Of 32 young observed by Obersteiner, 2 were judged "epileptic," but no note has been seen that there was any deformity accompanying the epileptic condition.

Westphal reports two offspring of an epileptic animal both of which on irritation of the epileptogenous zone had only an atypical attack, which, however, he considers as characteristic. This would seem to be hardly confirmatory, as many animals, both adults and young, whether offspring of epileptic or perfectly normal parents, often show spasmodic muscular contractions and body movements on irritation of the specific zone, such as twitching of the extremities and moving the body from side to side. This is, however, quite different from the typical convulsion with its tonic and clonic phases and loss of sensibility. Sommer [16] gives absolutely negative results with 23 offspring. Grainger-Stewart,[17] in observations covering considerable time, has never had a case of epilepsy in offspring of epileptic animals.

I. *Offspring of Epileptic Male and Normal Female.*

In this class 52 young were under observation, and in no case was there an animal presenting any abnormality, and there were only 4 deaths, making the mortality only 7%.

II. *Offspring of Normal Male and Epileptic Female.*

Of the 26 offspring in this class, only 15 were alive at birth and one died on the second day, leaving only 14 for study. Thus, there were 46% of deaths among the young of the epileptic female.

III. *Offspring of Epileptic Male and Epileptic Female.*

Of the entire 73 young in this division, 18 were dead at birth and 3 extremely weak ones died on the second or third day. These showed no paralysis. If stimulated by stroking the head or sides while lying on the back, there was free movement of all the limbs, but not sufficient strength to walk or eat. The mortality here was 29%. Comparing this with the above, it would appear that fewer offspring of the epileptic female survived than in the case of both epileptic parents. This is due to the fact that the injury was bilateral, and frequent convulsions were produced in all cases in Class II, while in the later cases, in Class III, the attacks were restricted and very few were produced, not more than one weekly, after being fully established. The change is clearly indicated by the fact that previous to the limitation of convulsions there were 54% of deaths, while following the restriction there was a mortality rate of only 21%. Aside from this there was no abnormality. No transmission of convulsions was found.

IV. *Offspring of Animals of the Second and Third Generation.*

Since no direct transmission occurred, the work was further carried on to find if alternate heredity according to the Mendelian principle would result here. Ten young of the third generation and 3 of the fourth failed to present anything notable.

IX. SUMMARY.

I. Lesions occurring in the cord or principal nerve trunks of guinea pigs produce a tendency to convulsions resembling epilepsy in the human subject. The attacks, however, have not been proven spontaneous, but may be elicited by irritation of a specific zone of skin on the side of the face and neck corresponding to the injured nerve. In this series 97% of the animals in which the sciatic nerve was resected developed convulsions; the remainder, 3%, showed only the scratch reflex.

II. The scratch reflex, the first manifestation of the nervous lesion, developed at the end of a period averaging eighteen days after the division of the nerve.

III. The complete convulsion appeared on an average of one month and nine days following the injury to the nerve and eighteen days after the development of the scratch reflex.

IV. Age proved not to be an absolute factor in relation to the time of development of the convulsions. Among 4 animals operated upon at the same time, varying from over eight months to one month of age, the youngest animal developed the convulsions first, only thirty-three days following injury. The age is ordinarily judged by weight. The average weight of a guinea pig at one month is slightly less than 250 gm.

V. The zone of irritation varies in extent. The sensitive area is at first limited to the skin over the side of the face. This extends progressively with the further development of the convulsive tendency to include the shoulder and often some distance beyond the border of the scapula. The degree of sensitiveness varies in individual cases. Sometimes merely touching the hair will produce an attack, while in others definite molding of the skin is required.

Trophic changes occur in the zone of irritation, manifested often by falling of the hair, leaving the skin exposed; or it may be the hair becomes brittle and breaks off, thus causing a roughening of the coat. In extreme cases the skin may ulcer-

ate. As a rule parasites accumulate over the area and there is some anesthesia.

VI. The convulsion follows irritation of the sensitive zone and is preceded by the scratch reflex. Following this, the animal falls on its back with eyes closed, insensible, and all its muscles in a state of tonic, followed by clonic, convulsion. The attack is usually brief, but may be spontaneously repeated several times. For some time following the return of consciousness the animal is somewhat stupid and dazed.

It was found that the animals would in most cases respond to repeated irritation, though some could be made to react only once without an interval of some hours to a day or more.

Severity of attacks depended on the size and physical condition mainly, though no rule could be applied to all cases. Those developing the attack most quickly were subject to the most severe convulsions.

VII. The effect of convulsions was productive of a marked loss of flesh, and this bore no relation to the quantity or quality of food given.

Lessened reproduction was also universal, and in almost every instance of birth of young they were not alive or died immediately after birth. This was proved not to be due directly to the division of the nerve, for by limiting attacks to not more than one each week, perfectly normal offspring were born. This would seem to show a marked disturbance in metabolism due to frequent convulsions.

VIII. The study of 128 offspring of epileptic animals to observe the transmission of epilepsy, reported by Brown-Séquard[5] to have been seen in his series, was absolutely negative. Four young were very weak at birth and died on the second day, but showed no other symptoms. The fact that *convulsions in the offspring of epileptic animals always, in Brown-Séquard's experience, existed with a lack of toes,** makes it seem possible that there may have been some pre-natal injury which would produce the same effect as a division of the nerve.

The 13 young of the second and third generations were also negative.

A microscopical study of the trunk organs from these animals should be of interest to compare with that of a series from the human subject.[18]

The nervous system of animals having had frequent convulsions, if examined histologically, might reveal something singificant, and the skin lesion existing in the zone of irritation has never received more than gross consideration. These lines, if followed out, would add much to the complete study of Brown-Séquard's epilepsy in guinea pig.

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* The inattention of commentators to this fact clearly stated by Brown-Séquard may be emphasized by this footnote.

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Clinical Department.

AN EXTRA-UTERINE PREGNANCY AT FULL TERM.*

BY C. H. HARE, M.D., BOSTON, MASS.

It was the writer's great pleasure to assist Dr. Swift in his operation upon a case of full-term extra-uterine pregnancy which he reported to this Society on Jan. 18, 1898, and which report was later printed in the Boston Medical and Surgical Journal, May 12, 1898. That case was operated forty-five days after the supposed death of the child. The placenta was removed. Most of the membranes not removed. The abdomen was closed without drainage. There was considerable shock, but otherwise the convalescence was excellent. The following summer a second case was seen in Paris. Pinard made the diagnosis of extra-uterine pregnancy at about five and one-half months. The patient was taken into the hospital and watched until a living child was removed from the abdomen by Ségond a short time before labor would have been expected had the pregnancy been intra-uterine. The placenta and membranes were not removed. The membranes were stitched to the abdominal incision and the sac drained. The writer first saw this case between seven and eight weeks after the operation, at which time both mother and baby were in the best of health. The abdominal sinus was then about the size of a child's little finger. My third case to see was operated by myself.

Mrs. C. C., 1451, was first seen March 30, 1910. Aged thirty-three years. Married ten years. One child, nine years of age. No abortions. Menstruation began at sixteen and had always been regular and normal. She has never had any pelvic trouble. The last and regular menstruation occurred May 6, 1909. There was no more flow until March 20 to 22, 1910, when she used some dozen napkins and passed a few clots after an ether examination. She had severe lower abdominal cramps on June 6, after which she was in bed for about six weeks with much nausea and vomiting and a large loss in weight. She was then fairly well

* Read at meeting of the Obstetrical Society of Boston, Oct. 25, 1910.

until cramps began about Christmas time and troubled her at times until Feb. 12. She felt life daily from October until Feb. 12, but never after that date. The abdomen steadily increased in size from October to February, and the leg and thigh veins became prominent. She had no question of her pregnancy and expected her confinement Feb. 10. On Feb. 12 from 9 A.M. to 4 P.M. she had mild labor-like pains which she hourly waited to have severe enough to send for her physician. Instead of which, however, they ceased. In the next few days the breasts became swollen and leaked. The abdomen and the large veins gradually lessened in size. When seen March 30 she weighed one hundred and thirty pounds, having lost ten pounds in six weeks. Her mental and nervous condition forbade a satisfactory examination. The cervix had practically disappeared, but there was a pencil-size hole high up and near the pubes on the left. A soft solid mass filled the pelvis and abdomen up to the navel. The ether examination had been made by two men of exceptionally large obstetrical experience, who found the uterus empty and the uterine canal three and three-fourths inches deep. They thought it most likely that she had a rapidly growing fibroid and that the pregnancy idea had been an error. My knowledge of the literature acquired through the case of Dr. Swift was fresh in memory, owing to the rarity of his case; hence, with the typical signs of a pregnancy over a period of nine months ending with a pseudo-labor and then the disappearance of pregnancy signs as the literature tells us to be typical of such cases, my first guess for diagnosis was an abdominal pregnancy at full term with death of the child on Feb. 12. She was operated April 6. A few ounces of dark serum were visible on opening the peritoneum. The fetal sac was ruptured and a dead baby weighing four and three-fourths pounds removed. The head was in the left pelvis. The placenta was fist size and shape in the right pelvis, easily removed, harder and stiffer than normal and weighed two pounds. The child and inside of the sac were very thickly covered with vernix caseosa and fine hairs. The uterus was soft, double normal size and lying in front of the sac. The sac was about the thickness of intestinal wall, but firmer and, barring the abdominal wall to which it had no adhesions, it was as if so firmly pressed into everything it touched that it was a part of and inseparable from everything touched. Only a small upper portion was removed. From the pelvic portion an opening was made into the vagina; a T-tube placed for drainage; and the cut edges of the sac infolded and sewed tight. Tubes, ovaries and appendix were not seen. There was no hemorrhage. More blood was lost from the vaginal puncture for the drainage tube than from any other source. The baby and placenta were given to Dr. Leary, who tells me they are simply like the usual dead and macerated specimens and nothing remarkable about them. The operation was well borne. The highest temperature was 101° and pulse 110 on the second day, after which it was never above 99° or pulse above 95. There was profuse discharge from the tube, with much odor, for several weeks. She left the hospital four weeks from the day of operation, but the drainage tube was not removed until twelve days later. Her convalescence was ideally good. The writer has seen her only once since operating, but by letter four days ago she tells me that she is completely tired out and in poor general condition owing to the care of an invalid mother since her return from the hospital, yet her menstruation is the same as before the operation and she has no pelvic pain or discomfort of any kind.

Diagnosis, care and operation on these cases is, of course, most vital. No man's personal experience, owing to the rarity of cases, can be sufficient to make him an expert, and as time goes on it is probable fewer cases of ectopic gestation will escape early diagnosis and early operation; hence any one individual's experience is likely to lessen. We are indebted to Sittner for exhaustive work upon extra-uterine pregnancy at term in papers published in 1901 and 1908. This writer collected reports of 165 cases of viable fetus at the time of operation from the year 1813 to 1906. Of these he could follow 122 sufficiently long to tell us that 63 lived beyond the first month, 23 beyond the first year, 6 beyond the sixth year, and one to the age of nineteen. His statistics on deformities report, of 93 children, 10 as badly deformed and 5 so badly as to cause death. A paper by Peterson, of Ann Arbor, in December last, reviews the papers of Sittner and a few others since published, and ends with the following conclusions.

First, wherever conditions permit, operation for the removal of the gestation sac is indicated in the first half of an extra-uterine pregnancy, since,

Second, at this period the mother is in great danger from rupture and sepsis; and,

Third, the chances for the survival of the fetus are very poor.

Fourth. During the latter part of an extra-uterine gestation the chances of rupture and a fatal hemorrhage are very much less (4.8%); and

Fifth, the chances of the survival of the fetus are very much greater.

Sixth. While malnutrition and malformation of the extra-uterine child are more common than with the fetus under normal conditions, they are not frequent enough to contra-indicate attempts at saving its life.

Seventh. Hence, under favorable surroundings, when the patient can be watched, she should be allowed to go within two or three weeks of term before operation.

Eighth. Since the maternal mortality is more than twice as great after operations in advanced extra-uterine pregnancy where the placenta is left behind,

Ninth, its removal should be one of the cardinal principles of each operation.

Tenth. In the "discoid" variety of placenta where only a small surface of this organ is not attached, the blood supply must be controlled, either by tying the vessels or by compression of the aorta before an attempt be made to remove the placenta.

Eleventh. When for any reason removal of the placenta is impossible, the sac should be stitched to the parietal peritoneum and the placenta shut off from the peritoneal cavity by gauze.

Twelfth. Dependent drainage through the vagina should be secured whenever possible.

THE profession in Russia celebrated, in various ways, Nov. 26, the hundredth anniversary of the birth of Nicolai Pirogoff, the great Russian surgeon, chief of the military medical service during the Crimean and the Russo-Turkish wars, and long professor of surgery at the Military Academy. His first work, published in 1836, on the anatomy of arteries and fascia, not only gave him an international reputation, but blazed the way for the surgery of the future. — *Jour. Am. Med. Asso.*

Medical Progress.

PROGRESS IN SURGERY.

Thoracic Surgery.

by samuel robinson, m.d.

At the Chicago meeting of the American Medical Association in 1908 a symposium on thoracic surgery was held and later reviewed in the columns of this Journal. [1]

Considerable interest prevailed in the discussions concerning the comparative value of the positive and negative pressure methods of avoiding the ill-effects of operative pneumothorax, and although clinical experience with the use of apparatus was then too small to be of value it was evident that the use of differential pressure might open a new era in thoracic surgery. Such hopes have been realized in a striking activity of experimental and clinical investigation which promises a lowered mortality from thoracic disease. The progress may be reviewed from the experimental and clinical aspects.

EXPERIMENTAL INVESTIGATION.

1. *Apparatus.* The old controversy between the advocates of plus and minus pressure is rapidly closing. The blood-pressure experiments of Seidel, Dreyer and Robinson have shown that positive differential pressure when properly administered does not disturb the physiology of respiration and circulation. The operations of Kuettner under negative and positive pressure have demonstrated the like practical applicability of the two. Innumerable operations upon animals and human beings under positive pressure have been sufficiently successful to warrant its continued use. The simpler and less expensive method then has naturally become the popular one and no fewer than fifty devices for the application of positive pressure have now been presented.

Conceiving the interesting idea that negative pressure may be better adapted to certain pathological conditions within the thorax, Willy Meyer has constructed a double cabinet for the combined use of plus and minus pressure with mechanism for prompt transition from one to the other.

Positive pressure cabinets large enough to contain the anesthetizer and the patient's head have been designed by Engelken, Meyer and Robinson, and are in use in Breslau, New York and Boston.

The head helmet with openings for the patient's head and the anesthetizer's hands continues to be the choice of Brauer and Janeway, and Karewski contributes another such apparatus with slight modifications. Mayer, Tiegel, Schmieden, Widal and Robinson remain satisfied that the purposes of differential pressure can be accomplished with the face mask method. Mollgaard and Flint have since constructed apparatus applicable to the mask method, with ingenious improvements in the control of the etherizing and exhaust segments.

Matas, Kuhn, Green, Dorrance, Fell, Richter and others have continued to advocate the use of peroral intubation, although it may be said that their methods more nearly approach the older custom of rhythmical artificial respiration than the principles of differential pressure, which presupposes the use of a constant, uninterrupted stream of air.

While the interest of investigators in the Sauerbruch differential pressure idea was at its height, Volhard and Sollmann were demonstrating that, in the presence of a wide open pneumothorax on both sides, oxygenation of the blood can be maintained without inflation of the lungs provided a constant stream of oxygen is introduced in the region of the bifurcation of the trachea. This, of course, involved either the introduction of a tube through a tracheotomy wound, or through the mouth, larynx and trachea. Robinson, in 1908, published the results of animal experiments in which he had verified the investigations of Volhard and Sollmann, and further added that while oxygenation could be maintained with intratracheal oxygen in the presence of almost complete lung collapse, it could not be maintained with air alone without at least a two-thirds inflation of the lung, even when the air supply was provided at the bifurcation of the trachea. Meltzer and Auer have explained these phenomena from a physiological standpoint and have perfected the method of introducing air through a tube to the bronchial bifurcation, calling the method "intratracheal insufflation." They have satisfactorily demonstrated that in a curarized animal, with the front of the chest removed, oxygenation is preserved with the lungs quiescent in a state of normal inflation. Inasmuch as the introduction of a tube in the dog is a comparatively simple procedure, many investigators have come to employ this method in their experimental intrathoracic operations. Elsberg has constructed an apparatus applicable to the human, and it is supposed by some that this intratracheal insufflation will eventually supplant the other methods.

Simplicity, portability, inexpensiveness, are features which recommend the insufflation method to its supporters. The advocates of the cabinet, mask and helmet methods argue that in thoracic operations on the human the avoidance of all intrabuccal and intratracheal instrumentation is of value, not only because of the difficulties attending intubation in certain individuals, but also because of the frequent intolerance of the pharynx and trachea to foreign bodies in spite of deep local and general anesthesia. It is doubted whether the introduction of a tube to the bifurcation of the trachea even in the most suitable patient is simple enough to warrant its practice after the opening of the thorax and the onset of symptoms which indicate the need of differential pressure. If we assume that at such a crisis an attempt at intubation might threaten the life of the patient, it would seem to be necessary to introduce a tracheal tube in all patients under-

[1] Progress in Surgery, James G. Mumford: Boston Med. and Surg. Jour., vol. clix, Nos. 23 and 24, pp. 760–763; 796–798.

going thoracic operations. Those who employ the other forms of apparatus, recognizing their ease of immediate application in case of need, and knowing, furthermore, that in a large percentage of thoracic operations no pressure is necessary, have come to operate with apparatus at hand, but without its application until necessary. Operators have remarked upon the consolation obtained from the immediate availability of means of differential pressure, although in the course of a doubtful operation it may not have been found essential. It has been argued further that all thoracic operations which may need artificial inflation are of a nature which demand hospital treatment, and that ease of portability beyond that of moving apparatus from one hospital to another is not a feature in support of the use of intratracheal insufflation unless the latter method can be shown to have more practical advantages. It has been mentioned, too, that thoracic operations of the type referred to are ordinarily of sufficient shock to the patient without the addition of intratracheal instrumentation. Again it is argued that in a large majority of thoracic operations but one cavity is opened, and that inasmuch as the remaining lung in the majority of cases continues to functionate enough to prevent a too great accumulation of carbon dioxide in the space between the lips and the bronchial bifurcation, the introduction of air as deep as the bifurcation is not essential, and that moderate pressure applied at the nose and mouth is sufficient to accomplish the desired result. Tiegel, recognizing the contribution of Volhard, has by the mask method substituted oxygen for air in his mask differential apparatus and becomes satisfied in a series of operations on the human that oxygen at a pressure of 1 cm. of water, although not enough to inflate the lung, is sufficient to maintain oxygenation. In cases of double pneumothorax, oxygen under greater pressure with resulting inflation may be necessary. He even recognizes that in many cases there is sufficient functional activity of the unoperated lung to inhale enough oxygen from the mask without resistance to its escape to preserve the normal heart action; he nevertheless advocates the use of pressure in conjunction with oxygen because of its necessity in double pneumothorax, in tracheal obstruction, in case of need of artificial respiration and for inflation of the lung before closure of the thoracotomy wound.

2. *Experimental thoracic operations.* Excision of greater or less portions of the lung tissue has continued to be a popular problem of experimental investigation. It is now universally admitted that excision of one or two lobes of the lung in dogs or rabbits is attended with absolute success, the manner of treating the lobe stump being of comparatively little importance and attended with like success with mass ligatures or with special treatment of the bronchial stump. (Tiegel, Green, Robinson, Danielsen.)

Total extirpation of one lung in animals has now come to be regarded as a procedure with low mortality. Sauerbruch and Robinson, who had performed total pneumectomies under negative and positive pressure respectively, had met with opposite results. They conclude that the explanation of success with negative pressure rests in the fact that at the close of an operation in a negative pressure cabinet the persisting pressure in the emptied side of the thorax is equal to that of the unopened side and that the conditions are favorable, therefore, for the compensatory hypertrophy of the remaining lung and for the displacement of the heart and lung to occupy the hollow pleural cavity. In a long series of animal operations under positive pressure, in which no effort was made at the end of the operation to reexpand the remaining lung or otherwise to obliterate the atmospheric pressure of the open side, the mortality was high. They, therefore, recommended the necessity of hyperinflation of the remaining lung at the close of operations for total pneumectomy in dogs. Flint has since proved the importance of this suggestion. After pneumectomy he sutures the thoracotomy wound, leaving a bent glass tube, which, under hyperinflation of the remaining lung, is suddenly removed as the last mattress suture is tied. He has also produced an absolute negative pressure within the empty thorax by post-operatively aspirating the hollow thorax until by manometer reading the normal negative pressure was produced. By these two methods he has performed seven total pneumectomies with two deaths. Von Eberts has likewise been successful with the aspiration method. It is of interest that in Flint's operations the inversion of the bronchus with peribronchial stitch, recommended and successfully employed by Meyer, was not considered essential, and it is further noticeable that the successful total pneumectomies under negative pressure performed by Sauerbruch were done with mass ligatures of the stump and vessels. From these factors it may be concluded that bronchial leakage is less likely to occur if the normal negative pressure is preserved after pneumectomy, and that the previous fatalities have been due more perhaps to neglect of this feature than to lack of care in the closure of the bronchus. The most successful series of total pneumectomies in dogs is that of Willy Meyer, with seventeen successes in twenty-one operations. The fact that negative pressure was employed in most of these operations, together with particular care in closure of the bronchus, leaves us undetermined as to which was more responsible for his results.

The technic of closing wounds in the lung has been presented in several forms by Talke, Green, Mayer, Dorrance, Tiegel and others, and the like success of the varying methods has led us to conclude that suturing of cuts, lacerations, and other wounds of the lung tissue is a simple and successful procedure. Dorrance reports a series of eighteen experiments in which stab wounds were inflicted, stating that hemothorax was present in a large proportion of cases and that operation and suture under such conditions were successful in thirteen animals.

The esophagus has also been the seat of active

experimental investigation, and it may be said that all such experiments have been made possible by the introduction of differential pressure, the use of which is absolutely essential in esophageal operations upon the normal dog. Tiegel, Sauerbruch, Green and Janeway, Meyer and Mayer have done progressive work along these lines, although results are somewhat discouraging. Thus far efforts to approximate the proximal end of the esophagus and stomach after resection of any considerable portion of the esophagus have been attended with a high mortality. The use of buttons for such anastomoses has been to a great extent abandoned on behalf of the direct suture, but leakage has occurred even with the latter, partly, if not wholly, as a result of the excessive tension on the approximated parts. Green and Janeway have found that the approximation of the proximal portion of the esophagus and the prepyloric portion of the stomach is possible, and they report a series of six favorable results after excision of the lower esophagus and cardiac portion of the stomach.

Experimental surgery of the heart has contributed features which will undoubtedly be of value in operations on the human being. Haecker and Sauerbruch have demonstrated the practicability of the transpleural approach to the heart. They claim that this approach is of value primarily because many bullet and stab wounds of the heart involve the pleura and lung, and that heart suture without the repair of lung injury and the removal of hemo- and pneumothorax is an incomplete procedure. They have demonstrated that, with the pleura opened under low differential pressure, the concurrent slowing of the pulse-rate facilitates suture of the heart muscle. They advocate, furthermore, temporary pressure of the vessels at the base of the heart during the introduction of sutures to the ventricles to diminish the blood leakage after the opening of the pericardium, and they have shown that almost complete occlusion of these vessels may be maintained in rabbits for more than a minute without fatal results.

The introduction of differential pressure has made possible certain investigations in pathological physiology in which valvular lesions have been artificially produced by the introduction of ligatures in the region of the mitral valve. Carrel has removed and transplanted sections of the thoracic aorta and vena cava.

(To be continued.)

Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Thirty-Second Annual Meeting, Held in Washington, D. C., May 3, 4, 5, 1910.

James E. Logan, M.D., *President.*
James E. Newcomb, *Secretary.*

I. THE NASAL PHENOMENA OF NEURASTHENIA.

By Charles Prevost Grayson, M.D. (Abstract.)

Frequency and severity of neurovascular nasal disorder as a complication of neurasthenia. Of too common occurrence to be regarded as merely coincidental. Possessed of therapeutic as well as pathologic importance. Occurs in both essential and symptomatic neurasthenia, and in both the nasal phenomena are unmistakably of nervous origin. Not to be confused with hay fever or vernal catarrh. No hypersensibility to irritants of external origin. Disturbing factor evidently comes from within, and its action is probably central rather than peripheral. Although ordinary symptoms of peripheral irritation may be absent, yet the actual intranasal conditions are as strongly marked in neurasthenia as in the periodic violence of hay fever. Vaso-paresis and infiltrative tumefaction of turbinates pronounced. Quite sufficient to account for or, at least, aggravate the headache, mental apathy and even the melancholia of neurasthenia. Its relief, therefore, of considerable therapeutic importance with reference to cure of the central nervous derangement. It is an example of the danger of prolonged alteration of physiologic processes eventuating in actual pathologic changes. The repeated disturbance of arteriovenous balance in nasal mucosa leads in time to persistent vasoparesis with all its consequences. Therapeutic neglect of this condition will greatly hinder the success of general treatment of the neurasthenia. Local measures of relief: Cauterization alone of little value, but if serum-distended turbinates are first drained by free scarification or multiple puncture, chromic acid or galvano-cautery will then prove effective. Glycerophosphates and strychnine of collateral systemic value. Analogy between results of local treatment in these cases and the removal of adenoid growths in children. Mental improvement equally prompt and remarkable.

Dr. B. R. Shurley, Detroit, said that there are a number of cases that come under the observation of the rhinologists which are classified under the term of neurasthenia, and they are perhaps the most abused of all that come under the observation of the different specialists. He had been greatly interested in some problems along this line, and some time ago had been privileged to make observations on carrier pigeons after a long flight, — making sections of the spinal cord and observing the action of fatigue under the microscope, — and there is a complete change in the cell structure of the pigeon that has been over-fatigued as compared with one that has been at rest. He is confident that in all these cases there is a definite reason, which we are not always able to ascertain, to explain the different vasomotor neuroses so often presented. Another class of cases has been demonstrated to be due to actual changes in the natural secretions. This is in the line of physiology, and we are just beginning to understand that a large number of these so-called neurasthenics are cases of atypical Graves' disease and myxedema. Dr. Grayson had spoken of the effect of the glycerophosphates on the throat, and the marked changes in the air passages. There is a drying of the air passages in some of these neurasthenics which responds promptly to properly regulated doses of sheep's thyroids; iodine, also, is of great value in regulating this condition. Many of these thyroid conditions are due to loss of balance of the governing influence of the thyroids, pituitary bodies, etc., and by supplying the deficiency in the body when indicated results are reached that are well worth while.

Dr. Solis Cohen, Philadelphia, remarked that Dr. Sajous, who is at present in the lead in the investigations of the internal secretions, had stated that he owed his interest in the subject to the attention paid to thyroid cases when he was in Dr. Cohen's clinic.

DR. J. P. CLARK, Boston, said that while there may be cases in which the nasal symptoms are due to what is termed neurasthenia, yet none would feel satisfied in making a diagnosis of neurasthenia for nasal conditions, and if some physical conditions, such as described by Dr. Grayson, could be found, we would all be pleased. The more we know of nasal conditions, the more cases we will be able to remove from the classification of neurasthenia. In one case he had treated both antra contained a thick glairy mucosa which came out in almost a solid mass, and by clearing out the antra the patient was entirely rid of the local symptoms that were affecting his health very markedly. That belonged to the class of cases that might easily have been overlooked and classified under neurasthenia.

DR. R. C. MYLES, New York, said that he had found in cases of neurasthenia the same nasal phenomena described by Dr. Grayson. The conditions have sometimes a common and sometimes a local cause, and the difficulty seems to be in differentiating at the outset the proper relief for these cases. They do not stand manipulative procedure well, and certain types have to be referred back to the general physician to be relieved of their toxemic conditions. It is a peculiar fact that during the past winter he has seen more incipient thyroid cases than in the ten years previous. Whether or not this may be due to the extensive use of thyroid extract, he could not say.

DR. H. L. SWAIN, New Haven, said that in considering this matter we should bear in mind that there are anatomical conditions and physical deviations in the mucous membranes of those who suffer from rhinitis or disturbed internal secretions differing from those possessed by persons with normal structures. His work in cases of edematous rhinitis has convinced him that these patients have thinner vessel walls, less fibrous connective tissue distributed through the membranes and fewer of the muscle elements which contract than in other pathological conditions; and in this lack of firmness in the texture of the vessel wall there is the physical cause for the condition in the nose. He agreed with Dr. Shurley that there are types of exophthalmic goiter or myxedema which are responsible for many of the phenomena in these cases of nerve tire or neurasthenia.

DR. GRAYSON said that he would not for a moment presume to make a diagnosis of neurasthenia simply from the nasal conditions, but that a large proportion of such cases manifest the phenomena he had described. In the cases described the conditions persisted for months, many with scarcely any remission, and must have been due to other conditions than autotoxemias, for under treatment their general condition had greatly improved, yet the local condition continued. Dr. Shurley's remarks about the pathological conditions were decidedly illuminating, and when further studied may prove of decided benefit to this class of patients.

II. A COMPARATIVE STUDY IN THE ANATOMY OF MAN AND THE ANTHROPOID APES, WITH THEIR PHYSIOLOGICAL SIGNIFICANCE; EXHIBITION OF GROSS AND MICROSCOPIC SPECIMENS.

DR. T. GORDON WILSON, Chicago.

Dr. Wilson pointed out that the evolution of the larynx from a sphincter-like organ at the entrance to the respiratory tract to one in which the primitive function was overshadowed by the part now played by it in inter-relational life made the larynx especially interesting and important for comparative study. The paper was confined to a study of the ventricles and their appendages, and to the relation of the thyro-arytenoid muscle to the inferior vocal cord. Gross and microscopic examinations have been made of the larynges of a white man, a Chinaman, an orang-utan, several macacus monkeys, and a marmoset. By means of lantern slides and microscopic sections thrown on the screen the various points in the progressive series were demonstrated, especially the approximations of the muscle to the inferior vocal cord. In the second part of the paper there were discussed the various hypotheses which from time to time have been advanced to account for the presence of ventricles in the larynx. It was held that however adequate some of these hypotheses might appear to be to explain the presence of ventricles in one species, the impossibility of applying any one hypothesis to the anthropoidea in general was an obvious defect. Dr. Wilson insisted that if any general function was to be associated with the laryngeal diverticula, one must look for it along the lines of the general principle underlying laryngeal development, namely, the requirements of inter-relational life. With this in view, it was suggested that by means of such sacs the animal was able to modify the voice to express emotional states. In man, the close approximation of the musculature to the cord offered a finer mechanism to produce the same result, and so one would expect a diminution in the development of the diverticula. This appears to be so.

DR. J. PRICE-BROWN, Toronto, told of the case of a young woman twenty-five years of age, with a tumor in the neck which was soft and would disappear on inspiration and appear on expiration. He had concluded that it was a laryngeal sac, although he had had no previous knowledge on that subject, and that it was filled by air. His confrères had disagreed, and thought it was a thymus or thyroid gland and was drawn into the thorax during inspiration. He wished to know Dr. Wilson's opinion on the subject.

DR. WILSON replied that the question of laryngeal sacs was a very complex one, but that he had little doubt the case described by Dr. Price-Brown was a laryngeal sac. A similar case is reported in literature.

III. EXHIBITION OF ANATOMICAL PREPARATIONS DEMONSTRATING COMMUNICATIONS BETWEEN THE BLOOD VESSELS SUPPLYING THE DURA, THE ORBIT AND THE NASAL CAVITIES.

By DR. GEORGE E. SHAMBAUGH, Chicago.

Zuckerkandl, by injecting the longitudinal sinus, has been able to inject the mucosa of the frontal sinus and some of the mucosa of the nasal cavities, and recently Killian has demonstrated the blood-vessel communications between the frontal sinus and the dura, but further than this little important work has been done along these lines. The question seems one of great clinical importance, and Dr. Shambaugh undertook to demonstrate these communications on the heads of fetuses. Securing them quite fresh, he was able to do this very successfully. The heads were then decalcified and sections were removed, showing the nasal cavities, the orbit and the brain cavity. Thick sections were cut, colored and mounted on slides, and one can see in these the blood vessels going through. With a stereoscopic microscope there is no difficulty in demonstratng these vessel communications between the various nasal cavities and the dura. The anatomical preparations showed these communications very beautifully.

DR. H. P. MOSHER, Boston, said that every one must thank Dr. Shambaugh for presenting these beautiful specimens and bringing this subject up to date.

IV. THE MANIFESTATIONS OF RECURRENT INFLUENZA ON THE NOSE AND THROAT.

By Dr. Joseph L. Goodale, Boston.

Dr. James L. Newcomb, New York, said that he himself belonged to the class of cases described by Dr. Goodale, and that he wished to testify to the excellence of Deland, Fla., for such conditions. The air is dry and pleasant, and, furthermore, there is a good hotel there, which is not found in many Florida places, where you can lead a quiet life.

Dr. Casselberry said that the essayist had described cases symptomatically which are familiar to all, but that he himself has not been accustomed to ascribing them all to a common etiological factor, — there are other elements, and he wished to emphasize the good that will result in many cases of persistent tickling and irritation of the pharynx by the destruction of some one particular follicle or group of follicles in the pharynx. Of course the general cauterization of follicles in cases of follicular pharyngitis was familiar to all, but that was not the topic under discussion. The thorough cleansing of the secretions is next in importance as a therapeutic measure. His own experience in regard to abbreviating the course of these conditions differs from that of Dr. Goodale. He has frequently been impressed with the fact that after having endured for days they are cut short decidedly. He has had greater benefit from the dry climate of the West than from other localities.

Dr. H. L. Swain, New Haven, said that the patient will often assure you that you have hit the spot when you hit the lingual tonsil.

Dr. James E. Logan, Kansas City, said that the paper was very interesting to him in the light of some investigations he has been pursuing for a number of years. His experience has led him to believe that the infectious area is not to be attributed to the conditions in the faucial tonsils; they are more in the avenue of the digestive tract and are less liable to affect the upper respiratory tract than is usually believed. He is inclined to believe that the infections that pervade the upper respiratory tract are, to a large extent, located in the vault of the pharynx — you will find there the pneumococcus catarrhalis, the staphylococcus, the streptococcus, etc., in their various manifestations, but in so slight a manifestation that the little areas are easily overlooked. During the later years he has been able to find these recurrent "upholstered" conditions, which formerly he was not able to recognize as being of any value whatever, and he was glad to hear Dr. Grayson say that the pharyngeal tract is the place to look for these bacterial invasions. In his opinion, the only way to treat these conditions and prevent their recurrence is by the removal of these "upholstered" masses. He has found the application of a 30% solution of nitrate of silver to these recessi, through the oro-pharynx, very effective.

Dr. Joseph L. Goodale, Boston, said that he prefers the carbolic acid as the caustic agent during the acute inflammatory stage rather than the silver nitrate, which is best suited for use in the interval, to prevent recurrence. It requires a good deal of skill and practice to be able to treat the nasopharynx successfully.

V. QUININÆ AND UREA HYDROCHLORATE AS A LOCAL ANESTHETIC.[1]

By E. Fletcher Ingals, M. D., Chicago. (Abstract.)

Papers on this subject have appeared in the *Journal of the American Medical Association*, by Dr. Thiebault, 1907; Dr. E. J. Brown, 1908, and Drs. Hertzler, Brewster and Rogers, in 1909. The author of the present paper confirms the former statements that this is a safe and efficient local anesthetic, but he has not been able to demonstrate the prolonged action claimed by some of the other observers. He has used this anesthetic in many cases of nasal surgery, and in every instance has obtained excellent results. This drug in a 20% solution applied locally produces anesthesia as profound as a similar solution of cocaine, but it requires about four times as long to obtain results. A solution of 5% of cocaine and 15% of urea quinine in 1: 2000 of suprarenalin has been found most satisfactory. It acts as promptly and sometimes apparently more quickly than a 20% solution of cocaine in the suprarenalin solution. The reaction following cauterizations in the nares has been much less when this solution has been employed as an anesthetic than when the 20% solution of cocaine has been used.

Submucous injections of this drug have given profound and deeper anesthesia than its topical applications, but some of them have been followed by prolonged pain and a good deal of swelling. On account of the prolonged anesthesia claimed for this remedy, it would appear to be strongly indicated in the treatment of hyperesthetic rhinitis and hay fever. The author's experience does not make him as hopeful of the results in these affections as would have been anticipated from the former reports on the drug, nevertheless he considers that it should be given a fair trial. As a local anesthetic when used hypodermically in from ¼ to ½% solution, it appears to be very efficient, and it is shown to be absolutely safe by the fact that 100 gr. of the drug were injected into the veins by Brewster in the course of six hours in a case of pernicious malaria with recovery of patient. The author highly recommends this anesthetic in combination with cocaine and suprarenalin for all intranasal surgical operations.

Dr. Solis Cohen, Philadelphia, said that he has used this preparation for many years in general practice in remittent fever, especially pernicious fever. There is a form in which the patient suffers from chills, and if this is given in doses of 60 gr. it will often prevent paroxysms. He has used it also in removing growths from the larynx, with as much facility as with cocaine. He considers it a very satisfactory anesthetic.

Dr. Casselberry, Chicago, inquired whether Dr. Ingals had had any experience with it in tuberculosis of the larnyx. His remarks would seem to establish its utility in such conditions on account of its long duration.

Dr. Shurley said that he had started using this combination some time ago on the advice of a rectal specialist who had some most remarkable results with the infiltration of this anesthetic, but after using it on a few cases and hearing some unfavorable reports from others who had tried it, he discontinued its use.

Dr. T. Gordon Wilson, Chicago, said that he would like to know more about this from a different point of view. Some years ago he had been interested in the subject of the nerve endings, and the first thing that had to be done was to differentiate between the question of anesthesia and the question of nerve death: on the one hand, the suppression of the nerve function, and on the other hand, their death — protoplasmic death. The reason why you get so long an anesthesia is that you produce death of the particular nerve endings. It would, therefore, seem to be very dangerous to inject it into a nerve trunk.

Dr. John R. Winslow, Baltimore, said that for the past few months he has performed practically all his tonsillectomies under quinine anesthesia, with much

[1] Presented at the American Laryngological Association at Washington, May, 1910.

satisfaction, though in a stronger solution than usually used, — from 3 to 5%. By making the injection from fifteen to twenty minutes before operation, he finds that not only is the anesthetic effect increased, but that no hemorrhage follows the incision. He has had no bad results, though there is considerable swelling and edema for a while. His patients, however, do not admit that they are relieved of the after-pain characteristic of operations on the tonsils.

DR. H. L. SWAIN, New Haven, said that if the remarks made by Dr. Wilson in regard to protoplasmic death prove to be true, it would be very satisfactory. If the nerves in a tubercular lesion would remain dead until the patient passed away, we would have a great addition to our armamentarium.

DR. SOLIS COHEN said that he had had under treatment a very severe case of tubercular ulcer of the larynx in which this anesthetic allowed the patient to swallow for two or three days. A 20% solution was used. It required two or three minutes to produce the anesthesia.

DR. INGALS, closing the discussion, said that Dr. Cohen had answered Dr. Casselberry's question. He himself, however, had found that it required from fifteen to twenty minutes to produce the anesthesia. As to the discomfort arising from the injection, he judged that there was a good deal of swelling and that the patient might be very uncomfortable. He had not injected the tonsil at all. He and Dr. Wilson had discussed the subject of the nerve endings a few days earlier, and had agreed that it would be a fine thing if the nerve endings could be killed for a time at least. His experience in regard to eliminating the use of a vasomotor constrictor has been different from that reported by Dr. Winslow — the bleeding seemed to be as great as after any other anesthesia. According to his understanding, there is considerable anesthesia, lasting perhaps for ten or twelve hours.

VI. THE SYNDROME OF THE SPHENOPALATINE GANGLION.

By DR. GREENFIELD SLUDER.

DR. HARRIS P. MOSHER, Boston, said that asthma can in quite a number of cases be stopped promptly and for a moderate length of time by proper treatment directed to the sphenopalatine ganglion, and that we are indebted to Dr. Sluder for the first definite and full anatomical description of this ganglion. He has also successfully treated an obstinate case of moderate rhinitis.

DR. T. GORDON WILSON, Chicago, said that to him the most interesting part of the paper was the association of definite nasal symptoms with lesions affecting a sympathetic ganglion. The changes in vasomotor and secretory disturbances described by Dr. Sluder are important and suggestive, but the gustatory phenomena which he finds are difficult to reconcile with our present accepted knowledge of the course of these phenomena. The results of testing for taste in the anterior part of the tongue are subject to so much variation in healthy individuals, are subject to so much variation, that most men who have worked on this subject agree that to obtain reliable results taste must have been carefully tested before as well as after operation. The absence of such a record appears to lessen the value of Dr. Sluder's findings.

DR. SLUDER, closing the discussion, said that Dr. Mosher's observations on asthma were most interesting, and he hoped to try it in such cases. He was familiar with the work of Dr. Stein, of Chicago, who proposed treating cases of sneezing vasomotor rhinitis by injection into the nerve trunks as they enter through the sphenopalatine foramen. His own attempts with this condition have been few, and the results have been disappointing. He had been careful in expressing himself in regard to dealing with the question of taste. There is no anatomy, so far as he knows, to explain these phenomena — they are apparently inexplicable. He is also aware of the difficulty of dealing with the subject of taste in the anterior two thirds of the tongue. He has tried to follow the literature of the sense of taste, but it is exceedingly extensive, and he has no idea that he has read it all.

(To be continued.)

Book Reviews.

A Textbook of Veterinary Anatomy. By SEPTIMUS SISSON, S.B., V.S., Professor of Comparative Anatomy, Ohio State University, College of Veterinary Medicine. Octavo of 826 pages, 588 illustrations. Philadelphia and London: W. B. Saunders Company. 1910.

This fine piece of bookmaking containing 826 pages, including the index, is comparable to the best works on human anatomy, and is a decided addition to good veterinary literature of English-speaking people.

"The lack of a modern and well-illustrated book on the structure of the principal domestic animals has been acutely felt for a long time by teachers, students and practitioners of veterinary medicine," says the author in his preface, though he might have added "in English," for foreign languages offer excellent comparative anatomies, for example, Ellenberger and Baum "Handbuch der Vergleichenden Anatomie der Hausthiere." Yet it is not amiss to say at once that the work under consideration ranks with the best.

Modern methods of preparation have materially altered prevailing opinion regarding the normal form of certain of the viscera, and the results are given in this volume. "Embryological and histological data have been almost entirely excluded, since it was desired to offer a textbook of convenient size for the student and a work of ready reference for the practitioner."

"Veterinary anatomical nomenclature is at present quite chaotic in English-speaking countries," and so the author has endeavored to exclude certain terms which seem to fulfil no "useful purpose, and others which are clearly erroneous, or otherwise undesirable," and "in many cases the terms agreed upon by the Congresses at Baden and Stuttgart are adopted either in the original Latin or in anglicized form," an excellent plan.

Of the five hundred and eighty-eight exemplary illustrations, often colored, many are original and many are reproductions from Ellenberger and Baum, Leisering, Schmaltz and others, and it is pleasing to note that in all such instances proper acknowledgment has been made.

It is a distinct pleasure to review so admirable a work, a marked advance in English veterinary literature, upon which student and practitioner may well congratulate themselves and no medical school can afford to be without. It is an exhaustive gross anatomy of the horse, ox, pig and dog,

including the splanchnology of the sheep. There is but one regret, namely, that so extensive a volume should not consider the anatomy of the bird, taking the domestic fowl as the type.

An Introduction to the Study of Hypnotism, Experimental and Therapeutic. By H. E. WINGFIELD, M.A., M.D., B.C. Cantab. New York: William Wood & Co. 1910.

Hypnotism is a subject which too many physicians are prone to regard with suspicion, skepticism or contempt, and which sometimes suggests to them, as generally to the laity, ideas of the supernatural, the transcendental or the uncanny. Dr. Wingfield's volume presents it in its true light as the science of a psychic condition, dependent on definite psychologic and physiologic laws, and capable of being used for certain therapeutic purposes. After a sane and lucid exposition of the nature and phenomena of hypnosis and the methods of its induction, he describes the principles of legitimate treatment by suggestion and presents a rebuttal in refutation of the case against hypnotism. He makes frequent reference to the work of Sidis in Boston on this subject. Whatever one's prejudices, one cannot help recognizing and being impressed by his serious and absolute honesty of purpose and expression. His admirable book should be read with thoughtful attention by physicians as an introduction to the facts of a field in medicine of whose possible value and importance we are often ignorant or intolerant.

The Medical Record Visiting List, or Physicians' Diary for 1911. New revised edition. New York: William Wood & Co. 1910.

This convenient pocket diary not only provides space sufficient for a visiting list of sixty patients a week, but contains tables of valuable information which should be useful to the busy practitioner.

Hay Fever and Paroxysmal Sneezing (Vasomotor Rhinitis). By EUGENE S. YONGE, M.D. (Edin.), Physician to the Manchester Hospital for Consumption and Diseases of the Throat. Edinburgh and London: William Green & Sons. 1910.

This small book of one hundred and fifty pages is a valuable addition to the literature of this most perplexing disease, not that it contains much that is new, but because it is an able monograph on the subject by an able author. It is a brief compilation of the numerous speculations on etiology and the various methods of treatment, including the author's, of vasomotor rhinitis, so called. As a review it is complete, yet well edited and brief. His own conclusions are not always easy to find, being often blended with those of his predecessors. In general they are interesting and judicial, although not always convincing. He tries to draw a sharp line between hay fever proper, meaning those cases in which the pollen of different plants are evidently the exciting agent, and all other allied cases, grouping the latter under the title of paroxysmal sneezing or vasomotor rhinitis. By his own showing there is too much in common between these two groups to make this altogether logical.

For the last three quarters of a century the group of disturbances which includes the different hay fevers has been one of the most elusive of diseases; both its etiology and its treatment appear periodically to be approaching solution without ever getting there. Some victims sneeze only in June, others only in September; some cannot come near certain animals, others are affected only by something else. Asthma may or may not be related to it. Some cases are relieved or even cured by almost anything, yet others by something else or nothing. This is, therefore, a difficult subject to handle, but one which offers wide fields for etiological imagination. The author follows the lead of the majority of writers in looking at the symptom-complex as primarily caused by a weakness of the nervous system. Although giving credence to most of Dunbar's work, he does not quite arrive at the logical conclusion from this that lack of immunity to the different irritants may be due to the lack of a chemical neutralizing agent in the nasal secretions and that the nervous symptoms may be entirely secondary. He reviews the whole list of local operations which have been recommended, and adds one of his own which has given him good results. It consists in removing under general anesthesia the so-called tubercles of the septum, situated at the junction of the septal cartilage and the ethmoid plate. On the much-discussed question of the influence of intra-nasal deviations in producing the disease, and the benefit to the patient in removing them, he occupies a conservative middle ground. The pallor of the nasal mucous membrane which is often, in this country at least, a very characteristic feature of the disturbance, has not particularly impressed him. Although the disease as seen in England varies somewhat from that with which we are familiar in America, on account of the somewhat different exciting irritants, the careful study by the author of American authorities relieves the book of the objection of being foreign.

Education in Sexual Physiology and Hygiene. A Physician's Message. By PHILIP ZENNER, M.D. Cincinnati: The Robert Clarke Company. 1910.

The problem of teaching and learning the physiology and hygiene of the reproductive function is the subtlest and most difficult in the education of adolescents; indeed, it is one which many adults never solve for themselves, which humanity collectively has never solved. All efforts at its solution are tentative; many do more harm than good. The present volume represents the author's attempt, which has the merit of being serious and entirely right-minded. For young children his method seems well adapted. For older children, especially boys, it should seem that a shrewder tone of frankness were more effective. "Sexual virtue is the best policy" is the form which such instruction would have taken from the tongue of wise Ben Franklin.

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REPORT OF THE MASSACHUSETTS TUBERCULOSIS COMMISSION.

IN the issue of the JOURNAL for March 17, 1910, we described and commented editorially on a resolve, then pending before the Massachusetts Legislature, providing for the appointment of a "commission to investigate and report upon a system of caring for tubercular patients by state and local authorities"; and in our issue for May 12, 1910, we announced the passage of this resolve, and the names of the commissioners as appointed by Governor Draper. This commission has prosecuted its labors during the past summer, and its report is now at hand. Embodying as it does the investigations and opinions of experts whose recommendations are likely to be of considerable weight, this report deserves attention and careful consideration Its principal data and conclusions may be summarized as follows:

There are estimated to be in Massachusetts approximately 35,000 cases of tuberculosis, of which probably 27,000 are pulmonary. For the accommodation of these cases there are, besides private hospitals, four state sanatoria, seven municipal tuberculosis hospitals, and ward or almshouse provision for tuberculous patients in 21 cities and towns. The hospitals and sanatoria, public and private, have 2,773 beds, accommodating rather more than 5,000 persons each year. The state institutions receive principally cases capable of arrest or cure; advanced cases are generally sent to municipal hospitals or to their homes.

Though recognizing the importance of caring for early cases, the commission considers the segregation of advanced cases to be the most efficient single measure in the effort to stamp out tuberculosis. It therefore recommends that the total accommodation for tuberculous patients be increased to 5,000 or 6,000 beds, chiefly in local hospitals. To encourage the establishment of these institutions, it recommends that the state pay a "subsidy of $5 per week for each non-paying patient in a local hospital which meets with the approval of the trustees of hospitals for consumptives, provided tubercle bacilli are demonstrated.' This sum is about half the weekly cost of maintenance of a patient in a tuberculosis institution, and the commission also recommends that the charge to paying patients at the state sanatoria be raised to the same amount. It makes further minor suggestions relative to the administration of these sanatoria; it advises the erection, in connection with the hospital school at Canton, of a state hospital school for tuberculous children; and finally recommends "that the legislature require the establishment of dispensaries for the discovery, supervision and treatment of cases of tuberculosis by the agency of the local boards of health, in all cities and towns with over 10,000 inhabitants." Four members of the commission believe it advisable, under certain restrictions, for local boards of health to supply needy tuberculous patients with food at their homes. The remainder submit a dissenting minority opinion of three that such relief should be given by private relief societies or overseers of the poor on recommendation from boards of health.

The most significant aspects of this report may be included under three topics, — state subsidy, tuberculosis dispensaries and food distribution. In regard to the importance of segregating advanced cases, the attitude of the commission seems sound. The advanced case, particularly if ignorant or unruly, constitutes the greatest menace to the community, because from him may be distributed the greatest amount of infecting material. The way to stop tuberculosis is to stop the infection of new cases. Supervision and control of advanced cases is, therefore, essential, and the commission believes this may best be obtained in local hospitals. The difficulty in the way of this, as of the attainment of all desirable things, is the expense. A state subsidy, whereby the commonwealth would halve with each community the cost of maintaining in segregation its non-paying tuberculous patients, would help municipalities meet this expense and probably hasten the erection of the needed institutions. Upon careful consideration, the commission believes that such subsidy would be a wise economic measure and would more than pay for itself in the saving of life and health by the decreased

incidence of tuberculosis resultant from more thorough segregation of advanced cases which in their homes are foci of fresh infection. Perhaps these sanguine expectations are justified. They certainly concur with the results attained by segregation in other infectious diseases. Before they become the basis of action, however, they should be subjected to rigid criticism, for in undertaking subsidy, the state is employing a dangerous agent. The taxpayer is already overburdened, and once the principle of subsidization becomes established and familiar, it is difficult to foresee to what extent it might be carried by those whose charitable enthusiasm is greater than their judgment or their own financial assets.

Similar comment may be made on the suggestions for tuberculosis dispensaries and the supplying of food. There is no end to the desirable things that communities might have, were there money enough to pay for them. But communities, like individuals, must count the cost. If they do not, their fate is the same. Doubtless tuberculosis is a great public evil, which is worth fighting, but so are venereal diseases, and so is cancer. Provisions for dealing with all these must be made gradually, with due regard for the capacities of the public purse. Moreover, the supplying of food is a measure which, though doubtless in certain cases desirable and humane, is, nevertheless, capable of dangerous, proletariat-building possibilities.

These comments are made not in opposition to the spirit of the report, which is a document of great value and importance, but merely by way of suggesting that there are two sides to some of the propositions which it advances. The principles upon which it lays out the campaign against tuberculosis are eminently sound. Only, in endeavoring to carry that campaign into effect, it should be remembered, with due consideration for the recommendation of experts, that human progress is necessarily slow, that something must be left to natural processes which can be aided but not hastened, and that in initiating any new measure of expense the project should be weighed as a question of policy as well as of theoretic desirability.

NOTIFICATION OF SYPHILIS AND GONORRHEA.

The California State Board of Health is the first to place syphilis and gonorrhea on the list of reportable diseases. This action was taken in a regulation recently issued, which reads as follows:

"*Be it resolved*, That the California State Board of Health declares that, beginning Jan. 1, 1911, syphilis and gonococcus infections shall be reportable and shall be placed on the list of communicable diseases which local boards of health and health officers are required to report to the secretary, it being provided, however, that until further action by this board, physicians may report the facts concerning these diseases by office numbers instead of names of patients.

"*Be it further resolved*, That this board officially calls the attention of the citizens of California to the contagious and infectious nature of these diseases and requests their co-operation in combating them by every available means — educational, sanitary, medical, social and moral."

The California State Board of Health shows much courage by taking the lead in applying to venereal diseases the same measures that experience has suggested for dealing with other infections. The first step towards control and suppression of any disease is a knowledge of the number and location of existent cases. For this the system of notification by number, if conscientiously carried out by physicians, makes a workable provision and should prepare the way for intelligent and concerted action, by education and prophylaxis, towards the eradication of diseases which are a far greater menace to mankind and to civilization than tuberculosis. It will be of interest to observe how this advanced example of California works, how soon it is followed by boards of health in other states and to what extent the position of the California Board will be carried out in practice.

TYPHOID FEVER EPIDEMICS.

Several minor epidemics of typhoid fever are in progress in various parts of the country. At Annapolis, Md., four more new cases developed during the week ending Dec. 3, making a total of twenty-four, as yet without fatalities, among students at the United States Naval Academy. At Lexington, Va., so many cases have appeared that Washington and Lee University was closed on Nov. 27, to stand closed until Jan. 3, 1911. This epidemic is supposed to be due to an infected water supply. At Windsor Locks, Conn., over fifty cases of typhoid have occurred since Oct. 15, and there have been two deaths. Poor sewage provisions are thought to be responsible for this epidemic. At Hyde Park there has been an unusually large number of typhoid cases this fall. The town board of health, suspecting the water-supply, advised the inhabitants to boil all water used for drinking. Recently a thorough inves-

tigation of this supply has been made by the Massachusetts State Board of Health, and, in a letter from its secretary to the Hyde Park Board, recommends the continuance of this precaution and the obtainment as soon as possible of a supply better protected from sources of contamination.

The continued recurrence of such epidemics serves only to re-emphasize the insidious dangers of typhoid fever and the seeming impossibility of its extermination by even the wisest sanitary provisions. At such a time the protective possibilities of anti-typhoid inoculation become all the more impressive. From all American army-posts where it is being employed come unanimously favorable reports of its safety, trifling discomfort and efficacy in reducing the incidence and mortality from typhoid. Education and example will be the most potent factors in persuading the public and the medical profession to the general adoption of this valuable prophylactic procedure.

A TYPHOID CARRIER.

A TYPHOID carrier, who was responsible for the death of two persons from typhoid fever and the illness of over thirty others during the past summer, has been discovered in the person of an Adirondack guide. A baffling outbreak of the disease, involving at least thirty-six persons, occurred in a fashionable camp in the Adirondack Mountains, and experts were called in to discover the cause. The water supply was found to be absolutely pure, but the milk, as used by the residents, proved to be contaminated. It was shown that this milk was originally of the finest quality and that it was gathered and delivered under all possible sanitary precautions. It was learned, however, that the last person who handled it was the guide referred to, and an investigation of this individual revealed the fact that he was suffering from chronic dysentery and was also a prolific producer of typhoid bacilli. The State Department of Health was appealed to, but declined to take any action, on the ground that there is no law in the state authorizing the health authorities to interfere in a case of this kind. It will be remembered that the notorious "Typhoid Mary" was kept secluded for more than two years on North Brother Island, but this was by the purely local action of the New York City Health Department. The man consented of his own accord, however, to come to New York, at the earnest request of Dr. Charles E. North, of the New York Milk Committee, and, if the money can be secured for his maintenance, Dr. North purposes giving him a thorough course of Metchnikoff lactic acid treatment, in the hope, possibly, of putting a stop to the production of typhoid germs.

MEDICAL NOTES.

FIRE IN A CANADIAN HOSPITAL. — Report from Toronto, Ont., states that on Dec. 1 the Toronto Free Hospital for Consumptives, at Weston, was destroyed by fire. The ninety-two patients in the hospital, of whom forty are helpless, were safely removed.

ASSOCIATION OF FOOD AND DAIRY DEPARTMENTS. — The annual convention of the National Association of State and National Food and Dairy Departments, which was held on Nov. 28 to Dec. 1 in New Orleans, La., was attended by representatives from nearly every state. One of the principal topics under discussion at the sessions was "The Uniformity of National and State Pure Food Laws."

DIPHTHERIA IN CHICAGO. — It is reported that diphtheria is epidemic in Chicago. On Nov. 27 there were about eight hundred cases in that city. Stringent measures have been taken to prevent further spread of the infection, and an additional sum of $10,000 has been voted to meet the expense of combating the disease.

HARVEY LECTURES. — The third lecture of the series of 1910–11 of the Harvey Society will be given in New York on Dec. 10 by Dr. Harvey Cushing, of Baltimore, Md., on "Certain Clinical Aspects of Dyspituitarism." The postponed lecture by Professor Castle will be given on Feb. 25, 1911.

SUSPENSION OF PUBLICATION OF THE *Montreal Medical Journal*. — It is announced that with its current December issue the *Montreal Medical Journal* will cease publication. It is understood that this is done through friendly agreement with the Canadian Medical Association, whereby the work hitherto done by the *Montreal Journal* will continue to be represented in a new publication.

DEPORTATION OF A CASE OF TRACHOMA. — In last week's issue of the JOURNAL, we referred to the case of an Armenian immigrant who, being ordered deported on account of having trachoma, appealed for a writ of habeas corpus on the ground that she had married an American citizen. This appeal has been denied by the United States Dis-

trict Court, and the woman will be deported unless she obtains a reversal of this decision before the Circuit Court of Appeals.

Epidemics of Cholera. — During the week ending Dec. 3, 27 new cases and only, 3 deaths of Asiatic cholera were reported from Italy, a slight decrease from the record of the preceding week. Report from Lisbon, Portugal, states that the disease is epidemic in Funchal, the capital of Madeira, but the number of cases is not given.

Movement against Opium in China. — There is apparently a definite movement in China against the sale and use of opium, except for medicine. Advices from Pekin state that on Dec. 2 the imperial senate passed a resolution forbidding the inter-provincial transportation of the drug after July, 1911, and its consumption by smoking after January, 1912. This resolution is said also to advocate abrogation of the opium treaty with Great Britain, thereby preventing further importation from India. The abolition of illegal opium traffic by oriental initiative seems, however, almost incredible; and one is tempted to mistrust the genuineness of reform from a habit of such long duration.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Dec. 6, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 42, scarlatina 27, typhoid fever 12, measles 24, smallpox 0, tuberculosis 56.

The death-rate of the reported deaths for the week ending Dec. 6, 1910, was 17.80.

Boston Mortality Statistics.—The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 3, 1910, was 219, against 185 the corresponding week of last year, showing an increase of 34 deaths, and making the death-rate for the week, 16.95. Of this number 120 were males and 99 were females; 213 were white and 6 colored; 131 were born in the United States, 86 in foreign countries and 2 unknown; 52 were of American parentage, 137 of foreign parentage and 30 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 47 cases and 0 deaths; scarlatina, 31 cases and 0 deaths; typhoid fever, 15 cases and 0 deaths; measles, 27 cases and 1 death; tuberculosis, 59 cases and 25 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 24, whooping cough 6, heart disease 29, bronchitis 5. There were 17 deaths from violent causes. The number of children who died under one year was 31; the number under five years, 50. The number of persons who died over sixty years of age was 75. The deaths in public institutions were 70. Cerebrospinal meningitis, 2 cases. Anterior poliomyelitis, 2 cases.

Of the above infectious diseases the following were non-residents: Diphtheria, 1 case. Consumption, 4 cases and 3 deaths. Scarlet fever, 3 cases.

Deducting deaths of non-residents, the total is 189 and the death-rate is then 14.63.

Nomination of a Physician for the School Board. — Dr. Thomas F. Leen, of Boston, has been nominated by the Citizens' Municipal League and by the Public School Association as candidate for election to the Boston School Board.

Newly Registered Physicians. — Forty-one candidates, of whom two were women, passed the recent examination by the Massachusetts State Board of Registration in Medicine and are now entitled to practise under the laws of the commonwealth.

A Living Centenarian. — Richard K. Powers, of Lancaster, Mass., is locally reputed to have been born on Nov. 27, 1810, in Sterling, Mass. It is reported that he recently celebrated the supposed centennial anniversary of his birth by sawing cord wood in his back yard. He is said to attribute his longevity and good health to habitual vigorous physical exercise.

Appointment of School Physicians. — The Boston Board of Health recently recommended a reduction in number and an increase in salary of the school physicians in this city, of whom there are at present 80. It is now proposed by the mayor to increase this number to 115 and raise the salary of each physician from $200 to $300. Action on this proposition is still undecided.

Work of Industrial School. — The sixteenth annual report of the Massachusetts Industrial School for Crippled and Deformed Children, recently published, presents the record of the valuable work done by this institution during the past year. A year ago, the number of pupils was increased from thirty to thirty-five, and the opening of a new fourth schoolroom this fall makes possible the admission of about twenty-five more. A special appeal is made for additional contributions of money to enable the provision of

an open-air room for children of tuberculous susceptibility. The annual Christmas celebration and sale will be held at the school on Dec. 23.

SISTER RAPHAEL SUCCESSOR TO SISTER GONZAGA. — In an editorial in the issue of the JOURNAL for Nov. 24 we noted the retirement from the Carney Hospital, South Boston, of Sister Gonzaga, who was associated with the hospital for thirty years, and since 1881 had been its sister superior. Her successor, who has recently assumed charge, is Sister Raphael, formerly superior of St. John's Hospital, Lowell, Mass. Sister Raphel, who was born at Emmetsburg, Md., served as an army nurse during the Spanish War and has also been in Panama and in the West.

NEEDS OF MILK AND BABY HYGIENE ASSOCIATION. — In a communication to the public press, the treasurer of the Boston Milk and Baby Hygiene Association states that since the beginning of its fiscal year, June 1, 1910, the association has received subscriptions to the amount of nearly $8,700. There are at present 607 babies registered at the stations of the association. To complete the work of the current fiscal year there will be need of at least $7,400 more, for which earnest appeal is made to the public.

THE SCHOOL LUNCH PROBLEM. — At a conference held in Boston on Dec. 3 by the Woman's Educational and Industrial Union on the problem of the school luncheon, an address was made by Dr. George S. C. Badger, who pointed out that the unpalatable or unhygienic school lunch emanates as often from the home of the ignorant well-to-do as from that of the needy poor. Education of parents seems a wiser agent in securing proper nutrition of children than even discriminating free distribution of school luncheons by public or private charity. The risks of pauperization are even greater to society than those of malnutrition.

DECREASE OF TUBERCULOSIS IN BOSTON. — The seventh annual meeting of the Boston Association for the Relief and Control of Tuberculosis was held on Nov. 30. The reports of the officers described the activities of the Association during the past year. This year has seen the establishment by the Association of the Prendergast Camp for convalescent or arrested cases of phthisis, which cost over $5,000. During this year, also, there were given under the auspices of the Association 81 lectures, chiefly to labor unions, and over 4,500 anti-spitting cards and more than 35,000 other pieces of educational literature were distributed. Attention was called to the decrease in the total number of deaths from tuberculosis in Boston from 1,227 in 1903, the year in which the Association was organized, to 1,073 in 1909. Mr. Robert Treat Paine was elected president of the Association for the ensuing year, and Dr. Arthur K. Stone its vice-president.

NEW YORK.

A VICTIM OF THE FOLDING BED. — The folding bed has claimed another victim in New York. Benjamin Lott, a civil engineer, died on Dec. 1 in the Harlem Hospitals from injuries he had received the night previous by the sudden closing of a folding bed in which he and his wife were sleeping. There was a dislocation in the cervical vertebræ, caused by the sides of the bed which caught his neck and held it tight, and from the moment of the accident he was completely paralyzed from the seat of injury down. Mrs. Lott, who was thrown on her head, which was pressed between the mattress and the pillow, was nearly suffocated before she was rescued.

QUARTERLY MORTALITY REPORT. — The condensed quarterly report of the Bureau of Records of the City Health Department shows that in the quarter ending Sept. 30, 1910, there was a decrease of 2,165 in the total number of deaths from the average of the past five years. In almost all diseases there was a smaller mortality than the quinquennial average, and among the largest decreases from this average were the following: Diarrheal diseases under five years of age, 778; apoplexy and softening of the brain, 318; organic heart diseases, 171; Bright's disease and acute nephritis, 165; pulmonary tuberculosis, 136; simple meningitis, 111; pneumonia, 94; cerebrospinal meningitis, 80. Among the few increases from the quinquennial average were the following: Cancer, 49; chronic bronchitis, 5; influenza, 3.

LOW DEATH-RATE FOR NOVEMBER. — The low record in the death-rate reached in October was surpassed by the figures for November, the mortality in the city representing an annual death-rate of 13.89, as against 13.90 in the month of October and 15.04 in November, 1909. This is somewhat remarkable, as many of the diseases on the list show more or less increase in deaths. Among the diseases in which there was an augmented fatality were the following: The weekly average of deaths from measles increased from 2

in October to 4 in November; the weekly average from scarlet fever, from 2.5 to 5; from whooping cough, from 3.75 to 4.25; from diphtheria and croup, from 16.5 to 25.75; from influenza, from 1.5 to 3.25; from pulmonary tuberculosis, from 153.25 to 155; from acute bronchitis, from 11.75 to 19.5; from pneumonia, from 71.75 to 94.5; from bronchopneumonia, from 64.5 to 73.5; from apoplexy and softening of the brain, from 23.25 to 25.5; from organic heart diseases, from 112.25 to 137; and from Bright's disease and acute nephritis, from 88.75 to 108.25. Among the diseases in which there was a diminished mortality were the following: The weekly average of deaths from typhoid fever declined from 17.75 to 15.75; from epidemic cerebrospinal meningitis, from 5.5 to 2.75; from diarrheal diseases, from 143.25 to 65.5; from diarrheals under five years of age, from 133.75 to 57.5; from cancer, from 76.25 to 70; from appendicitis and typhlitis, from 14.25 to 8.25; and from puerperal diseases, including septicemia, from 10.5 to 8.75. In the week ending Nov. 26 but 5 deaths were reported from typhoid fever, the lowest number from this disease since the third week of May, last. The corrected death-rate for the month, excluding non-residents and infants under one week old, was 13.18.

Current Literature.

Medical Record.

Nov. 26, 1910.

1. Beyer, H. G. *The United States Naval Medical School.*
2. Souchon, E. *The Philosophic Anatomy of the Liver.*
3. Magnus-Levy, A. *Chemical Problems in Diabetes.*
4. *Deal, F. A. *Tuberculin Treatment in Advanced Stages of Tuberculosis. A Report of Seventeen Cases Treated with Tuberculin Serum in Hospital Practice.*
5. Welt-Kakels, S. *On Preliminary Examination of Children at the Dispensary as a Means of Protection against Contagious Diseases.*
6. Vandegrift, G. W. *The Practical Value of a Positive Complement Fixation Test in Syphilis.*

4. Deal reports seventeen cases of advanced tuberculosis, fourteen pulmonary, one laryngeal and two joint — in which he used tuberculinum purum (Koch's old tuberculin from which the toxic albumoses have been eliminated). He finds that this purified tuberculin properly used is a safe remedy in such cases, and that it often relieves fever and catarrhal symptoms and reduces the amount of infiltration. [L. D. C.]

New York Medical Journal.

Nov. 26, 1910.

1. Runnels, S. C. *The Carbon Compounds of Arsenic in the Treatment of Syphilis.*
2. Beebe, S. P. *The Chemistry of Cancer.*
3. Ruggles, E. W. *Supplementary Report on the Hot-Air Treatment of Phagedenic Chancroid and Chancre.*
4. Fitzpatrick, C. P., and Atkinson, J. P. *The Introduction of Large Quantities of Gases into the Circulatory Apparatus.*
5. Whitall, J. D. *Case of Sesamoid Bone of the Knee.*
6. Wile, I. S. *Clinical Statistics.*
7. Robinson, B. *Treatment of Symptoms in Hospitals.*
8. McCarthy, J. F. *An Improved Operating and Observation Endoscope for the Anterior Urethra.*
9. Wolfer, J. A. *Acute Myelogenic Leukemia.*
10. Dicken, W. E. *Some Steps towards the Prevention of Post-Operative Exudates.*

The Journal of the American Medical Association.

Nov. 26, 1910.

1. Jackson, C. *Esophageal Stenoses following the Swallowing of Caustic Alkalies.*
2. Dean, L. W. *Changes in the Nose after Widening the Palatal Arch.*
3. Smith, H. B. *An Apparatus for Supporting and Holding the Head and Shoulders in Cerebellar and High Spinal Operations.*
4. Smith, R. R. *Enteroptosis, with Special Reference to Its Etiology and Development.*
5. Ochsner, A. J. *Surgical Aspects of Enteroptosis.*
6. *Musser, J. H. *Enteroptosis: The Physician's Viewpoint.*
7. Skinner, E. H. *The X-Ray Diagnosis of Enteroptosis.*
8. *Marshall, H. W. *Arthritis of Gastro-Intestinal Origin. Its Diagnosis and Treatment.*
9. Moffett, G. R. *Accurate Formula for Use in the Modification of Cow's Milk in the Artificial Feeding of Infants.*
10. Harris, S. *Radical Cure of Malaria: Its Importance and How It is Obtained.*
11. Sill, E. M. *Dietary Studies of Under-nourished School Children in New York City.*
12. Huffman, O. V. *Miner's Consumption.*
13. Barach, J. H. *Warning against the India-Ink Method for the Spirochete Pallida.*

6. Musser emphasizes the following facts in relation to enteroptosis: The high tension of modern life, especially of the leisure class, is especially productive of the symptoms encountered in enteroptoses. This condition is rarely found in the laboring classes. Victims of this neurosis are generally members of neurotic or degenerating families. These cases from childhood have poor health, especially noticeable in abdominal symptoms. Musser found no evidence of malnutrition or perverted nutrition or toxemia in the metabolic analyses of ten such cases and finds this additional evidence of the strong neurotic element in this condition. Operation often does great harm by calling attention more closely to the abdominal symptoms. If we could recognize congenital ptoses, as he believes these are, early enough, and before the neuroses develop, we might be able to forestall the ill-effects of the insufficiencies which develop later.

8. Marshall has done some very exhaustive experimental work on the bacterial flora of arthritic and non-arthritic cases, and, in endeavoring to adjust theories to the findings, advances the following to explain the intimate relation so commonly seen to exist between chronic arthritic cases and enteroptoses and intestinal stasis or inefficiency. As to the origin of the toxins, which are supposed to be the cause of the arthritic conditions, there are three theories: (1) Some specific organism that produces the toxic substance, which has not yet been discovered, is present in the stools. (2) Ordinary non-pathogenic bacteria develop excessively, and the products of their activities exert a mild irritating effect on joint tissues from being in excess in the blood. (3) Defective digestion produces abnormal chemical products independently of bacterial action that are the cause of arthritis. Examinations, however, of stools of arthritic patients show no constant characteristics or any pecularities that are not observed in patients who do not have arthritis. The relationship between intestinal toxins and joint lesions must depend on variable formation of toxins, variable absorption of them through the intestinal walls, variable unknown processes in their passage through the liver into the general circulation and diverse resistances of joint tissues. Production of toxins fluctuates with the quantity of nitrogenous food and the abundance of bacteria and hence may be diminished by changing the character of the diet and introduction of micro-organisms, such as lactic acid bacteria, which inhibit the growth of putrefactive bacteria. But patients with arthritis who respond to intestinal

treatment habitually eat more than their digestive tract is capable of handling, and intestinal putrefaction hence is apt to occur in excess. Excessive amounts of bacterial products from the intestines find their way into the blood and irritate susceptible joints. Hence through the regulation of the activities of the intestinal tract we have, in a certain per cent of cases, a means of favorably influencing arthritic conditions. [E. H. R.]

THE JOURNAL OF EXPERIMENTAL MEDICINE. VOL. 12.

NO. 3. MAY 1, 1910.

1. EYSTER, J. A. E. *Studies on the Venous Pulse. 1 A Study of the Diastolic Waves of the Venous Pulse, with Especial Reference to the Possibility of a Wave Due to the Contraction of the Venous Region of the Mammalian Heart.*
2. GUTHRIE, C. C. *Survival of Engrafted Tissues. 1. (a) Ovaries and (b) Testicles.*
3. BURTON-OPITZ, R., AND WOLF, H. F. *The Changes in the Venous Blood Flow on Administration of Amyl Nitrite.*
4. NASMITH, G. G., AND HARRISON, F. C. *Changes Induced in the Blood of Rabbits by Living in an Atmosphere of Water Gas.*
5. *FLEISHER, M. S., AND LOEB, L. *Studies in Edema. VI. The Influence of Adrenalin on Absorption from the Peritoneal Cavity, with Some Remarks on the Influence of Calcium Chloride on Absorption.*
6. MARINE, DAVID, AND LENHART, C. H. *Observations and Experiments on the So-called Thyroid Carcinoma of Brook Trout (Salvelinus Fontinalis) and Its Relation to Ordinary Goiter.*
7. BERRY, J. L., AND MANN, A. *The Complement-Binding Test in Rabies.*
8. ROUS, P. *An Experimental Comparison of Transplanted Tumor and a Transplanted Normal Tissue Capable of Growth.*
9. OPIE, E. L. *On the Relation of Combined Intoxication and Bacterial Infection to Necrosis of the Liver, Acute Yellow Atrophy and Cirrhosis.*
10. *FOWLER, C. C., AND HAWK, P. B. *Studies on Water Drinking. II. The Metabolic Influence of Copious Water Drinking with Meals.*
11. GIBSON, BANKS R., AND BANZHAF, E. J. *The Quantitative Changes in the Proteins in the Blood Plasma of Horses in the Course of Immunization.*

5. Fleisher and Loeb found that adrenalin injected intraperitoneally increases the rapidity of absorption of fluid from the peritoneal cavity, independently of whether the solution to be absorbed is hypotonic or hypertonic or is approximately isotonic with the blood serum. The intravenous injection of adrenalin also increases the absorption of fluid, but not so markedly as does the intraperitoneal injection. They also found that the increase of absorption from the peritoneal cavity caused by the injection of adrenalin is not due to the increased diureses caused by the injection of this substance.

10. Fowler and Hawk found that the daily drinking of three liters of water with meals for a period of five days by a young adult in nitrogen equilibrium produced an increase in body weight and an increased excretion of urinary nitrogen, but a decreased excretion of feces and of fecal nitrogen and a decrease in the quantity of bacteria excreted. They conclude that copious water drinking with meals stimulates protein catabolism and in general is attended by many desirable and by no undesirable features. [R. I. L.]

JULY 23, 1910.

1. AMBERG, S. *The Cutaneous Trichophytin Reaction.*
2. CARREL, A. *Latent Life of Arteries.*
3. FLEISHER, S., AND LOEB, L. *Studies in Edema. The Influence of Nephrectomy and Other Surgical Operations and of the Lesions Produced by Uranium Nitrate upon Absorption from the Peritoneal Cavity.*
4. *FLEISHER, M. S., AND LOEB, L. *Studies in Edema. The Influence of Caffeine on Absorption from the Peritoneal Cavity and the Influence of Diuresis on Edema.*
5. BROWN, W. H. *Observations on the Origin, Distribution, and Significance of Fuchsin Bodies, with Special Staining Technic.*
6. FIELD, C. W. *A Study of an Extremely Pure Preparation of Ricin.*
7. *WRIGHT, J. H. *Neurocystoma or Neuroblastoma, a Kind of Tumor not Generally Recognized.*
8. KNOX, J. H. M., MOSS, W. L., AND BROWN, G. L. *Subcutaneous Reaction of Rabbits to Horse Serum.*

4. Fleisher and Loeb, in summarizing all the experiments in which they studied absorption from the peritoneal cavity, state that changes in the osmotic pressure of the blood represent the principal factor in explaining the variations in the rate of absorption of fluid from the peritoneal cavity. They find no direct relation between an increase in the rate of absorption of fluid from the peritoneal cavity and an increase in the amount of urine secreted. Under the influence of caffeine a greater amount of sodium chloride is eliminated from the body fluids into the tissues or through the kidneys. The writers believe that in the case of caffeine and other similar substances the diuresis is not due primarily to a specific action of the kidney, but to conditions which affect the distribution of sodium chloride in the body.

7. Wright calls attention to a group of tumors now usually classified as glioma, sarcoma, lymphoma or lymphosarcoma. The essential cells of the tumor are considered to be more or less undifferentiated nerve cells or neurocytes or neuroblasts and hence the names neurocytoma and neuroblastoma. Wright reports twelve cases from the literature and his personal experience. In a large proportion of the cases the adrenal was involved. Wright believes that inasmuch as five of the new cases have been recognized within the year, neurocytoma will not prove to be a very rare tumor. [R. I. L.]

SURGERY, GYNECOLOGY AND OBSTETRICS.

OCTOBER, 1910.

1. WALLACE, W. L. *Appendiceal Intussusception. A Case in an Adult.*
2. SCHMIDT, L. E. *On the Diagnostic Possibilities of Skiagraphy of the Vas Deferens, with or without Skiagraph of the Ureter.*
3. LERCHE, W. *A Contribution to the Surgery of the Esophagus. With the Report of Five Cases of Cicatricial Strictures treated by Cutting through the Esophagoscope.*
4. HEANEY, N. S. *Periodic Intermenstrual Pain.*
5. BAZLEY, C. *Intestinal Perforation in Typhoid Fever, with Special Reference to Treatment. Report of Seven Cases.*
6. EDDY, I. H. *The Care of the Puerperal Woman.*
7. *DICKINSON, R. L. *Cæsarean Section for Impassable Contraction Ring.*
8. MILLER, C. J. *Malignant Rhabdomyoma of the Vagina in Children.*
9. *CLARK, J. G., AND NORRIS, C. C. *Conservative Surgery of the Pelvic Organs in Cases of Pelvic Peritonitis and of Uterine Myomata. With Review of the Immediate and After Results in 299 Cases.*
10. DAILEY, N. G. *Total Congenital Absence of the Vermiform Appendix. Review of the Literature and Report of a Case.*
11. PRINCE, E. M. *Cholecystitis Complicating Typhoid Fever, with Report of Two Cases.*

7. Dickinson advocates Cæsarean section for impassable contraction ring under the following conditions: (1) Child living and not enfeebled or endangered by length of labor, long drainage of water or unskilled attempts at extraction. (2) Ring refusing to relax under morphia or to yield to complete etherization, coupled with patient manual dilatation by a skilled obstetrician. (3) Mother in fair condition for a laparotomy and not infected. (4) Request by patient and husband that a somewhat increased risk to the mother be assumed for the sake of obtaining a living child, in lieu of embryotomy. These indications are perfected if (5) at a previous labor, in expert hands, this same condition of the contraction ring has caused loss of a child not unduly large. There are six cases of section for contraction ring reported in available literature. All were in skilled hands. Of five instances, in only one was the section undertaken of choice. Three of the six mothers died. Two children survived. These, however, were all desperate cases and do not contra-indicate the advisability

of this operation with its now greatly lowered mortality. Dickinson goes carefully into the etiology, clinical picture, diagnosis and treatment of this condition in a most thorough manner.

9. Clark and Norris summarize their article on conservative surgery of the pelvic organs as follows: Practically all pelvic inflammatory cases should be given a course of preliminary treatment before operation. By this method some cases will escape operation entirely, while others can be operated more easily, quickly and safely. A greater number of cases will be found suitable for a conservative operation. If possible, four to six weeks of normal temperature and blood counts should precede each operation. Pus which can be easily reached without traversing the peritoneal cavity should be evacuated at once. The proportion of cases requiring emergency surgery is extremely small. The end results of salpingectomies are disappointing. Pregnancy rarely takes place. Conservation of macroscopically diseased tubes is, however, unsatisfactory. Conservative ovarian surgery offers excellent results provided the ovarian circulation is not impaired. The reason many resected ovaries become cystic is because of interference with blood supply. When it is found necessary to remove both ovaries, an hysterectomy should also be done. Such uteri are useless and often cause subsequent trouble. If it is necessary to remove the uterus, and one or both ovaries can be spared, their preservation will prevent the unpleasant symptoms of the artificial menopause. In the presence of myomata, hysteromyomectomy is the operation of choice in the great majority of cases. If it is possible to amputate across the cervix at such a level as to leave behind corporeal endometrium, scant but regular menstruation will follow if one or both ovaries are preserved. [E. H. R.]

THE PRACTITIONER.

OCTOBER, 1910.

"COMMON AILMENTS" NUMBER.

1. DUCKWORTH, D. *A Clinical Note Respecting Common Ailments.*
2. *WICKHAM, L. *Gonorrhea.*
3. MARSHALL, C. F. *Non-Specific Sores.*
4. JELLETT, H. *Leucorrhea.*
5. BARKER, A. E. *Varicose Veins.*
6. *HALL, F. DE H. *Pleurisy.*
7. RANKIN, G. *Pleurisy. Three Interesting Cases.*
8. HOOD, D. W. C. *Insomnia.*
9. TILLEY, H. *Hoarseness.*
10. PARKER, C. A. *Tonsillitis.*
11. WILLIAMS, P. W. *Asthma.*
12. ROUGHTON, E. W. *Nose Bleeding.*
13. LITTLE, E. G. *Warts and Chilblains.*
14. ABRAHAM, P. S. *Ringworm.*
15. LANGWILL, H. G. *Stammering.*
16. BUNCH, J. L. *Nevi Treatment by Liquid Air and Solid Carbon Dioxide.*
17. ROMER, F. *Certain Sprains.*

2. Wickham sums up his idea of the treatment of gonorrhea in men as follows: (1) Precise diagnosis of the nature of the lesions. (2) Knowledge of their local position. (3) Direct interference in the case of superficial lesions. (4) Mechanical action to reach even deep lesions and mechanical transport of medicinal particles.

6. Hall advises that all cases of pleurisy should be treated as if tuberculous. He goes into the details of treatment in the early acute stage of dry pleurisy, pleurisy with serous effusion and pleurisy with purulent effusion. [J. B. H.]

EDINBURGH MEDICAL JOURNAL.

OCTOBER, 1910.

1. *GIBSON, G. A. *The Relief of Cardiac Enlargement by Surgical Measures.*
2. MURRELL, W. *Gonococcic Arthritis and Its Treatment.*
3. RUSSELL, W. *A Working Plan of Clinical Medicine Teaching.*
4. *WILKIE, D. P. D. *Gastro-Jejunal and Jejunal Ulceration following Gastro-Enterostomy.*
5. FORDYCE, A. D. *The Care of the Infant and Young Child (to Five Years) in Edinburgh.*

1. Gibson reports the details of an interesting case in which thoracotomy was done to relieve the heart with adhesive pericarditis. In this particular case only temporary benefit ensued.

4. Wilkie has made a study of peptic ulcer of the jejunum occurring as a sequel to gastro-jejunostomy. He recognizes two types, one gastro-jejunal, in which the ulceration occurs at the site of the anastomosis, and the other true jejunal ulceration, in which one or more ulcers form in the jejunum at some distance from the anastomotic opening; the former is more common. It may manifest itself at any period after the operation from a few weeks to several years; it is usually associated with a recurrence of the gastric symptoms. The tendency to perforation of such ulcers is greater than in the case of gastric ulcer. In all recorded cases the original operation was done for non-malignant affection of the stomach or duodenum. Such ulceration has been met with in every variety of gastro-enterostomy; in the majority of cases the preceding gastric lesion had been associated with hyperacidity; it is probably caused by the action of the acid gastric juice or the jejunal mucosa normally exposed to an alkaline medium. He gives the details of three cases in which this ulceration had occurred and presents experiments on hyperacidity and jejunal ulcer. The article is well illustrated with numerous plates. [J. B. H.]

QUARTERLY JOURNAL OF MEDICINE. VOL. 4. NO. 13.

OCTOBER, 1910.

1. GIBSON, A. G., GOOD, T. S., AND PENNY, R. G. *The Pulse immediately Preceding the Epileptic Attack.*
2. *THURSFIELD, H. *Influenzal Septicemia, with a Short Review of the Present Status of Bacillus Influenzæ.*
3. *ADDIS, T. *Hereditary Hemophilia: Deficiency in the Coagulability of the Blood the Only Immediate Cause of the Condition.*
4. MONRO, T. K. *A Further Note on Hematoporphyrinuria not Due to Sulphonal.*
5. *COWAN, J., KENNEDY, A. M., PATERSON, A. R., AND TEACHER, J. H. *Two Cases of Acute Endocarditis.*
6. *FOWLER, J. S., AND DICKSON, W. E. C. *Tuberous Sclerosis.*
7. *COWAN, J., AND RITCHIE, W. T. *Coupled Rhythms of the Heart.*
8. *WHITE, W. H. *The Outlook of Sufferers from Exophthalmic Goiter.*

2. Thursfield relates two cases of influenzal septicemia; the first resembled clinically a severe attack of grippe, with a temperature chart resembling that of croupous pneumonia; the second started with symptoms of phlebitis of the leg, followed by fever, consolidation in the lung, and dry pericarditis. Both cases ended in recovery and Pfeiffer's bacillus was obtained in pure culture from the blood in both. Leucocytosis was absent. He then reviews the rôle played by the influenza bacillus in disease. On the basis of Cohen's three cases of septicemic meningitis he concludes that this form is due to a variety of the bacillus which is pathogenic for animals, but this is not invariably so, for in a case coming under the observation of the reviewer, the bacillus was without effect when inoculated into suitable animals.

3. This article is a report of the study of the coagulation time of the blood in twelve hemophiliacs. Addis found that the delay in the coagulation time of the blood, which is always to be found in this disease, is roughly proportional to the severity of the symptoms, in the severe cases being prolonged even up to eighty minutes. The addition of thrombokinase to hemophilic blood hastened the coagulation time, but large amounts were necessary to render it normal. With small amounts, which were sufficient to decrease notably the coagulation time in normal blood, the hemophilic blood was still very slow in clotting. The amount of negative pressure necessary to produce bruising with a dry cup was found to be the same in a hemophiliac as in a normal person, which shows that fragility of the capillaries cannot be assumed in hemophilia. In short, the delayed clotting which is always present in hemophilia is sufficient of itself to account for all the phenomena.

5. The authors found in a case of acute endocarditis with prolonged a–c interval an inflammatory lesion of the auriculo-ventricular bundle, in another case with very short

a-c interval a similar lesion in the auriculo-ventricular node, without implication of the bundle.

6. Tuberous sclerosis is a rare developmental disease characterized by the presence of scattered hard nodules in the cerebral cortex, frequently associated with tumors in the heart, kidneys and skin. During life, epilepsy and imbecility are constant features. If, in addition to these, adenoma sebaceum is present, the diagnosis may be made *intra vitam*, otherwise not. The authors report one case and analyze the literature.

7. By coupled rhythm of the heart the authors mean that two beats are separated by a short pause, and the second beat is followed by a long pause. This is what most writers call bigeminy. Cowan and Ritchie describe the various forms of this condition, classifying it as follows: (1) Coupled rhythm of the ventricles, occurring at times in partial and complete heart-block in perpetual arrhythmia, and as a result of ventricular extrasystoles; (2) coupled rhythm of both auricles and ventricles. They illustrate these types by original tracings and discuss at length the various theories as to the method of production of the bigeminy.

8. White's statistical report of a large series of cases of Graves' disease merely shows that many such patients recover under medical treatment although in too poor condition to stand an operation. He considers that the most important feature in medical treatment is absolute rest in bed for weeks and months, with freedom from anxiety. [W. T.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 44.

Nov. 3, 1910.

1. ENDERLEN. *Diagnosis and Treatment of Goiter.*
2. FÜRBRINGER. *The Value of Quinquand Finger Crepitation Sign.*
3. *ZIELER, K. *Experiences with Ehrlich-Hata Preparation "606."*
4. *KOLL, E. *Prolonged Intravenous Adrenalin Infusion.*
5. NEUMANN, G. *Demonstration of Bacterium Coli in the Outer World, Especially on Nutrient Media.*
6. BRÜCKNER, G. *Dysentery Bacilli of Type Y in the Intestines and Liver of a Former Typhoid Bacillus Carrier.*
7. DEHMEL. *A Needle in the Duodenum removed through an Enterostomy.*
8. FROMMBERGER, E. *Symphysiotomy with the Aid of a Symphysis Clamp.*
9. OPPENHEIMER, E. H. *Monocle and Half-Spring Eyeglass.*
10. FALTA, M. *An Aseptic Eye Dropper Flask.*

3. Zieler adds his experience with some fifty cases of syphilis early and late treated by Ehrlich's new compound. He is strong in his praise of the new preparation. He mentions, however, that it is still too early to be sure of the end results, but for temporary results it is far superior to mercury. Possibly in the future it will be found necessary to combine the two.

4. Koll describes in detail a method which he has devised for the long-continued (several hours) intravenous injection of adrenalin. He has tried it on animals and finds that it is a valuable means of keeping up blood pressure. He thinks it is practical for clinical medicine and surgery. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 42.

Oct. 18, 1910.

1. *BRUNS, O. *Artificial Lowering of the Air Pressure in the Lungs by Means of Improving the Circulation.*
2. SCHULTZE, W. H. *The Oxydase Reaction on Pieces of Tissue.*
3. *ROTH, G. *Permanent Anesthesia of the Larynx in Tuberculosis by Infiltrating the N. Laryng. with Alcohol.*
4. *BECKHAUS, C. *Heart Disease from Trauma.*
5. GROSSMANN, K. *What Diseases of the Heart Contraindicate Ehrlich's "606"?*
6. DUHOT. *Technic and Dosage for Injecting Ehrlich's "606."*
7. TAEGE, K. *Observations on Syphilis treated with "606."*
8. EHLERS. *A Case of Death from "606."*
9. BLACKER, W. *Technic of Intravenous Injection for Infants.*
10. BARDACHZI, F. *Röntgen-Therapy of Myoma of the Uterus.*
11. PÜRKHAUER, R. *A Drawback of the Iodine Benzine Mode of Disinfection.*
12. *DIBBELT, W. *Disturbances of the Metabolism for Lime in Rachitis.* (Concluded.)

1. Bruns describes a simple apparatus for temporarily lowering the air pressure in the lungs. The essential parts of the apparatus are a pump and air tank to which a face mask is attached in such a way that the patient breathes in and out of the tank through the mask. The experiments seem to show that in this manner the suction of the great veins in the chest can be much increased, the diastole of the heart facilitated and the velocity of the circulation considerably increased. The method is recommended for cases in which cardiac embarrassment is due to improper functioning of the respiration, as in emphysema, kyphosis, and the like; and for cases of cardio-muscular weakness, as in obesity or anemia. The treatment may be given for about fifteen minutes at a time. It gives considerable relief and is liked by the patients. The contra-indications are the same as for other forms of physical therapy: severe decompensation, aneurysm, thrombosis and impending embolism, but it can safely be used in mild cardiac insufficiency.

3. Roth reaches the conclusion that, when the ordinary methods have failed, Hoffmann's method of injecting the N. laryng. sup. with alcohol is a safe and useful means of combating dysphagia resulting from tuberculosis of the larynx.

4. Having recently studied three cases of heart lesion following trauma, Beckhaus believes that it is more common than is generally supposed. He recommends after any severe accident, especially to the left side of the chest, that the heart be examined carefully, and that if cardiac symptoms should appear later, they be not hastily attributed to neurasthenia.

12. As a result of careful experimentation, Dibbelt has reached the conclusion that rachitis is a disturbance of the metabolism for calcium, that the excretion of calcium through the intestines is increased in rachitis, and that the bone changes are due to resorption. In explanation he offers the view that excessive excretion of calcium may be favored by food lying unabsorbed in the intestine as a result of illness in the child or artificial feeding of infants. [G. C. S.]

No. 43. Oct. 25, 1910.

1. v. HERFF, O. *Treatment of Dystocia from Narrow Pelvis.*
2. LÄWER AND SIEVERS. *Practical Use of Instrumental Respiration in Humans.*
3. ACHELIS, W. *Orthodiagraphic Demonstration of the Apex of the Heart.*
4. KRÖSING, E. *The Hot-Air Douche in Gynecology.*
5. WEINBRENNER, C. *Operative Treatment of Inflammation of the Adnexa.*
6. SCHWAB, M. *Use of Medicated Tampons in Gynecology.*
7. RITTER, H. *One Experience with Ehrlich's "606."*
8. LÖWENBERG, M. *X-Rays in the Treatment of Skin Diseases.*
9. BOHAC, C. *X-Ray Treatment of Scleroma.*
10. HAYMANN, H. *Pantopon in Psychiatry.*
11. GOLDSCHMIDT, A. *Medicinal Treatment of Bronchial Asthma.*
12. ENSLIN. *An Eye Symptom in the Left-handed.*
13. LUNKENBEIN. *A Rare Puncture Wound of the Stomach.*
14. STRAUSS, L. *A Peculiar Case of Fish Poisoning.*

BERLINER KLINISCHE WOCHENSCHRIFT. No. 45.

Nov. 7, 1910.

1. GOLDSCHEIDER. *Problems and Aims of Clinical Instruction.*
2. FRENKEL-HEIDEN. *The Application of "606" in Nervous Diseases.*
3. MÜNGER, A. *The Internal Secretion of the Generative Glands.* (To be continued.)
4. LEWY, F. H. *The Condition of the Muscles in Cerebral and Spinal Muscular Atrophy.*

5. Kuttner, L., and Pulvermacher, G. *The Occurrence and the Diagnostic Importance of a Pepsin-Splitting Enzyme in the Stomach Contents.*
6. Carpi, N. *The Morphological Blood Changes in Struma and Basedow's Disease.*
7. Wideröe, S. *Examination of the Origin of Raised Body Temperatures.*
8. Ely, L. W. *Tuberculosis of the Knee-Joint in Adults, with a New Explanation and Operative Treatment.*
9. *Kaiser, O. *The Treatment of Prolapse by Means of the Pessary.*
10. Zypkin, S. M. *Acute Myeloid Leukemia. A Case of Green Coloration of the Bone Marrow.* (Concluded.)
11. Marx. *Child Murder.*

9. The author discusses the various kinds of pessary, their advantages and disadvantages. The Scheumann spherical pessary is of all the most satisfactory. Kaiser has also used this pessary to advantage in cases of sterility due to abnormalities in the shape of the vagina. He has had many cases of sterility cured by using the small-sized pessary of Scheumann for a few weeks followed by a few weeks' use of the next larger size until the normal shape of the vagina was attained. [J. L. H.]

Die Therapie der Gegenwart.

October, 1910.

1. *Umber, F. *Observations on the Pathology and Treatment of Duodenal Ulcer.*
2. Baginsky, A. *General Principles in the Treatment of the Infectious Diseases of Children.*
3. *Weiss, O. *The State of the Present Theory Concerning Asthma.*
4. Jacobsohn, L. *The Importance of the Suprarenal Preparations in Medical Practice.*

1. Umber believes that duodenal ulcer occurs a good deal more frequently than it is diagnosed. He emphasizes the following important diagnostic symptoms: (1) Pain in the right parasternal line in the gall-bladder region, coming on not more than three hours after the ingestion of food, sometimes relieved by taking more food. In one case the writer observed attacks of severe paroxysmal pain in the knees and elbows; the ulcer was situated on the posterior wall of the duodenum and had eroded the head of the pancreas. (2) A palpable resistance at the seat of pain. (3) Chilly feelings in the hands, feet and abdomen. (4) Blood in the stools, the patient having been on a meat-free diet for several days and gastric analysis being negative. Umber advises operation for duodenal ulcer only when there are such urgent indications as profuse bleeding or unbearable pain.

3. Weiss correlates his clinical experience with Brügelmann's theory of the causation of asthma. The essential factor in producing an attack is an irritation of the respiratory center. Such irritation may be traumatic, reflex or toxic. Grief or terror or any other severe "cerebral trauma" may precipitate a typical asthmatic seizure. Reflex irritation may come from any part; toxic irritation from disease or excess of CO_2. [L. D. C.]

Revue de Médecine.

October, 1910.

1. *Bernheim. *Venous Asystole in Hypertrophy of the Left Heart, due to Concomitant Stenosis of the Right Ventricle.*
2. *De Brun. *Studies on Paludal Infantilism.*
3. Stcherbach. *Litteral Psychomotor Hallucinations and Other Phenomena due to the Excitation of the Cortical Centers of Letters in Jacksonian Epilepsy.*

1. According to the observations of Bernheim upon ten cases with autopsy, the condition of right ventricular collapse is not rare. Hypertrophy or dilatation of the left heart is not often associated with a dilatation of the entire right heart, as has been formerly supposed. The hypertrophy of the interventricular septum and its convex bulging into the right ventricle, from dilatation, produces a stenosis of the lower half of that cavity. Above this point there is dilatation of the upper part of the ventricle and the right auricle, with all the signs of stasis of the great circulation. This phenomenon accounts for the frequency, in cardiac insufficiency, of congestion of the abdominal organs, ascites, etc., without evidence of the least interference with the lesser circulation — in the lungs.

2. De Brun reports forty cases of a peculiar type of infantilism, which he considers due to faulty metabolism, provoked by a chronic malarial infection. The subjects are short of stature, with thin extremities, small head and extremely infantile external genital organs. Pubic and axillary hair is generally wanting and the voice is shrill and high pitched. The author believes that this failure to develop, mentally as well as physically, is due to (1) absence of testicular or ovarian internal secretion; (2) sclerosis of the thyroid with consequent hypothyroidism; (3) atrophy of the pituitary gland and; (4) atrophy of the suprarenals. All the cases presented evidence of the first, while others showed during life or post-mortem characteristic malarial sclerosis of the thyroid. Isolated cases presented symptoms and signs similar to acromegaly and Addison's disease. It seems most reasonable that there should be some common etiological factor for so many very similar cases. [L. H. S.]

Obituary.

SAMUEL ALEXANDER, M.D.

Dr. Samuel Alexander, a prominent New York surgeon, died Nov. 29, at the New York Hospital, after an operation for appendicitis. He belonged to the well-known Alexander family of Princeton, N. J., and was fifty-one years of age. He was a graduate from Princeton University in 1879 and from Bellevue Hospital Medical College in 1882. He afterwards served as interne in Bellevue Hospital, and in 1887 became visiting surgeon to the hospital, a position which he retained up to the time of his death. He was also surgeon to the Montefiore Home and Hospital for Chronic Invalids. He was for some time a lecturer at the Bellevue Hospital Medical College, and in 1900 was appointed professor of clinical surgery, Department of Diseases of the Genito-Urinary System, in Cornell University.

There are but few men in the profession whose deaths could bring so deep a sense of loss to those of its members who knew him as that of Dr. Alexander.

His abundant vitality and enthusiasm, his keen and clear habit of thought and expression, his directness, his absolute honesty, the whole-hearted devotion to his work and the ardent energy with which he threw himself into it, inspired and stimulated all who came in contact with him. To the students whom he helped to equip for their careers, he imparted much of his own zeal and the desire to attain to the goals he placed before them; veterans felt their forces renewed and drew from his presence something of the sense of exuberant life which was never absent from him and which lent such warmth and color to all that he said and did.

More than any one of our number that we call to mind, he possessed the quality which, for lack of a better name, we term personal magnetism. He drew and held his pupils as a magnet draws and holds bits of steel, and his unconscious exercise of this power, applied as it always was to further scientific knowledge and to impart it to his scholars, to maintain and to promote the highest standards of professional work, exerted

in these directions a potent and most valuable influence. Medical education in this country by his death is deprived of one of its most striking figures, and suffers a serious loss.

He was easily the most brilliant as well as one of the ablest of the group of men whose work lies in the special field of surgery to which he devoted himself. To many of the members of the Genito-Urinary Association the first thought when preparing to go to the annual meetings of the association to which he, and they, belonged was the pleasure of seeing him again, of listening to the sharp, terse, incisive sentences in which he put forward his views upon the various questions that were under discussion, and the certainty they felt of being filled with new enthusiasm and with the desire to strive to reach yet higher levels than those they had yet reached, which they knew would result from their contact with him.

He made many men his debtors in such ways as these, and as one of them, the writer desires to do homage to his memory.

Correspondence.

THE ADVISABILITY OF THE ESTABLISHMENT OF A STATE HOSPITAL FOR CASES OF NERVOUS BREAKDOWN.

BROOKLINE, MASS., Dec. 5, 1910.

Mr. Editor: In an article on page 822 of the JOURNAL of Nov. 24, 1910, under the heading, "Desirability of a State Psychopathic Hospital," I am misrepresented as remarking upon the "disadvantages" of a state psychopathic hospital at a recent hearing at the State House. As such an institution is now in process of construction, and as I, in common with other physicians, worked early and late to secure this admirable means for the early treatment of mental disease, the reporter's mistake is obvious.

The matter under consideration at the hearing was the advisability of the establishment of quite a different institution, namely, a sanitarium or hospital for cases of nervous breakdown and other nervous conditions not amounting to insanity. Of the great need of such a provision, there is no doubt in my mind. The principal question is whether the work should be entered upon under state or private auspices, a matter which is still *sub judice*. For some inexplicable reason my comment at the hearing on the various advantages and disadvantages of both plans was taken by the reporter to refer to a psychopathic hospital.

Very truly yours,
HENRY R. STEDMAN, M.D.

[The use of the adjective "psychopathic" in the title and in the first line of the piece of Miscellany on page 822 of the JOURNAL of Nov. 24 seems to have given rise to some confusion in the minds of some of our readers, and in so far was unfortunate. Such a misunderstanting of our statement on the part of these readers was not anticipated at the time the contribution was printed. — ED.]

SOCIETY NOTICE.

THE NEW ENGLAND HOSPITAL MEDICAL SOCIETY. — This society will meet at the Kensington Chambers, corner Boylston and Exeter streets, Boston, Room 203, on Thursday, Dec. 15, at 7.30 P.M. Section of Obstetrics, Dr. Sarah R. Stowell, chairman. Subject: "The Progress in Obstetrics," Dr. Franklin S. Newell.

BLANCHE A. DENIG, M.D.,
Secretary.

RECENT DEATHS.

DR. LANDON B. EDWARDS, who died at Richmond, Va., on Nov. 27, was born in 1845. He was a charter member of the Medical Society of Virginia, a founder of the Virginia Medical Monthly Journal and of the University College of Medicine in Richmond. He had practised in the latter city for many years.

DR. WILLIAM F. HUSSEY, who died of heart disease last week at Roslindale, was born in East Boston on June 29, 1881. He graduated from the Tufts Medical School in 1905, served a year in the Marine Hospital at Chelsea, Mass., and subsequently studied for a time in Vienna. He was a member of The Massachusetts and of the Norfolk County Medical Societies.

DR. HENRY HUTCHINSON, of St. Paul, Minn., who died of heart disease on Dec. 2, at Algiers, was born in Montreal, Canada, on Aug. 20, 1849. In 1874 he graduated from the Hahnemann Medical College at Philadelphia, and after practising four years in Northfield, Minn., settled in St. Paul. In 1894 he became a member of the Minnesota State Board of Health, and since 1901 had been its president. He was for a time professor of theory and practise in the College of Homeopathic Medicine and Surgery, University of Minnesota. He was a member of the American Health Association, of the Minnesota State Anti-Tuberculosis Association, and of the American and Minnesota Institutes of Homeopathy.

DR. FREDERICK D. MCNEAL, who died of pneumonia last week in Troy, Ohio, was born in 1840. He was at one time food and dairy commissioner of Ohio.

DR. CHARLES TESSIER, who died last week of cerebral hemorrhage at Haverhill, Mass., was born in Canada in 1853. He is survived by two daughters and by one son, also a physician.

DR. BENJAMIN WILLIAMS, of Rockland, Me., who died at Prospect Harbor, Me., on Nov. 27, was born in 1835. During the Civil War he served as assistant surgeon of the Eighth Maine Regiment.

DR. THOMAS GILL NOCK, a well-known physician and former mayor of Rome, N. Y., died on Nov. 28, in his fifty-second year. He was a native of Windsor, Conn., and was graduated from the College of Medicine, Syracuse University, in 1883. He had served as coroner of Oneida County and as a manager of the State Hospital for the Insane at Utica, and for the past six years was a member of the board of fire and police commissioners of Rome.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, NOV. 19, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	—	—	Waltham	5	0
Chicago	632	159	Pittsfield	5	—
Philadelphia	—	—	Brookline	5	—
St. Louis	—	—	Gloucester	9	1
Baltimore	—	—	North Adams	8	1
Cleveland	—	—	Northampton	7	1
Buffalo	—	—	Chicopee	5	2
Pittsburg	—	—	Medford	3	—
Cincinnati	—	—	Beverly	4	1
Milwaukee	—	—	Leominster	3	1
Washington	—	—	Hyde Park	8	1
Providence	—	—	Melrose	1	0
Boston	211	49	Newburyport	5	—
Worcester	35	10	Revere	4	1
Fall River	34	11	Westfield	8	2
Cambridge	34	9	Woburn	3	1
Lowell	42	15	Peabody	—	—
New Bedford	34	11	Marlboro	2	0
Lynn	27	8	Attleboro	2	1
Springfield	26	5	Adams	3	1
Lawrence	25	10	Clinton	2	1
Somerville	22	4	Gardner	3	1
Brockton	8	2	Milford	—	—
Holyoke	15	10	Watertown	1	0
Malden	9	1	Plymouth	—	—
Chelsea	9	—	Southbridge	1	—
Newton	7	1	Weymouth	1	—
Salem	6	1	Framingham	3	1
Haverhill	13	—	Wakefield	3	—
Fitchburg	—	—	Webster	0	—
Everett	7	3	Arlington	1	—
Quincy	—	—	Greenfield	1	—
Taunton	17	4			

Address.

PHYLOGENETIC ASSOCIATION IN RELATION TO CERTAIN MEDICAL PROBLEMS.*

BY G. W. CRILE, M.D., CLEVELAND, OHIO.

THE discovery of the anesthetic properties of ether and its practical application to surgery must always stand as one of the great achievements of medicine. It is eminently fitting that the anniversary of that notable day, when the possibilities of ether were first made known to the world, should be celebrated within these walls, and whatever the topic of your Ether Day orator, he must fittingly first pause to pay tribute to that great event and to the master surgeons of the Massachusetts General Hospital. On this occasion, on behalf of the dumb animals as well as on behalf of suffering humanity, I express a deep sense of gratitude for the blessings of anesthesia. Two years ago an historical appreciation of the discovery of ether was here presented by Professor Welch, and last year an address on medical research was given by President Eliot. I, therefore, will not attempt a general address, but will present an experimental and clinical research.

Time will permit the presentation of only the summaries of the large amount of data. The great assistance rendered by my associates, Dr. D. H. Dolley, Dr. H. G. Sloan, Dr. J. B. Austin and Dr. M. L. Menten,[1] I acknowledge with gratitude.

The scope of the title of this paper may be explained by a concrete example.

When a barefoot boy steps on a sharp stone there is an immediate discharge of nervous energy in his effort at escape from the wounding stone. This is not a voluntary act. It is not due to his own personal experience (i. e., his ontogeny), but is due to the experience of his progenitors during the vast periods of time required for the evolution of the species to which he belongs, i. e., his phylogeny. The wounding stone made an impression upon the nerve receptors in the foot similar to the innumerable injuries which gave origin to this nerve mechanism itself during the boy's vast phylogenetic or ancestral experience. The stone supplied the phylogenetic association, and the appropriate discharge of nervous energy automatically followed. If the sole of the foot is repeatedly bruised or crushed by the stone, shock may be produced. If the stone be only lightly applied, then there is also a discharge of nervous energy from the sensation of tickling. The body has had implanted within it in a similar manner other mechanisms of ancestral or phylogenetic origin whose purpose is the discharge of nervous energy for the good of the individual. In this paper I shall discuss the origin and mode of action of some of these mechanisms including certain phases of anesthesia.

The word anesthesia — meaning *without feeling* — describes accurately the effect of ether in anesthetic dosage. Although no pain is felt in operations under inhalation anesthesia, the *nerve impulses set up* by a surgical operation still reach the brain. We know that not every portion of the brain is fully anesthetized, since surgical anesthesia does not kill. The question then is, What effect has trauma under surgical anesthesia upon the part of the brain *that remains awake?* If, in surgical anesthesia, the traumatic impulses cause an excitation of those wide-awake cells, are the remainder of the cells of the brain, despite anesthesia, influenced in any way? If influenced, they are prevented by the anesthesia from expressing the same in conscious perception or in muscular action. Whether the *anesthetized* cells are influenced or not must be determined by noting the physiologic function after anesthesia has worn off, and in animals by an examination of the brain cells as well. It has long been known that the vasomotor, the cardiac and the respiratory centers discharge energy in response to traumatic stimuli applied to various sensitive regions of the body during surgical anesthesia. If the trauma is sufficient, exhaustion of the entire brain is observed after the effect of the anesthetic is worn off; that is to say, despite the complete paralysis of voluntary motion and the loss of consciousness due to ether, the traumatic impulses that are known to reach the *awake* centers in the medulla also reach and influence every other part of the brain. As to whether or not the consequent functional depression and the morphologic alterations seen in the brain cells may be due to the low blood pressure which follows excessive trauma is answered by the following experiments, viz.: the circulation of animals was first rendered *static* by over-transfusion, and was controlled by a continuous blood-pressure record on a drum, the factor of anemia was thereby wholly excluded during the application of the trauma and during the removal of a specimen of brain tissue for histologic study. In every such instance morphologic changes in the cells of all parts of the brain were found, but it required more trauma to produce *equal* morphologic changes in animals protected against low blood pressure than in animals whose blood pressure gradually declined in the course of the experiments.

In the cortex and in the cerebellum, the changes in the brain cells were in every instance more marked than in the medulla. There is also strong *negative* evidence that traumatic impulses are not excluded by ether anesthesia from the part of the brain that is apparently asleep. This evidence is as follows:

If the factor of fear be excluded, and if in addition the traumatic impulses are prevented from reaching the brain by cocain blocking, then, despite the intensity or the duration of the trauma within the zone so blocked, there follows no exhaustion after the effect of the anesthetic disappears, and no morphologic changes are noted in the brain cells. A still further negative evidence that inhalation anesthesia offers little or no protection to the brain cells from trauma is derived

* Address delivered at the Massachusetts General Hospital on the sixty-fourth anniversary of Ether Day, Oct. 18, 1910.

[1] From the H. K. Cushing Laboratory of Experimental Medicine, Western Reserve University, Cleveland.

from the following experiment: A dog whose spinal cord had been divided at the level of the first dorsal segment, and then kept in good condition for two months, showed a recovery of the spinal reflexes, such as the scratch reflex, etc. This animal is known as a "spinal" dog. Now, in this animal the abdomen and hind extremities have no direct nerve connection with the brain. In such a dog a continuous severe trauma of the abdominal viscera and of the hind extremities lasting four hours was accompanied by but slight change in either the circulation or in the respiration, and no microscopical alteration of the brain cells. Judging from a large number of experiments on *normal* dogs under ether, such an amount of trauma would have caused not only a complete physiologic exhaustion of the brain, but also morphologic alterations of all of the brain cells and physical destruction of many. We must, therefore, conclude that, although ether anesthesia produces unconsciousness, it *apparently protects none of the brain cells* against exhaustion from the trauma of surgical operations; ether is, so to speak, but a veneer. Under nitrous oxide anesthesia there is approximately only one fourth the exhaustion on equal trauma as under ether; either nitrous oxide protects or ether predisposes to exhaustion under trauma. With this as a point of departure we will inquire into the cause of this exhaustion of the brain cells.

ON THE CAUSE OF THE EXHAUSTION OF THE BRAIN CELLS FROM TRAUMA OF VARIOUS PARTS OF THE BODY UNDER INHALATION ANESTHESIA.

Numerous experiments on animals upon the effect of ether anesthesia *per se*, i. e., ether anesthesia without trauma, showed that although certain changes were seen there was neither the characteristic physiologic exhaustion after the anesthesia had worn off nor were there seen the characteristic changes in the brain cells. Turning to trauma, in a study of the behavior of individuals as a whole under deep and under light anesthesia, we at once found the cue to the discharge of energy, — the consequent physiologic exhaustion and the morphologic changes in the brain cells.

If, in the course of abdominal operations, rough manipulation of the parietal peritoneum is made, there is frequently observed a marked increase in the respiratory rate and an increase in the expiratory force, even to the extent of an audible expiratory groan. Under light ether anesthesia severe manipulation of the peritoneum often causes such vigorous contractions of the abdominal muscles that the operator may be greatly hindered in his work.

Among the unconscious responses to trauma under ether anesthesia are purposeless moving, withdrawing of the injured part, and if the anesthesia is sufficiently light and the trauma sufficiently strong, there may be an effort directed toward escape from the injury. In injury under ether anesthesia every grade of response may be seen, from the slightest change in the respiration or in the blood pressure to a vigorous defensive struggle. As to the purpose of these subconscious movements in response to injury, there can be no doubt, — *they are efforts at escape from the injury.*

Can any one picture the actual result of a formidable abdominal operation extending over a period of half an hour or more in an unanesthetized human patient if extensive adhesions are broken up, or if a large tumor is dislodged from its bed? In such a case would not the nervous system discharge its energy to the utmost in efforts to escape from the injury, and would the patient not suffer complete exhaustion? If the traumata, under inhalation anesthesia, be sufficiently strong and repeated in sufficient numbers, the brain cells will finally be deprived of their dischargable nervous energy and become exhausted just as exhaustion follows a strenuous and too prolonged muscular exertion, for example, such as is seen in endurance tests. Whether the nerve energy of the brain is discharged by injury under anesthesia, or whether by ordinary muscular exertion, identical morphologic changes are seen in the nerve cells. In shock from injury, in exhaustion from overwork (Hodge and Dolley) and in exhaustion from pure fear, the general functional weakness is similar, — in each a certain length of time is required to effect recovery, and in each there are morphologic changes in the brain cells. It is quite clear that in each of these cases the altered function and form of the brain cells are due to an *excessive discharge of nervous energy*. This brings us to the next question, viz., what determines the discharge of energy from trauma with or without inhalation anesthesia?

ON THE CAUSE OF THE DISCHARGE OF NERVOUS ENERGY FROM TRAUMA IN ANIMALS UNDER INHALATION ANESTHESIA AS WELL AS IN THE NORMAL STATE WITH SPECIAL REFERENCE TO MEDICAL PROBLEMS.

I looked into this problem from many viewpoints and there seemed to be no solution until it occurred to me to seek the explanation in certain of the postulates which make up the doctrine of evolution. I realize fully the difficulty and the danger in attempting to reach the generalization which I shall make later and in the hypothesis I shall propose. There is, of course, no direct final proof of the truth of even the doctrine of evolution. It is idle to consider any experimental research into the cause of phenomena that have by natural selection required millions of years to develop. Nature has made the experiments on a world-wide scale; the data are before us for interpretation. Darwin could do no more than collect all available facts and then frame an hypothesis that best harmonized the facts. Sherrington, that masterly physiologist, in his volume entitled "The Integrative Action of the Nervous System," shows clearly how the central nervous system was built up in the process of evolution. Sherrington has made free use of Darwin's doctrine in explaining physiologic functions, just as anato-

mists have extensively utilized it in the explanation of the genesis of anatomical forms. I will assume, therefore, that the discharge of nervous energy is accomplished by the application of the law of inheritance and association, and that this hypothesis will explain many clinical phenomena. I shall present such evidence in favor of this hypothesis as time and my limitations will admit, after which I shall point out certain clinical facts that may be explained on this hypothesis.

According to the doctrine of evolution, every function owes its origin to natural selection in the struggle for existence. In the lower and simpler animal life, indeed, in our human progenitors as well, existence depended principally upon the success with which three great purposes were achieved, viz., (1) self-defense against or escape from enemies; (2) the acquisition of food; and (3) procreation; and these were virtually the only purposes for which nervous energy was discharged. In its last analysis in a biologic sense this statement holds for man of to-day. Disregarding for the present the expenditure of energy for procuring food and for procreation, we will consider the discharge of energy in self-preservation. The mechanisms for self-defense which we now possess were developed in the course of vast periods of time from the lowest forms through all the intermediary stages to our present estate. One would expect, therefore, that we are now in possession of mechanisms which still may discharge energy on adequate stimulation but are not suited to our present needs. We shall point out such examples. As Sherrington has stated, there is interposed between ourselves and the environment in which we are immersed, our skin, in which are implanted many receptors for receiving specific stimuli which are transmitted to the brain. When these stimuli reach the brain, there is a specific response principally in the form of muscular action. Now, each receptor can only be adequately stimulated by the particular factor or factors in the environment which created the necessity for the receptor in question. Thus there have arisen receptors for touch, for temperature, for pain, etc. The receptors for pain have been designated noci-ceptors (nocuous or harmful influences) by Sherrington.

On the basis of natural selection, only the regions of the body that have been during long periods of time exposed to injury could have developed noci-ceptors. On this ground the finger, because it is exposed, should have many noci-ceptors, while the brain, though the most important organ of the body, because it has been during a vast period of time protected by a skull, should have no noci-ceptors. Realizing that this point is a crucial one, Dr. Sloan and I made a series of careful experiments. The cerebral hemispheres of dogs were exposed by removal of the skull and dura under ether anesthesia and under local anesthesia. Then various portions of the hemispheres were slowly but completely destroyed by rubbing with a piece of gauze. In some instances the hemisphere was destroyed by burning. In no instance was there more than a slight response of the centers governing circulation and respiration, and there was no morphologic change noted in an histologic study of the brain cells of the uninjured hemisphere. The experiment was as completely negative as the experiments on the "spinal" dog. Clinically I have confirmed the experimental findings in the course of explorations for brain tumor with a probe in conscious patients. Such explorations elicited neither pain nor evidence of altered physiologic functions. The brain, therefore, contains no mechanism, — no noci-ceptors, — the direct stimulation of which could cause a discharge of nervous energy in a self-defensive action. That is to say, direct injury of the brain can cause no purposeful nerve muscular action, while direct injury of the finger does cause purposive nerve muscular action. In like manner, the deeper portions of the spinal region have been sheltered from trauma, and they too show but little power of causing a discharge of nervous energy on receiving trauma. The various tissues and organs of the body are differently endowed with injury receptors, or the noci-ceptors of Sherrington. The abdomen and chest when traumatized stand first in their facility for causing the discharge of nervous energy, i. e., *they stand first in shock production*. Then follow the extremities, the neck and the back. It is an interesting fact that *this* physical type or *that* physical type of trauma elicits different responses as to the discharge of energy. Because it is such a commonplace, one scarcely realizes the importance of the fact that clean-cut wounds with a razor-like knife cause the least reaction, while a tearing, crushing trauma causes the greatest response. It is a suggestive fact that the technic of the carnivora in fighting each other and in killing their prey is probably the most efficient shock-producing trauma known. *In the course of evolution this may well have been the predominating type of trauma to which our progenitors were subjected.* In one particular respect there is an analogy between the response to trauma of some of the parts of the body of the individuals of a species susceptible to shock and the response to trauma of certain of the great divisions of the animal kingdom. Natural selection has protected one great division, the crustacea, against its enemies with a protective armor — the turtle and the armadillo are examples; to another division — the birds — it has given a sharp eye and wings, — the wild goose is an example; to another it has given a diabolic odor for protection, — the skunk is an example. The turtle, protected by its armor, is in a very similar position with respect to its protection against trauma as the sheltered brain of man, and like the brain does not respond by an especially active self-protective nerve muscular response. The turtle merely withdraws its head and legs within the armored protection and is proverbially difficult to exhaust or to kill by trauma. The brain and other phylogenetically sheltered parts likewise cause no exhausting self-protective nerve muscular response. The skunk is quite effectively protected from violence by its peculiar odor. This is indicated not only by con-

sidering the protective value of the odor, but also by the fact that the skunk has no efficient nerve muscular mechanism for escape or defense, and can neither run fast nor can it climb a tree. Moreover, in encounters it shows no fear and backs rather than runs. The armadillo rolls itself into a ball for defense. Therefore the turtle, the armadillo and the skunk should have fewer noci-ceptors than a dog or man and should show less response to trauma. On the evidence of two (an insufficient number) carefully conducted experiments on the skunk, and two on the armadillo, there was as compared with the dog, the opossum, the pig, the sheep and the rabbit very much less discharge of energy on severe and protracted trauma of the abdominal viscera. These subjects were indeed relatively difficult to exhaust by trauma. These experiments are too few to be conclusive but they are of some value and furnish an excellent lead. It seems more than a coincidence that fear, noci-ceptors and susceptibility to shock go hand in hand in these comparative observations.

The discharge of energy caused by an adequate mechanical stimulation of the noci-ceptors is best explained in accordance with the law of phylogeny and association. That is, injuries awaken such reflex actions as have by natural selection been developed for the purpose of self-protection. Adequate stimulation of the noci-ceptors for pain is not the only means of causing a discharge of nervous energy. Nervous energy may also be discharged by adequate stimulation of the various ticklish regions of the body. The entire skin surface of the body contains delicate ticklish receptors. These receptors are closely related to the noci-ceptors for pain, and their adequate stimulation by an insect-like touch causes a discharge of energy — a nerve muscular reaction — resembling that of brushing off insects. This reflex is similar to the scratch reflex elicited in the dog. This discharge of energy is almost wholly independent of the will and is a self-protective action in the same sense as is the response to pain stimuli. The ear in man and in animals is acutely ticklish, — the adequate stimulus being any foreign body, — especially a buzzing insect-like contact. The discharge of nervous energy in horses and in cattle on adequate stimulation of the ticklish receptors of the ear is so extraordinary that in the course of evolution it must have been of great importance to the safety of the animal. A similar ticklish zone guards the nasal chambers. The discharge of energy here takes such form as effectively to dislodge the foreign body. The larynx is exquisitely ticklish, and in response to adequate stimulus, energy is discharged in the production of a vigorous cough. The mouth and pharynx have active receptors which cause the rejection of nocuous substances. The conjunctival reflex, though not classed as ticklish, is a most efficient self-protective reflex. I assume that there is no doubt as to the meaning of the adequate stimuli and the nerve-muscular response of the various ticklish receptors of the surface of the skin, of the ear, the nose, and the eye, and the larynx. These mechanisms were developed by natural selection as protective measures against the intrusion of insects and foreign bodies into regions of great importance. The discharge of energy in these instances is in accordance with the law of inheritance and association. The other ticklish points which are capable of discharging vast amounts of energy are the lateral chest wall, the abdomen, the loins, the neck and the soles of the feet. The type of adequate stimuli of the soles of the feet, the distribution of the ticklish points upon them, and the associated response leave no doubt that these ticklish points were long ago established as a means of protection from injury. Under present conditions they are of little value to man.

The adequate stimulus for the ticklish points of the ribs, the loins, the abdomen and the neck is deep isolated pressure, probably the most adequate being that of a tooth-shaped body. The response to tickling in these regions is actively and obviously self-defensive. The horse discharges energy in the form of a kick; the dog wriggles and makes a counter-bite; the man makes efforts at defense and escape.

There is strong evidence that the deep ticklish points of the body were acquired through vast periods of fighting, with teeth and claws. Even puppies at play bite each other in their ticklish points and thus give a recapitulation of their ancestral battles and of the real battles to come. The mere fact that animals fight effectively in the dark and always according to the habit of their species supports the belief that the fighting of animals is not an intellectual but a reflex process. There is no book of rules governing the conduct of a fight between animals. The sequences of events follow each other with such kaleidoscopic rapidity that the process is but a series of automatic stimulations and physiologic reactions. Whatever the significance, it is certain that man did not come either accidentally or without purpose into possession of the deep ticklish regions of his chest and abdomen. Should any one doubt the vast power that adequate stimulation of these regions possess in causing the discharge of energy, let him be bound hand and foot and vigorously tickled for an hour. What would happen? He would be as completely exhausted as though he had experienced a major surgical operation or as if he had run a Marathon race.

A close analogy to the reflex process in the fighting of animals is shown in the rôle played by the sexual receptors in conjugation. Adequate stimulation of these two distinct groups of receptors, the noci and the sexual, cause specific behavior, — the one toward embrace, the other toward repulsion. Again, one of the most peremptory causes of the discharge of energy is that due to an attempt forcibly to obstruct the mouth and the nose, threatening asphyxia. Neither friend nor foe is trusted, and a desperate struggle for air ensues. It will be readily granted that the efforts to prevent suffocation were established for the purpose of self-preservation, but the discharge of nerve-muscular energy to this particular end is

no more specific and no more shows adaptative qualities than do the preceding examples. . Even the proposal to bind one down hand and foot excites resentment, a feeling of self-preservation. No patient views with equanimity the application of shackles preparatory to anesthesia for an operation.

We have now considered some of the causes of the discharge of nervous energy due to various types of harmful physical contact, and have suggested analogous though antithetical sexual receptors. The response to the adequate stimuli of each of the several receptors is a discharge of nerve muscular energy of a specific type: One type for the ear, one for the larynx, one for the pharynx, another for the nose, another for the eye, another for the deep ticklish points of the chest and the abdomen, quite another for the delicate tickling of the skin, and still another in response to sexual and to painful stimuli.

According to Sherrington, a given receptor has a low threshold for only one, its own — hence a specific stimulus and a high threshold for all others; that is, the doors that guard the nerve paths to the brain are opened only on receiving the proper password. According to Sherrington's law, the individual as a whole responds to but one stimulus at a time, that is, only one stimulus occupies the nerve paths which perform acts, i. e., the final common path. As soon as a stronger stimulus reaches the brain it dispossesses whatever other stimulus is then occupying the final common path, — the path of action. The various receptors have a definite order of precedence over each other (Sherrington). For example, the impulse from the delicate ticklish points of the skin whose adequate stimulus is an insect-like contact could not successfully compete for the final common path with the stimulus of a noci-ceptor. The stimulus of a fly on the nose would be at once superseded by the crushing of a finger. In quick succession do the various receptors (Sherrington) occupy the final common path, but each stimulus is for the time always the sole possessor, hence the nervous system is integrated (connected up) to act as a whole. Each individual at every moment of its life has a limited amount of dischargeable nervous energy. This energy is at the disposal of any stimulus that obtains possession of the final common path, i. e., the *performance of acts*. Each discharge of energy is subtracted from the sum total, and whether the subtractions are made by the excitation of noci-ceptors by trauma, by tickling, by fighting, by fear, by flight, or by the excitation of sexual receptors, singly or in combination, the sum total of expenditure of energy, if large enough, produces exhaustion. Apparently there is no distinction between that state of exhaustion which is due to the discharge of nervous energy in response to trauma and that due to other causes. The manner of the discharge of energy is specific for each type of stimulation. On this conception traumatic shock takes its place as a natural phenomenon and is divested of its mask of mystery.

THE DISCHARGE OF ENERGY THROUGH STIMULATION OF THE DISTANCE RECEPTORS, OR THROUGH REPRESENTATION OF INJURY (PSYCHIC).

We will now turn from the discussion of the discharge of nervous energy by mechanical stimuli to the discharge of energy through mental perception. *Phylogenetic* association may arise through the distance receptors as well as through physical contact, viz., through sight, hearing, smell, or by a representation of physical experiences. The effect upon the organism of the representation of injury or of the perception of danger through the distance receptors is designated *fear*. Fear is as widely distributed in nature as is its cause, that is, fear is as widely distributed as injury. Animals under the stimulus of fear, according to W. T. Hornaday, not only may exhibit preternatural strength, but also show strategy of the highest order, a strategy not seen under a lesser stimulus. In some animals fear is so intense that it defeats escape; this is especially true in the case of birds in the presence of snakes. The power of flight has endowed the bird with an easy means of escape from snakes, especially when the encounter is in the tops of trees. Here the snake must move cautiously else he will lose his equilibrium. His method of attack is by stealth. When the snake has stalked its prey, the bird is often so overcome by fear that it cannot fly and so becomes an easy victim. The phenomena of fear are described by Darwin as follows:

"Fear is often preceded by astonishment and is so near akin to it that both lead to the senses of sight and hearing being instantly aroused. In both cases the eyes and mouth are widely opened and the eyebrows raised. The frightened man at first stands like a statue motionless and breathless, or crouches down as if instinctively to escape observation. The heart beats quickly and violently, so that it palpitates or knocks against the ribs. That the skin is much affected under the sense of fear, we see in the marvelous and inexplicable manner in which perspiration immediately exudes from it. This exudation is all the more remarkable as the surface is then cold, and hence the term, 'a cold sweat'; whereas the sudorific glands are properly excited into action when the surface is heated. The hairs also on the skin stand erect, and the superficial muscles shiver. In connection with the disturbed action of the heart, the breathing is hurried. The salivary glands act imperfectly; the mouth becomes dry and is often opened and shut. I have also noticed that under slight fear there is a strong tendency to yawn. One of the best-marked symptoms is the trembling of all the muscles of the body, and this is often first seen in the lips. From this cause, and from the dryness of the mouth, the voice becomes husky and indistinct, or altogether may fail. As fear increases into agony of terror, we behold, as under all violent emotions, diversified results. The heart beats wildly, or may fail to act, and faintness ensue; there is a death-like pallor; the breathing is labored; the wings of the nostrils

are dilated; there is a gasping and convulsive motion of the lips, a tremor on the hollowed cheek, a gulping and catching of the throat; the uncovered and protruding eyeballs are fixed on the object of terror, or they may roll restlessly from side to side. The pupils are said to be enormously dilated. All the muscles of the body become rigid, or may be thrown into convulsive movements. The hands are alternately clenched and opened, often with a twitching movement. The arms may be protruded, as if they were to avert some dreadful danger, or may be thrown wildly over the head. In other cases there is a sudden and uncontrollable tendency to headlong flight; and so strong is this, that the boldest soldier may be seized with a sudden panic. As fear arises to an extreme pitch, the dreadful scream of terror is heard. Great beads of sweat stand on the skin. All the muscles of the body are relaxed. Utter prostration soon follows, and the mental powers fail. The intestines are affected. The sphincter muscles cease to act and no longer retain the contents of the body. Men during numberless generations have endeavored to escape from their enemies or danger by headlong flight, or by violently struggling with them; and such great exertions will have caused the heart to beat violently, the breathing to be hurried, and the chest to heave, and the nostrils to be dilated. As these exertions have often been prolonged to the last extremity, the final result will have been utter prostration, pallor, perspiration, trembling of all the muscles, or their complete relaxation. And now, whenever the emotion of fear is strongly felt, though it may not be from any exertion, the same results tend to reappear, through the force of inheritance and association." (*Darwin.*)

In an experimental research, we found evidence that the physiologic phenomena of *fear* have a physical basis. This evidence is morphologic alterations in the brain cells, similar to certain stages of surgical shock and in fatigue from muscular exertion. For the present we will assume that fear is a *representation* of trauma. Because fear was created by trauma, fear causes a discharge of the energy of the nervous system on the law of phylogenetic association. The almost universal fear of snakes, of blood and of death and dead bodies may have such a phylogenetic origin. It was previously stated that under the stimulus of fear animals show preternatural strength. An analysis of the phenomena of fear shows that, so far as can be determined, all of the functions of the body requiring the expenditure of energy and which are of no direct assistance in the effort toward self-preservation are suspended. Involuntary expenditure of muscular energy, such as in the chase, the suspension of other functions is by no means so complete. Fear, hence trauma, may, therefore, drain to the last dreg the dischargeable nervous energy; therefore, the greatest possible exhaustion may be produced by fear and trauma. This is a distinction between fear and desire.

There is a factor, however, that influences the discharge of energy which I must discuss briefly. I refer to summation.

SUMMATION.

In the discharge of energy, summation plays an important rôle. Summation is attained by the repetition of stimuli at such a rate that each succeeding stimulus is applied before the nerve cells have returned to the resting stage from the preceding stimulus. If drops of water fall upon the skin from a sufficient height to cause the slightest unpleasant sensation, and at such a rate that before the effect of the stimulus of one drop has passed another drop falls in precisely the same spot, there will be felt a gradually increasing painful sensation until it becomes unbearable. This is summation. When a patient requires for a long time frequent painful wound dressings, there is a gradual increase in the acuteness of the pain receptors. This is summation. In a larger sense the behavior of the entire individual gives considerable evidence of summation, e. g., in the training of athletes the rhythmic discharge of muscular energy at such intervals that the resting stage is not reached before a new exercise is given results in a gradual ascent in efficiency until the maximum is reached. This is summation, and summation plays a large rôle in the development of both normal and pathologic phenomena.

We have now pointed out the manner in which at least a part of nervous energy of man may be discharged. The integrative action of the nervous system and the discharge of nervous energy by phylogenetic association may be illustrated by the analogy of an electric automobile. The electric automobile is composed of three principal parts: the motor and the wheels (the muscular system and the skeleton); the cells of the battery containing stored electricity (brain cells, nervous energy); and the controller which is connected with the cells by wiring (the receptors and the nerve fibers); and an accelerator button for increasing the electrical discharge (thyroid gland [?]). The machine is so constructed that it acts as a whole for the accomplishment of a single purpose. When the controller is adjusted for going ahead (adequate stimulus of a receptor), then the conducting paths (the final common path) for the accomplishment of that purpose are all open to the flow of the current from the battery, and the vehicle is integrated to go ahead. It spends its energy to that end and is closed to all other impulses. When the controller is set for reverse, the machine is by this adequate stimulus integrated to back, and the battery is closed to all other impulses. Whether integrated for going forward or backward, if the battery be discharged at a proper rate until exhausted, the cells, though possessing no more power (fatigue), have sustained no further impairment of their elements than that of normal wear and tear. Furthermore, they may be restored to normal activity by recharging (rest). If the vehicle be placed against a stone wall, and the controller be placed at top speed ahead (trauma and fear), and if the accelerator is on as well (thyroid secretion?), though the machine will not move, the battery will not

only soon be exhausted, but the battery elements themselves will be seriously damaged (exhaustion, — surgical shock).

We have now presented some evidence that nervous energy is discharged by the adequate stimulation of one or more of the various receptors that have been developed in the course of evolution. In response to an adequate stimulus, the nervous system is integrated for the specific purpose of the stimulated receptor, and but one stimulus at a time has possession of the final common path, — the nerve mechanisms for action. The most numerous receptors are those for harmful contact. These are the noci-ceptors. The effect of the adequate stimulus of a noci-ceptor is like that of pressing an electric button that sets in motion great machinery.

With this conception, the human body is likened to a musical instrument, — an organ, the keyboard of which is composed of the various receptors upon which environment plays the many tunes of life; and written within ourselves in symbolic language is the history of our evolution. The skin may be the "Rosetta Stone" which furnishes the key.

ANOCI-ASSOCIATION.

We are now prepared on the law of phylogenetic association to make a practical application of the principles of the discharge of nervous energy. In the case of a surgical operation, if fear be excluded and if the nerve paths between the field of operation and the brain be blocked with cocaine, there will be no discharge of energy due to the operation; hence, there can be no shock, no exhaustion. Under these conditions of operation the nervous system is protected against noci-association whether by noci-perception or by an adequate stimulation of noci-ceptors. The state of the patient in whom all noci-associations are excluded can be described only by coining a new word. That word is "*anoci-association.*"

The difference between anesthesia and anoci-association is that although *inhalation anesthesia* confers the beneficent loss of consciousness and freedom from pain, it does not prevent the nerve impulses from reaching and influencing the brain, and hence does not prevent surgical shock nor the train of later nervous impairments so well described by Mumford. *Anoci-association* excludes fear, pain, shock and post-operative neuroses. *Anoci-association* is accomplished by a combination of special management of patients (applied psychology), morphine, inhalation anesthesia and local anesthesia.

We have now presented in summary much of the mass of experimental and clinical evidence we have accumulated in support of our principal theme, viz., that the discharge of nervous energy is accomplished by the law of phylogenetic association. If this point seems to have been labored, it is because we expect to rear upon this foundation a clinical structure. How does this hypothesis apply to surgical operations?

PREVENTION OF SHOCK BY THE APPLICATION OF THE PRINCIPLE OF ANOCI-ASSOCIATION.

Upon this hypothesis a new principle in operative surgery is founded, viz., operation during the state of *anoci-association.* Assuming there is no unfavorable effect of the anesthetic, and no hemorrhage, the nerve cells of the brain cannot be exhausted in the course of a surgical operation except by fear, or trauma, or by both. Fear may be excluded by narcotics and special consideration until the patient is rendered unconscious by inhalation anesthesia. Then in addition to inhalation anesthesia, blocking with cocaine the nerve paths between the brain and the field of operation will place the patient in the beneficent state of *anoci-association,* and at the completion of the operation the patient will be as free from shock as at the beginning. In so-called "fair risks" such precautions may not be necessary, but in cases handicapped by infections, by anæmia, by previous shock and by Graves' disease, etc., anoci-association may become vitally important.

GRAVES' DISEASE.

Applying the principle of the discharge of nervous energy by phylogenetic association, and on the additional hypothesis that in the discharge of nervous energy the thyroid gland is, through the nervous system, stimulated, we can explain many phenomena of Graves' disease and possibly supply some of the factors to explain both the genesis and the cure of the disease.

In the wild state of animal life in which only the fittest survive in the struggle for existence, every point of advantage may have selection value. An animal engaged in battle or in a desperate effort at escape will be able to give a better account of itself if it has some means of accelerating the discharge of energy, some influence like that of oil upon the kindling fire. There is evidence, though perhaps not conclusive, that such an influence is exerted by the thyroid gland. This evidence is as follows: In myxedema, a condition characterized by a lack of thyroid secretion, there is a dullness of reflexes, and of intellect, a lowered muscular power, and generally a sluggish discharge of energy. In Graves' disease there is an excessive production of thyroid secretion. In this disease the reflexes are greatly sharpened, energy is discharged with very greatly increased facility, and metabolism is at a maximum. The same holds true in the administration of thyroid extract in large doses in normal subjects. In the course of sexual activities there is an increased action of the thyroid as indicated by an increased size and vascularity of the thyroid. In fear and in injury in cases of Graves' disease the thyroid is probably stimulated to increased activity as indicated by the increased activity of the thyroid circulation, by an increase in the size of the gland, by presenting the histologic appearance of activity in the nucleus of the cells, and by an increase of the toxic symptoms. Finally, Asher has stated that electric stimulation of the nerve supply of the thyroid causes an increased secretion. The origin

of many cases of Graves' disease is closely associated with some of the causes of the discharge of nervous energy, especially depressive influences, such as nervous shocks, worry and nervous strain, disappointment in love, business reverses, illness and death of relatives and friends. The association of activity of the thyroid with procreation is well known, hence the incidence of the double strain of overwork or of fear and the sexual evolution in maturing girls is obviously favorable to the development of Graves' disease. The presence of a colloid goiter is a suitable soil for the development of Graves' disease. I fully recognize the evidence that infection or auto-intoxication may be contributing factors and must be assigned their rôle.

I have never known a case of Graves' disease to develop from success or from happiness alone, nor from hard physical labor, unattended by strain, nor from the results of energy voluntarily discharged. Some cases seem to have had their origin in over-dosage of thyroid extract in too vigorous an attempt to cure a colloid goiter. In Graves' disease one of the most striking characteristics is the patient's loss of control and an increased susceptibility to stimuli, especially to trauma and to fear and to the administration of thyroid extract. It has been shown that the various causes of the discharge of nervous energy produce alterations in the nervous system and probably in the thyroid gland. This is especially true of the fear stimulus. This is clearly demonstrated in the brains of rabbits subjected to fear alone. Of special interest is the effect of daily fright. In this case the brain cells show a distinct change, although the animal is subjected to no fear for twenty-four hours before it is killed. Now, a great distinction between man and the lower animals is the greater control man has acquired over his actions. This quality of control, having been phylogenetically most recently acquired, is the most vulnerable to various *nocuous* influences. The result of a constant noci-integration may be a wearing out of the control cells of the brain. In Graves' disease there has been demonstrated in a typical case a marked morphologic change in the brain cells. As previously stated, the origin of many cases of Graves' disease is associated in a broad sense with some noci-influence. If this influence causes stimulation of both the brain and the thyroid, its excessive action may cause impairment of the brain and hyperplasia of the thyroid as well. As self-control is impaired, fear obtains ascendency and, *pari passu*, would stimulate the thyroid still more actively. Finally, the fear of the disease itself becomes a noci-stimulus. As the thyroid secretion causes an increase in the facility for the discharge of nervous energy, there is established a pathologic reciprocal interaction between the brain and the thyroid. The effect of the constantly recurring stimulus of the noci-influence is heightened by summation. This reciprocal goading may continue until either the brain or the thyroid is destroyed. If the original noci-stimulus is withdrawn before the fear of the disease becomes too strong, and before too much injury to the brain and the thyroid has been inflicted, a spontaneous cure may result. Cure may be greatly facilitated by a complete rest cure. A cure implies the return of the brain cells to their normal state, with the re-establishment of the normal self-control, and the restoration of the thyroid to its normal state. Then the impulses of daily life will once more have possession of the final common path and the noci-influence be dispossessed. The discovery of the real cause of a given case of Graves' disease is frequently difficult because the exciting cause may be personal and is painful. Of extreme interest is the fact that the patient in the acute stage may be unable to refer to the real cause without exhibiting an exacerbation of the symptoms of the disease. I presume no case should be regarded as cured until reference can be made to the cause without an abnormal reaction. It has been established that in Graves' disease injury to any part of the body even under inhalation anesthesia causes an exacerbation of the disease. Fear alone may cause an acute exacerbation. These acute exacerbations are frequently designated "hyperthyroidism" and are the special hazard of operation.

In operating on subjects of Graves' disease on the principle of anoci-association, there is scarcely a change in the pulse, in the respiration or in the nervous state at the close of the operation. Against the effect of the inflowing stimuli from the wound after the cocaine has worn off I know no remedy. It is necessary, therefore, in the serious cases not to venture too far. Since the adoption of this new method (anoci-association) my operative results have been so vastly improved that I now regard no case of Graves' disease as inoperable, at least to the extent of making a double ligation.

If we believe that a continuous stimulation of both the brain and the thyroid gland, on the law of phylogenetic association, accelerated by summation, plays a rôle in the establishment of the pathologic interaction seen in Graves' disease, then it is but the next step to assume that if the nerve connection between the brain and the thyroid is severed, or if the lobe is excised and the patient is reinforced by a sojourn in a sanatorium, or some environment free from former noci-association, the patient will, providing the brain cells, the heart or other essential organs have not suffered irreparable damage, be restored to normal health. There are still many missing links, and the foregoing is not offered as a final solution, although many of the phenomena from the viewpoint of the surgeon are explicable.

SEXUAL NEURASTHENIA.

The state of sexual neurasthenia is in many respects analogous to that of Graves' disease. In the sexual reflexes summation leads to hyper-excitability to psychic and mechanical stimuli of a specific type analogous to the hyper-excitability in Graves' disease to trauma and fear; both are based on the law of the discharge of energy by phylogenetic association and summation. It

would be interesting to observe the effect of interrupting the nerve impulses from the field of the sexual receptors by injections of alcohol or other agencies and thus exclude the associational stimuli until the nervous mechanism has again become restored to the normal.

INTERPRETATION OF SOME OF THE PHENOMENA OF CERTAIN DISEASES OF THE ABDOMEN ON THE HYPOTHESIS OF PHYLOGENETIC ASSOCIATION.

On the law of phylogenetic association, it is probable that many of the phenomena of certain lesions in the abdominal cavity become explicable. The noci-ceptors in the abdomen, like noci-ceptors elsewhere, have been established by some kind of injury to which this region has been frequently exposed over vast periods of time. On this premise, we could at once predict that there are no noci-ceptors for heat within the abdomen because during countless years the intra-abdominal region has not come in contact with heat. That this inference is correct is shown by the fact that the application of a thermocautery to the intestines when completing a colostomy in a conscious patient is absolutely painless. One could also predict the fact that there are no touch receptors in the abdominal viscera, hence no sense of touch in the peritoneum. Just as the larynx, the ear, the nose, the sole of the foot and the skin have all developed the specific type of noci-ceptors which are adapted for their specific protective purposes, and when adequately stimulated respond in a specific manner on the law of phylogenetic association, so the abdominal viscera have developed equally specific noci-ceptors as a protection against specific nocuous influences. The principal harmful influences to which the abdominal viscera may have been long exposed are deep tearing injuries by teeth and claws in the course of the innumerable struggles of our progenitors with each other and with their enemies; the perforation of the intestinal tract from ulcers, injuries, appendicitis, gallstones, etc., causing peritonitis; and over-distention of the hollow viscera from various forms of obstruction. Whatever may be the connection, it is a fact that the type of trauma from fighting corresponds nicely to that which in the experimental laboratory causes the most shock. Division of the intestines with a sharp knife causes no pain, but pulling on the mesentery elicits pain. Likewise, ligature of the stump of the appendix causes sharp cramp-like pains. Sharp division of the gall bladder causes no pain, but distention, which is the gall bladder's most common pathologic state, produces pain. Distention of the intestine causes great pain, but sharp cutting or burning causes none. In the abdominal viscera, like the superficial parts, noci-ceptors have been presumedly developed by specific harmful influences, and each noci-ceptor is open to stimulation only by the particular type that produced it.

As we have just stated, pain is associated with the excitation of noci-ceptors, and these may take precedence over and dispossess the routine functions, such as peristalsis, secretion and absorption, of their occupancy of their respective nervous mechanisms, just as fear does. Hence, the loss of weight, the lassitude, the indigestion, the constipation and the many alterations in the function of the various glands and organs of the digestive system in chronic appendicitis, chronic gall-bladder disease, may be explained. This hypothesis readily explains the extraordinary improvement in the digestive functions and the general health following the removal of an appendix so slightly altered physically that only the clinical results in many cases could persuade one that this change could be an adequate cause for such far-reaching and important symptoms. It would equally explain certain gall-bladder phenomena — the indigestion, loss of weight, disturbed functions, etc. This hypothesis may supply the explanation of the disturbance from an active anal fissure, which is a potent noci-associator, and the consequent disproportionate relief after the trivial operation for its cure. Noci-association would well explain the great functional disturbances of the viscera immediately following abdominal operations.

Post-operative and traumatic neuroses are at once explained on the ground of noci-association, with the resulting strain upon the brain cells, causing in them physical lesions. If one were placed against a wall and were looking into the gun muzzles of a squad of soldiers and were told that he must not be afraid because in nine chances out of ten he would not be killed outright when the volley was fired, would it help him to be told that he must not be afraid? Such an experience would be written indelibly on his brain. Yet this is much the same position in which some surgical patients are placed. In railway wrecks we can readily understand the striking difference between the conscious passenger and the sleeping or drunken one. In the latter persons the noci-perceptors and receptors were not aroused, hence their immunity. In the functional disturbances of the pelvic organs association and summation may play a large rôle. On this hypothesis many cases of neurasthenia may well be explained. In the behavior of the individual as a whole summation may well be a scientific expression for "nagging." Many other pathologic phenomena may be explained in a similar manner. Thus we can better understand the variation of a gastric analysis in a timid patient alarmed over his condition and afraid of the hospital. He is integrated by fear, and fear taking precedence over all other impulses, no organ functionates normally. On the same ground, one sees animals in captivity pine away under the dominance of fear. The exposure of a sensitive brain to the naked possibility of death from a surgical operation is equal to uncovering a photographic plate in the bright sunlight to inspect it before putting it in the camera. This principle explains, too, the physical influence of the physician or surgeon who, by his *personality*, inspires, like a Kocher, absolute confidence in his patient. The brain through its power of phylogenetic association controls many processes that

have wholly escaped from the notice of the "practical man." It is on the law of association that a flower, a word, a touch, a cool breeze, or even the thought of a fishing rod or of a gun, are helpful. On the contrary, any fragment of associational evidence of despair or misfortune, whether it be the corrugated brow, the gloomy silence of despair, a doubtful word, is equally depressing, and so could one add indefinitely to the symbolism that governs our daily lives. Thus, we see that through the law of inheritance and noci-association, we are able to read into the behavior of various diseases a new meaning.

OBSERVATIONS ON PATIENTS WHOSE ASSOCIATIONAL CENTERS ARE DULLED, AND ON DISEASES AND INJURIES OF REGIONS NOT ENDOWED WITH NOCI-CEPTORS.

Reversing the order, let us glance at the patient who is unconscious and who, therefore, has lost much of the power of association. His mouth is usually dry, the digestive processes are at a low ebb, the aroma of food causes no secretion of saliva. Tickling the nose causes no sneezing; he catches no cold. The laryngeal reflex is lost and food may be quietly inhaled. The entire process of metabolism is low. The contrast between man with associational centers keen and man with these centers dulled or lost is the contrast between life and death. On the behavior of the individual without associational power much might be said.

On the laws of adaptation through natural selection, phylogeny and association, one should expect no pain in abscess of the brain, in abscess of the liver, in pylephlebitis, in infection of the hepatic vessels, in endocarditis. This law explains why there are no noci-ceptors for cancer, and active noci-ceptors for the acute infections, because against cancer nature has no helpful response to offer and in certain of the acute pyogenic infections the noci-ceptors give the beneficent physiologic rest.

Could we dispossess ourselves of the shackles of psychology, and forget its confusing nomenclature, and view the human brain, as Sherrington has said, "as the organ of, and for, the adaptation of nervous reaction," many clinical phenomena would appear in a clearer light.

NATURAL SELECTION AND CHEMICAL NOCI-ASSOCIATION IN THE INFECTIONS.

Heretofore we have considered the behavior of the individual as a whole in response to a certain type of noci-influences. We have been thinking in terms of physical escape from *gross* physical dangers, or grappling with *gross nerve-muscular* enemies of the same or of other species, as related to some problems in medicine. To explain these phenomena we have invoked the aid of the laws of natural selection and phylogenetic association. If our conclusions are correct, then it should follow that in the same laws we can find the explanation of immunity, which, of course, means a defensive response to our *microscopic* enemies. There should be no more difficulty in building up by natural selection an efficient army of phagocytes, or specific chemical reactions against *microscopic enemies*, than the building up of the various noci-ceptors for our muscular defense against our *gross enemies*. That immunity is a chemical reaction is no hindrance to the application of the law of natural selection nor of association. What essential difference is there between the chemical defense of the skunk against its *nerve-muscular* enemies and its chemical defense (immunity) against *its microscopic enemies*?

The administration of vaccines becomes the adequate stimuli by phylogenetic association of a chemical nature whereby immune bodies are produced.

While mentioning this subject I will only raise the question whether or not the specific character of the inaugural symptoms of some infectious diseases may not be due to phylogenetic association. These inaugural symptoms are measurably a recapitulation of the leading phenomena of the disease in its completed clinical picture. Thus the furious immediate phenomena of pneumonia, of peritonitis, of erysipelas, of the exanthemata, show phenomena of exaggeration which are analogous to the phenomena of physical injury and of fear of physical violence. Just as the acute phenomena of fear or the adequate stimulus of noci-ceptors are a recapitulation of phylogenetic struggles, so may the inaugural symptoms of infections be a similar phylogenetic recapitulation of the course of the disease. A certain amount of negative evidence is supplied by the difference between the response of a dose of toxins as compared with a dose of a standard drug. No drug in therapeutic dosage except the iodine compounds causes a febrile response; no drug causes a chill; all specific toxins cause febrile responses, and many cause chills. If a species of animal had been poisoned by a drug over vast periods of time, and if natural selection had successfully established a self-defensive response, then the administration of that drug would cause the noci-association (chemical), and a specific reaction analogous to that following Coley's toxins might be expected. Bacterial noci-association probably operates through the same law as the physical contact of environment does. But natural selection is impartial. It must be supposed that it acts upon the microscopic invader just as well as upon the host. On this ground one would infer that the bacteria of acute infections must have met by natural selection each advance of the immunity of the host by the same law of natural selection. Hence, the fast and furious struggle between man and his microscopic enemies merely indicates to what extent natural selection has developed the *attack* and the *defense* respectively. This is analogous to the quick and decisive battles of the carnivora when fighting among themselves or when contending against their ancient enemies. But when phylogenetically strange animals meet each other, they do not understand how to conduct a fight. Natural selection has not had the opportunity of teaching them. The acute infections have the characteristics of being ancient enemies. On this hypothesis one might under-

stand the high mortality of measles when introduced into a new country. The infecting agency of measles by natural selection has become a powerful enemy of the human race, but the particular race to whom this infection is newly introduced has not had the equal advantage of building up its defense by the same law — natural selection. The variation in the effect of auto- and iso-pollution of water may be explained in a similar manner. Immunity and food assimilation are, therefore, on equal footing. May not the phenomena of anaphylaxis be studied on associational lines? Then, too, there may be chemical noci-associations of enemies now extinct, which like the ticklish points may still be active on adequate stimulation. This brief reference to the possible relation of the phenomena of the acute infections to the laws of natural selection and specific chemical noci-association has been made as a suggestion. Since the doctrine of evolution is all or nothing, I have included many phenomena to see how reasonable or unreasonable such an explanation might be.

RECAPITULATION.

The following are the principal points presented: In operations under inhalation anesthesia the nerve impulses from the trauma reach every part of the brain, — the cerebrum that is apparently anesthetized as well as the medulla that is known to remain awake, the proof being the *physiologic* exhaustion of and the *pathologic* change in the nerve cells. Under ether anesthesia the damage is at least four times greater than under nitrous oxide. Inhalation anesthesia is, therefore, but a veneer, a mask that "covers the deep suffering of the patient." The cause of the exhaustion of the brain is the discharge of nervous energy in a futile effort to energize the paralyzed muscles in an effort at escape from the injury just as if no anesthetic had been given. The exhaustion is, therefore, of the same nature as that from overexertion.

But if the nerve paths connecting the field of operation and the brain be blocked, then there is no discharge of nervous energy from the trauma, and consequently no exhaustion however severe or prolonged the operation.

Fear is a factor in many injuries and operations. The phenomena of fear probably are exhibited only by animals whose natural defense is nerve-muscular. The skunk, the porcupine, the turtle, have little or no fear. Fear is born of the innumerable injuries in the course of evolution. Fear, like trauma, may cause physiologic exhaustion of and morphologic changes in the brain cells. The representation of injury, which is fear, being elicited by phylogenetic association, may be prevented by the exclusion of the noci-association or by the administration of drugs like morphine and scopolamine, which so impair the associational function of the brain cells that immunity to fear is established. Animals whose natural defense is muscular exertion, among which is man, may have their dischargeable nervous energy used up by fear alone, by trauma alone, but most effectively by the combination of both. What is the mechanism of this discharge of energy? It is the adequate stimulus of the noci-ceptors — the electric buttons — and the physiologic response for the purpose of self-preservation. According to Sherrington, the nervous system responds in action as a whole and to but one stimulus at a time. The integration of the individual as a whole occurs not alone in injury and fear, but also, though not so strong, under other phylogenetic associations, such as the chase and procreation. When adequate stimuli are repeated in such a rhythm that the new stimulus is received before the effect of the previous one has worn off, a higher maximum is reached than is possible under a single stimulus, however powerful.

Sexual receptors are implanted into the body by natural selection, and the adequate stimuli excite the nerve muscular reactions of conjugation in a manner analogous to the action of the adequate stimulus of the noci-ceptors. The specific response of either the sexual receptors or the noci-ceptors is at the expense of the total amount of nervous energy available at the moment. Likewise, daily labor, which, in the language of evolution, is the chase, expends nervous energy. However, under the dominance of fear or injury the integration is most nearly absolute and probably every expenditure of nervous energy not required for efforts at self-preservation is arrested; hence fear and injury drain the cup to the dregs. This is the potential difference between fear and desire, between injury and conjugation.

What is the practical application of this? In operative surgery there is introduced a new principle, which removes from surgery much of the immediate risk from its trauma by establishing *anoci-association;* it places on a physical basis certain of the phenomena of fear; it explains to us the physical basis for the impairment of the entire individual under worry or misfortune; the daily noci-associations of the individual as a social unit; or a noci-influence of a part of the body. On the other hand, it explains the power of therapeutic suggestion and other influences which serve for the time to change the noci-integration, the physical basis for the difference between hope and despair; it explains some of the phenomena of Graves' disease, of sexual neurasthenia, possibly of hay fever and the genesis of the common cold. The principle is probably equally applicable to the acute infections whose chemical noci-association gives rise to many of the phenomena of the disease and explains their cure by natural immunity and by vaccines; it should teach us to view our patients as a whole; and especially should it teach the surgeon gentleness. It should teach us that there is something more in surgery than mechanics; and something more in medicine than physical diagnosis and drugs.

CONCLUSION.

The brain cells have existed during eons of time and amid the vicissitudes of change with perhaps less alteration than the crust of the earth. Whether lodged in man or in the lower animals,

they are related to and obey the same general biological laws, thus binding them, that is, ourselves, to the entire past and perform their function on the law of phylogenetic association.

So long have we directed our attention upon tumors, infections and injuries that we have not sufficiently considered the vital force itself. We have viewed each anatomical and pathologic part as an entity, and man as an isolated phenomenon in nature. May we not find in the law of adaptation under natural selection, and the law of phylogenetic association, the master key that will open to us the explanation of many of the pathologic phenomena as they have already explained many normal phenomena?

And may medicine not correlate the pathologic phenomena of the sick man with the forces of evolution, as the naturalists have correlated the phenomena of the sound man, — and disease as well as health be given its evolutionary setting?

Original Articles.

THE TUBERCULOSIS PROBLEM AS APPLIED TO CHILDREN.*

BY JOHN B. HAWES, 2D, M.D., BOSTON.

THE subject of tuberculosis is such a large one and a campaign against it involves so many important undertakings that a given community, city, state or country must devote its energies to one or two vital issues and put off until later others of nearly equal importance. In this state, for instance, a sanatorium for early cases seemed to be of first importance; next, as it became evident that in order to check the disease consumptives must be taken away from the homes of the population until they are cured or until they have learned how to live at home, the three new sanatoria at North Reading, Lakeville and Westfield were built. These sanatoria are primarily for adult consumptives; they have as yet no suitable provision for children.

The state has not forgotten, but none the less has scarcely yet touched upon, the question of tuberculosis as it occurs in children. In Europe, especially in France, the reverse is the case. There, most attention has been given to the care and education of tuberculous children. The state of Massachusetts already has more beds for its adult consumptives in proportion to its population than any other. It is rapidly realizing, and I might say already realizes, that the next step must be to make proper provision for tuberculous children, or, of infinitely more importance, to educate and care for them so that they do not become tuberculous. In certain respects this is a far easier task than that of caring for adult consumptives. Any one who has had practical experience in this matter recognizes only too well the almost hopeless task of trying to train and educate in the rules of hygiene and right living ignorant, stupid people from the slums of our cities, especially if they cannot even speak or understand the English language. Children, however, are easily trained and can just as well be taught right ways of living in the school as to learn wrong ways at home.

The objection may be raised that open pulmonary tuberculosis is comparatively rare among children. While it is true that the number of children with active open pulmonary tuberculosis is small, the number of ill-nourished and anemic children who will become tuberculous unless they are taught how to live is very great. It has become a habit to call such children "pre-tuberculous." This word, now so much in use, is a somewhat unfortunate one. We are most of us tuberculous, or at least 60 to 90% of us are. Practically every one of us has somewhere a focus of tuberculosis, happily latent, taken into the body in the early days of childhood. Thus, strictly speaking, only children in the first or second year of life may be said to be "pre-tuberculous." A more correct form would be "pre-phthisical" or "pre-consumptive." What the word really means is simply that any child who is weak, anemic or run down from any cause stands a very good chance of either having his own latent focus of tuberculosis break out and become active, or of becoming the abiding place of some wandering tubercle bacilli.

Of the total number of consumptives, those cases which occur in children probably do not amount to more than 1%. This, at least, has been my experience in looking over the applications for admission to our state sanatoria during the past year. The number of children attending our public schools, however, who are in the so-called "pre-tuberculous" stage has been found to amount to 10 to 25% of the total number. In Paris, some years ago, Professor Grancher, in an investigation of over 6,000 school children, found that about 18% were in this condition; in Boston the percentage was found to be somewhat higher, — nearly 25%, — and elsewhere the average is 15 to 25%. It is for such children that our open-air schools, fresh-air rooms, etc., are intended. A child with active tuberculosis of the lungs should not go to any kind of a school, but should be sent to a sanatorium or hospital and be treated for his lung condition; if at such an institution he can be given some instruction as well, so much the better. At the present time there is practically no state institution where such children can be sent. It is to be hoped that the state will take immediate measures to meet this need.

Coming to that other class of children, those in the pre-tuberculous stage, we find the situation only slightly more encouraging. What has been accomplished so far has been done either by private organizations or by a few cities. There are two open-air schools in Massachusetts, one in Boston and one in Cambridge. The credit of establishing the first open-air school in this country belongs to Providence, R. I. Soon after this, such a school was opened in Boston, at first under the auspices of the Boston Association for the Relief

* Read before the annual meeting of the Springfield Anti-Tuberculosis Association, Nov. 9, 1910.

and Control of Tuberculosis, but later taken over by the Consumptives' Hospital Department of the City of Boston.[1] It is now planned to have an "open-air room" in each school in the city, and thus to give a far greater number of children the benefit of this treatment.

Of greater importance, however, than a single open-air school in a city, or a few fresh-air rooms in our schoolhouses, is the question of proper ventilation and sufficient fresh air for all of our schoolchildren. It is surely a very poor policy to wait until a child has become run down and anemic before we decide that what the child needs is fresh air. We are coming to realize that the health of our children is of greater importance than the development of their brains. An open-air school will do a great deal of good to a small number of children, but it will do a far greater good in proving to the city authorities and to the public at large that well children as well as sick children need and must have fresh air.

We are doing only a small part of our work, however, if we stop at providing open-air schools or fresh-air rooms. We must not only give the children fresh air at school, but we must teach them how to live in their homes. This is the most important part of our work. In 1908 a law was passed by the legislature that tuberculosis and its prevention should be taught in our public schools. This law met with considerable disfavor and has accomplished practically nothing. In very few places has active work been done in instructing children in "tuberculosis and its prevention," or in other matters of health and hygiene. There are a few striking examples, however, of excellent work in this direction, particularly in Salem and in Fall River. In Salem, school children have been given talks on the subject of how to live, and how to avoid tuberculosis and other diseases, and have written short essays on what they have learned. Some of these I have read, and I was very much impressed with the knowledge shown on this subject. In Fall River a similar work is being carried on in the schools, particularly by means of a school tuberculosis exhibit. This consisted of a number of separate pictures, mottoes, etc., hung up in the schoolroom, demonstrating certain fundamental truths of hygiene and health.

Last year a bill was introduced into the legislature by the Tuberculosis Committees of The Massachusetts Medical Society to authorize a small appropriation for the formation of school tuberculosis exhibits. This bill was approved and signed by Governor Draper. Twenty such exhibits have been prepared under the supervision of the Board of Trustees of Hospitals for Consumptives. This did not prove to be an easy task. Such an exhibit should be cheap, so as to be within the reach of small towns and villages. It should be light, so that it can be easily handled and moved from room to room. It should be compact, so as to require little work in setting it up and taking it down, and, last, the lessons it teaches must be simple and striking. These features I have tried to combine in our school exhibit, with what success remains to be seen. It should be understood that these exhibits are in the nature of an experiment, and that the Board of Trustees will be only too glad to receive criticisms and suggestions as to the makeup of future exhibits. The price of each exhibit is $35. It consists of two large frames about 4×5 feet, which fold together so as to form a strong, compact box. This box or frame can be easily handled by two men, and can be locked and shipped with perfect safety. Each side of the frame contains twenty-four 8×10 inch smaller frames, in which are set pictures or mottoes. The pictures are covered with celluloid instead of glass. There is a row of mottoes along the top, and another row along the bottom, stating simple truths in regard to various questions of health, hygiene, tuberculosis and how to avoid it, etc. There are photographs, plainly labeled, showing various bad tenement conditions, dusty, dangerous trades, sweat shops, good and bad workshops of various kinds; there are pictures of sanatoria, tents, balconies, etc., for home treatment; pictures of outdoor schools, playgrounds, swimming pools and other similar subjects. Any mention of figures or statistics has purposely been omitted. A pamphlet has been prepared, which will be widely distributed, to go with the exhibit, with suggestions as to its demonstration. It is planned, where possible, to have tuberculosis societies buy this exhibit, so that with the money we may prepare others. Already this exhibit has been placed in Boston, Brookline, Cambridge, Canton, Chelsea, Clinton, Fitchburg, Gardner, Holyoke, Pittsfield, Springfield and Worcester.

We hope that before long many other anti-tuberculosis societies will realize the need of getting at the children by some such method as this. I would summarize this subject as follows:

1. There is practically no place in Massachusetts where young children with open pulmonary tuberculosis can be sent and properly cared for.

2. There are not more than one or two open-air schools where the many thousand anemic and run-down "pre-tuberculous" children can get fresh air and sunshine in addition to a knowledge of reading, writing and arithmetic.

3. Although there is sufficient legislation on the subject, there is at present very little instruction given to young children on hygiene, right living and the prevention of tuberculosis and other diseases.

As remedies for this state of affairs, and as an outline for future work of anti-tuberculosis societies, I would suggest the following:

1. Every effort should be made to get the state and local authorities to provide adequate facilities for the care of children with pulmonary tuberculosis. One effective way of doing this is to make application for the admission of all such cases to the state sanatoria. The strongest argument which the board of trustees of the state sanatoria can use before the legislature is a long list of applications from children for whom there is no place,

[1] This institution is no longer a school, but a day camp or hospital for tuberculous children.

nor for whom, with the present appropriation, can a place be provided.

2. Earnest and intelligent co-operation with the local school board to provide an outdoor school or fresh-air room for pre-tuberculous children; if such a school or room is established, the attention of the city legislature and board of health should be called to the good which it does.

3. It should be insisted upon that the terms of the 1908 act, that "tuberculosis and its prevention shall be taught in our public schools," etc., be complied with. This can best be done by means of tuberculosis exhibits prepared along the lines of those now loaned by the state, placed in all the public schools, and demonstrated wherever possible by doctors, nurses or social workers.

I know of no more fundamental or important work for any anti-tuberculosis society to take up than this.

THE THERAPEUTICS OF LIGHT.*

BY HERBERT MC INTOSH, A.M., M.D., BOSTON.

THE pioneer work of Finsen has served to direct attention in recent years to the utility of light therapeutics. Though his labors were chiefly confined to the treatment of lupus, in the control of which he achieved brilliant success, later students have found that light is applicable to the treatment and cure of a wide range of troubles. The purpose of this paper is to indicate, first, why, upon theoretic grounds, it is fair to conclude that light should exert an important effect upon the cure of disease, and, secondly, to indicate in a general way some of the uses to which it may be put.

It is scarcely necessary to say by way of introduction that light is the condition of terrestrial life. Whatever the life principle is, and it is still a profound mystery, it cannot manifest itself except under conditions made possible by light, and in the preparation of the earth as the habitation of man the precedent evolution of the vegetable kingdom by light was essential.

What a mighty force sunlight is, is made manifest when we reflect that by means of evaporation millions of tons of water are daily lifted into the atmosphere to descend as rain, and fill the water courses which in turn will ultimately be called upon, as the coal in our mines — the product of the sun's mighty activity in the carbonaceous period — is consumed, to supply power for industrial and domestic uses.

In like manner the same silent energy in the springtime lifts the sap from the roots into the trunks and branches of trees and into the stems of countless forms of vegetable life; in the aggregate an uncomputed weight of life-bearing fluid.

The influence of sunlight upon protoplasm is illustrated by many chemical phenomena. Thus bilirubin is oxidized into biliverdin by sunlight even when air is excluded and cl_2 unites with C_2cl_4 in sunlight forming C_2cl_6. Chlorine unites with hydrogen in sunlight with explosive violence to form hydrochloric acid.

The fermentative effects of light are very notable. Thus Niepce de Saint Victor and Corvisant found that a 0.1% solution of starch exposed during six or eight hours to the summer sun becomes transformed into sugar, no change occurring in the dark. In like manner glycogen is transformed into sugar more rapidly in the light than in the dark.

Passing now into the vegetable world, we find that under the influence of sunlight there is formed in the phanerogams or green-leaf plants a product which is called chlorophyll, by means of which the plant is enabled to break up the molecule of carbon dioxide and fix carbon in the form of starch into its own structure, thereby supplying an indispensable food for the sustenance of animals as well as material for the construction of dwellings.

This too brief review of the physical and physiological effects of light in nature prepares us to consider what effect it may have upon human life.

ABSORPTION OF LIGHT BY BLOOD.

Freund squeezed a drop of blood from the tip of his finger upon a quartz film, surrounded by a rim of paper 0.17 mm. wide, and covered it with another quartz film. The layer of blood completely filled the space of 0.17 mm. and showed uniformly red. The spectrum was photographed through a glass spectroscope by means of sunlight. The exposure lasted five minutes and produced no effect upon the photographic plate from lines F ½ G in the direction of the ultraviolet.

A second experiment was made upon the web of a live frog's foot in which the blood stream was flowing. The foot was placed in front of the slit of the spectroscope and illuminated by sunlight. The exposure lasted five minutes. Under these circumstances the line H ($\lambda = 3{,}964$ Å) was absorbed. This is very near the edge of the ultraviolet. From this experiment it is clear that blood absorbs light. It is for this reason that Finsen found it necessary in his treatment of lupus to employ compression upon the area treated in order to squeeze out the layer of blood which acted as a screen to the chemical rays.

Finsen's historic experiment with aristo paper placed behind the lobe of his wife's ear and illuminated for five minutes by the concentrated light of an arc lamp established the same fact. Without compression there was no effect upon the paper, but when the ear was compressed between two glass plates until it appeared bloodless, the aristo paper was blackened after an exposure of twenty seconds. From these experiments we may safely infer that blood absorbs light.

Quincke[1] found that hemoglobin gives off its oxygen more quickly in the light than in the dark. Therefore, light increases the oxidation of the tissues.

This action is somewhat analogous to the influence of light upon the molecule of carbon dioxide in the presence of chlorophyll. Here the atom of carbon is dissociated from the bivalent

* A paper read before the Brookline Medical Club, Nov. 9, 1910.

[1] Pflüger's Archives, 1894, vol. lvii, p. 134.

oxygen which is released, while the carbon in the form of cellulose is fixed in the cellular structure.

Fluorescence is the property which some substances have of absorbing higher frequencies and converting them into lower frequencies. Among these substances are blood and serum. These are, therefore, radiant energy transformers.

What is the significance of this fact that blood and serum like chlorophyll are fluorescent? It has been frequently affirmed, and correctly, that the ultraviolet rays have little penetration, and yet it is generally believed that these rays possess the highest virtue in phototherapeutics. It is certain that Finsen attached the greatest value to them in his therapeutic studies. If, now, they have but slight power to penetrate the skin, their value must be limited to very superficial conditions. Here we are met, however, by the fact discovered by Dr. Henry Bence Jones, in 1866, that blood and serum are fluorescent media. By this is meant that they have the property of absorbing light at one rate of vibration, as, for example, ultraviolet, and transforming it into a lower rate. They are, therefore, transformers of radiant energy, and we are justified in assuming that the absorption of the rays of higher refrangibility by the epidermis is not synonymous with their extinction, but rather with their transformation into another rate of light energy.

Having shown, then, that the ultraviolet frequencies which have little power of penetration are absorbed by the blood stream and have the ability to produce fluorescence and thus profoundly affect the chemistry of the tissues, let us turn our attention to the visible chemical frequencies. These include the upper end of the visible spectrum marked by the blue, indigo and violet. Now, it has been frequently proved that these chemical frequencies of the visible spectrum have marked power of penetration.

Thus Gadneff introduced under the skin of cats and dogs small tubes containing silver chloride. After exposure to sunlight the chloride of silver was found to be blackened, while no change occurred with captive animals kept in the dark.

Darbois[2] put a piece of photographic paper between two watch glasses. He then placed the watch glasses in the mouth against the buccal membrane. The light from a Finsen concentrator was then thrown upon the cheek. The photographic paper was blackened after one minute.

Gebhard[3] imbedded his hand in plaster of Paris, leaving only the back exposed, having placed a photographic plate in the palm. The hand was exposed for twenty minutes to the light of an electric arc lamp. The plate was afterwards developed and showed blackening with outlines of hand and fingers.

Solucha[4] placed strips of silver bromide gelatine under the skin of dogs and sewed up the wounds. The light from a ten to twenty-ampere lamp at a pressure of from fifty to sixty-five volts was thrown upon the parts with the result that decomposition of the silver bromide occurred in one half a minute.

[1] Traitement du Lupus Vulgaire. Thèse de Paris, 1910, p. 80.
[2] Die Heilkraft des Lichtes. Leipsig, 1898, p. 131.
[4] Quoted by Freund.

When the tubes were placed behind the ear or in the mouth against the check, decomposition soon occurred. When, however, the tubes were placed deep in the gluteal muscles, the light had no effect. When placed behind the forearm or in the closed hand there was no decomposition after fifteen minutes.

When, however, the current was increased to twenty amperes at 110 volts, the sensitized gelatine film was chemically altered when placed on the back of the neck or on the side of the body, the rays being thrown perpendicularly upon the film through the tissues.

I placed an x-ray film back of a dental skiagraph and put them between two watch glasses in a dark room. They were then introduced into the mouth between the teeth and the cheek. I then had the light of an arc 2,000 candle-power lamp thrown upon my cheek for about ten minutes and secured a very good picture of the dental skiagraph upon the sensitized film. This was obtained from the rays passing through the cheek. We have thus shown that visible chemical frequencies penetrate the body, and that the ultraviolet rays through their ability to excite fluorescence in the serum and blood stream are converted into chemical rays of lower frequencies.

That the luminous frequencies are capable of penetration is evident from the simple diagnostic procedures employed in the different specialties. Thus a 4 candle-power lamp placed in the mouth is capable of illuminating the maxillary antra; placed in the superior anterior angle of the orbit is capable of illuminating the frontal sinus; when introduced into the stomach by means of the gastrodiaphane illuminates the epigastric and surrounding regions; and when carried into the vagina irradiates an area extending up to the umbilicus.

From this brief survey of the field it is clear that all the frequencies penetrate the tissues, not only the red, yellow and orange, but the highly useful chemical frequencies of both the visible and invisible regions.

Which of these radiations are the most useful in therapeutics? Here again we recognize a general agreement as to the value of the heat waves, so that no need exists to emphasize the importance and value of the rays of greater lengths. Both theoretically, however, and practically, their utility is much less than that of the high rates of vibration. It is only as the wave lengths begin to approximate the diameter of the molecule that the most profound effects are discernible. Thus, while in plant life it is the yellow rays that are chiefly concerned in the function of assimilation, breaking up the carbon dioxide molecule, depositing carbon in the cellular structure and releasing oxygen, it is to the chemical rays that all excitomotor phenomena are due. The rays of greater wave length pass through the tissues practically without change except to impart a portion of their heat to the structures upon which they impinge. In like manner a wave upon the surface of the water is not destroyed

by an object of smaller size, but will fold itself around it and pass on unbroken, but if it be near the size of the obstructing object it communicates its vibration to the opposing object and is destroyed. In like manner the shorter vibration of the chemical portions of the spectrum surrender their energy in the tissues upon which they strike and thus produce their beneficial effects.

The absorption of oxygen by the blood under the influence of the chemical rays and the fluorescence of blood and serum under the influence of the more refrangible portion of the spectrum go far toward establishing the proposition that it is to the upper end of the spectrum that we must attribute the peculiar value of light treatment. I desire to emphasize this point because it is frequently affirmed by those who have given little consideration to the therapeutic uses of light that the value of light treatment resides in the impartation of heat to the tissues. This is measureably true. With the exception of thermopenetration, which has lately been introduced to the profession and which raises the temperature of the tissues in the path of the high-frequency current from eight to ten degrees, there is no method comparable to light for the production of heat in the tissues. The incandescent bath produces sweating in half the time required by a Turkish bath. This is in spite of the fact that the air in an incandescent bath is but little above the temperature of the body. In a Turkish bath the body is enveloped by a blanket of hot air and the temperature of the body is raised by actual contact with the source of heat. In an incandescent bath the radiant heat and light rays from incandescent bulbs traverse the air without impartation of energy, impinge upon the body, penetrate the tissues and produce physiological changes. The chemical portions of the spectrum undoubtedly produce metabolic effects, though it is usual to regard the incandescent bath as primarily a heat bath. It is in any event a much more agreeable form of heat bath than the Turkish bath, and patients quite invariably prefer the incandescent bath to the ordinary hot air bath.

While, however, it is to chemical rays that the peculiar value of light treatment must be ascribed, for general purposes the whole spectrum of white light is to be preferred. There can be no objection to using, and in most cases there is great value in including, the luminous and heat rays in the treatment of disease. Special indication, however, may call now for the exclusion of the heat rays and now for the exclusion of the ultraviolet rays. For general purposes, however, the full spectrum of white light, such preferably as is furnished by an 2,000 candle-power arc lamp, should be employed, and when only one lamp is used, there can be little doubt that this furnishes the best result. It is not denied, however, that the incandescent lamp of high candle power is a very useful agency for general therapeutic purposes.

Having directed attention to some considerations which should lead us to infer that light should *a priori* exert a favorable influence upon disturbed bodily conditions, let us sum up briefly some of the physiological effects of light which have been experimentally proved.

It is a matter of common observation that the skin may become irritated under the influence of the sun's rays and sustain burns under continued exposure which may produce great discomfort. Thus solar erythema and snow blindness are illustrations of the irritant effects of the ultraviolet rays of the sun.

Similarly, the tanning of the skin in summer time testifies to the influence which the sun's rays exert upon the pigment-producing cells of the *rete mucosum*.

Sweating occurs much more rapidly in an incandescent bath cabinet than in a Turkish bath, yet the temperature in the latter is much higher. Light, therefore, has a marked influence upon the sweat glands.

The effect of the impingement of light rays upon the body is to increase superficial hyperemia, and as a determination of blood to the surface cannot take place without its withdrawal from the interior, it follows that when large areas of the body are exposed to light energy there must be a depletion of the viscera.

Light energy is destructive of bacterial life outside the body. Since, however, this destructive action is due chiefly to the ultraviolet rays, and these are not highly penetrative, we are not permitted to affirm a directly bactericidal action in living tissue. I have already pointed out, however, that blood absorbs light, that the tissues fluoresce under the influence of light, and that the hemoglobin gives up its oxygen to the tissues more readily under light exposure. Herein may be perceived the damaging effect of light upon bacteria in the tissues. For as they are anaerobic, the production of oxygen is unfavorable to their growth and the increased activity of tissue combustion produced by light renders the nutrient media in which they live less favorable to their propagation.

The increased absorption of oxygen by the blood under the influence of light leads to increased activity in tissue destruction, and, therefore, augments the elimination of CO_2. In confirmation of this proposition Molschott,[5] Selmi and Piacentini[6] have shown that dogs, hens, pigeons and frogs eliminate less carbon dioxide in the dark than in the light.

In like manner S. Goodnow has shown that human beings and animals secrete more urine, urea and chlorides when continually exposed to daylight than when remaining in the dark. We may thus fairly conclude that light energy increases urinary elimination.

When the nude body is exposed to light energy there is a rise in temperature and an acceleration of both pulse and respiration. These observations of Goodnow have been repeatedly confirmed by the writer. Thus in a recent case treated in the incandescent bath for obesity, the temperature quickly rose from normal to 101°, and the pulse from 80 to occasionally 140. We may conse-

[5] Wien. Med. Wochenschr., 1885, no. 43.
[6] Rend. Conti. del Reale Instituto, 1870, vol. iii, Ser. ii, p. 51.

questly affirm that light tends to raise the normal temperature and accelerate the pulse-rate. It should be remarked, however, that these results are obtained from the whole spectrum, colored rays tending to lower the pulse, particularly the violet.

Sudden exposure to bright light may produce violent sneezing. This is a reflex from the sensory fibers of the trigeminus distributed to the Schneiderian membrane. Hence we may conclude that light energy may produce motor excitation.

Light markedly increases the number of red blood cells. This has been repeatedly demonstrated after an incandescent bath. It also increases the amount of hemoglobin. Under the influence of light oxyhemoglobin more readily surrenders its oxygen to the tissues, thereby stimulating combustion of the tissues. We have already shown that the solid constituents of the urine are increased, that sweating is promoted and that the elimination of CO_2 is augmented.

Cretinism occurs in the dark valleys where the rays of the sun never penetrate, and amenorrhea afflicts the Eskimo women during the long Arctic night. It is very evident, then, that sunlight promotes metabolism.

It would be profitable to spend some time, if it were at my disposal, upon the interesting subject of blue light. Many of you will recall the interest excited among the laity, in the 70's of the last century, by the publication of two books upon the use of colored lights. The first, published in 1876 by Gen. A. J. Pleasonton, of Philadelphia, a veteran of the Civil War, is entitled "The Influence of the Blue Ray of the Sunlight." The other is entitled "Blue and Red Light, or Light and its Rays as Medicine." It was written by a physician, Dr. S. Pancoast, of Philadelphia, and published the following year. These books have for us to-day simply an antiquarian interest. The first is highly fantastic, and neither has much scientific value. They excited, however, a great deal of interest, and all over the country houses were supplied with colored lights; generally blue or violet, sometimes alternate red and blue. On Beacon Street opposite the Common you may still see several stately dwellings ornamented by colored lights which are a memorial of the interest excited by these early writers. These books are now out of print, but may be found in the Boston Public Library.

The fact remains, however, that there is a therapeutic value attached to the blue and the red ray. Thus it is undeniable that the blue ray exerts a constringing effect upon the blood vessels and a soothing influence upon the peripheral nerves, and there is now a general agreement that the blue light is analgesic and in some instances anesthetic, and much clinical proof can be furnished to sustain this proposition. For the relief of superficial neuralgias, as, for example, trigeminal neuralgia, the results are sometimes very astonishing. Myalgia and arthritis similarly often yield promptly to the blue ray. Von Jaksch [7] dwells upon the soothing effect of blue light and uses blue chimneys upon his lamps in his sick wards. The healing of wounds is promoted by the blue light, and Pansini has shown by an elaborate study fortified by ergograms that blue light increases the power to do muscular work.

The efficacy of red light in smallpox depends upon the exclusion of the blue ray rather than upon any virtue residing in the red ray. The chemical ray promotes suppuration. If, therefore, the blue ray is excluded, pitting is prevented and the comfort of the patient promoted by the admission of red light. The use of the red ray in smallpox is associated with the name of Finsen, who was an enthusiastic advocate of this method of managing variola. He was not, however, the first to employ red light in this disease. John, of Gaddesden,[8] who died in 1361, was the author of the first medical treatise in the English language. The son of King Edward I, who was afflicted with smallpox, was under his care. He was placed in a bed with scarlet hangings and red blankets and counterpane. His throat was gargled with mulberry wine and his mouth washed with the juice of red pomegranates. The royal patient recovered without the usual disfigurements attending this dread disease. In Queen Elizabeth's time the value of red curtains and red glass was strongly affirmed by certain physicians, who, however, were regarded by the orthodox physicians of the day as charlatans.

Finsen, while reading in the library at Copenhagen, ran across an account of some sailors, suffering from smallpox, who were confined in a darkened room at New Orleans and recovered without pitting, and was thus led to recommend the exclusion of the chemical rays in the treatment of this disease. Finsen [9] condemns unsparingly the treatment of smallpox cases without the exclusion of the chemical frequencies of light.

Apart from these obvious uses of colored lights, there is undoubtedly a psychical aspect to the problem. Blue is a so-called "quiet color." It is associated with the quiet of the evening, the calm of the twilight and is the symbol of peace. Red, on the other hand, is a so-called "loud color" and is associated with the activity and bustle of the day and is the symbol of conflict and passion. The bull is maddened by it; unchaste women select it as the emblem of their unhallowed traffic, and the ancient temples of Venus were richly adorned with it.

More or less study of the effects of colored lights upon insane patients has been made, somewhat confirmatory of the conclusions already noted. Maniacal patients have, in some instances, been quieted by blue lights, while those afflicted with melancholia have been to some extent relieved by red. At the present stage of experimentation it would not be safe to affirm either uniform or positive results. In some instances they have been negative, as in the experiments of Von Paquet of Moscow.

The value of sunlight in surgery is well illustrated in a paper read at the Second International

[7] xx. Congress für Innere Medizin, 1902.

[8] Phila. Med. Jour., Dec. 7, 1901.

[9] Brit. Med. Jour., June 6, 1903.

Congress for Physiotherapy at Rome, Oct. 13–16, 1908, by Dr. Oskar Bernhard Moritz.[10] The remarkable results which this surgeon has attained in the healing of wounds, ulcers and skin affections he attributes (*a*) to the increased proportion of ultraviolet rays contained in the sunlight of elevated regions. Thus Oberengadin in the Alps, where the results reported were secured, is 1,800 meters above the sea. Here the weakening of the sun's rays through filtration through the atmosphere is enormously decreased and the ultraviolet rays possess greatly increased power. It is to this circumstance that Dr. Moritz attributes the freedom of the mountaineers of the high Alps from lupus and skin cancer, affirming that a chronic solare eczema renders the skin resistant to the invasion of bacteria. (*b*) To the remarkable dryness of the atmosphere in these elevated regions. Here again, however, we have an explanation in the increased ultraviolet content of the sun's rays, since even small quantities of water vapor act as a screen to the passage of the ultraviolet ray; and (*c*) to the absence of bacteria from these elevated regions. A little reflection here will again make clear that the absence of bacteria from mountain air is due to the increased proportion of ultraviolet rays in mountain sunlight.

Dr. Moritz cites the remarkable effect of sunlight upon a wound made in extirpating the spleen, which had broken open on the eighth day after operation, holding only by the peritoneal edges. In spite of curetting and cauterizing it had made no progress in healing. After an hour and a quarter's exposure to sunlight there was a distinct improvement, the granulations were markedly better and stronger and the great gaping wound under this treatment healed quickly. In grafting he simply lays the grafts in the sun upon the dry granulating surface. Within a quarter of an hour it is usually impossible to detach the grafts from the underlying tissue without exerting considerable force.

In like manner drainage becomes unnecessary for the most part in deep wounds, since insolation both dries out the deep pockets and incidentally destroys bacteria. Ulcers and cavities become through insolation in a short time pure and dry. They are quickly covered with a shiny fine parchment-like skin which usually lasts for from twenty to thirty hours, when the wounds are again exposed to sunlight. Any one who desires may readily verify these statements. A wound exposed to sunlight or the electric arc is quickly covered with a parchment-like membrane and the edges are crumpled and drawn together. Frequently no dressing is required.

With equally favorable results Dr. Moritz employs the insolation method in cases of tuberculosis of the skin, glands, joints, bones and larynx.

It is important to observe that in the method of Dr. Moritz, the rays of the sun are not concentrated, neither is there any exclusion of the heat rays, for which he claims under proper conditions both chemical and bactericidal power. In the winter the direct rays of the sun are reinforced by reflection from snow and ice. He reports cases of scrofuloderma which had resisted all other therapy for three years but yielded to sunlight treatment after three months, and two severe cases of lupus, one of which had involved the soft palate and the vocal cords. In cases of bone and joint tuberculosis he combines insolation and immobilization, placing the disabled part in a plaster of Paris jacket and exposing it to the sun's rays through openings cut in the dressing.

Among the other surgical conditions for which sunlight treatment is valuable, he mentions crushing wounds, ulcera cruris, perforating ulcer of the foot, wounds caused by infection, as abscesses, paronychia, furuncle, carbuncle, soft ulcers, buboes, and syphilitic ulcers associated with specific treatment.

It is possible that the very remarkable results obtained at high elevations could not be secured at lower elevations, and that there is a peculiar virtue in sunlight at these high altitudes. It is nevertheless true that sunlight treatment can be employed with advantage in many cases which are carefully excluded from the light by dark dressings, and particularly in those cases which have shown themselves rebellious to ordinary treatment.

It remains for me to state briefly the apparatus required for light treatment. The most generally useful apparatus for office use is in my opinion the arc lamp of 2,000 candle power. This furnishes the whole spectrum, including the ultraviolet rays, upon the importance of which I have sought to lay emphasis in the preceding pages. It furnishes a tremendous volume of rich chemical rays both visible and invisible, as well as abundant heat rays. Screens may be used to furnish blue or red light.

A substitute for the arc lamp is the high power incandescent lamp. Here, however, the ultraviolet rays are entirely cut off by the inclosing bulbs, and the treatment is necessarily to a large extent a radiant heat treatment. This is, of course, of great value, but manifestly inferior to a treatment which utilizes the whole spectrum as does the arc light.

Next there is the incandescent bath cabinet, a most useful apparatus, in which the nude body of the patient is exposed to the radiance of fifty or more sixteen-candle-power incandescent bulbs. With this apparatus it is necessary to combine certain hydriatic procedures in order to produce a suitable reaction and prepare the patient for exposure to ordinary temperatures.

The arc bath cabinet is also a highly useful apparatus. This is a cabinet six or more feet in length and of suitable width and height. It contains a cot upon which the patient lies nude and exposed to the rays from two powerful arc lamps. It is an artificial sun bath.

For dermatological uses particularly, there are lamps after the pattern of the Lortet et Genoud lamp designed to take the place of Finsen's enormous concentrators. These have quartz

[10] Jahrbuch über Leistungen und Fortschritte auf dem Gebiete der physikalischen Medizin, 1908, p. 77.

windows to permit the escape of the ultraviolet rays so important in most therapeutic treatments. Then there are small lamps with iron or other metal electrodes and quartz windows which are almost exclusively ultraviolet lamps.

Finally, there is the Kromayer mercury vapor lamp in which a current of electricity is passed through volatilized mercury, producing a peculiar greenish-blue light. This is provided with quartz windows for the egress of the ultraviolet rays. It has been used chiefly abroad for therapeutic purposes and has recently been adapted to the sterilization of potable water. It is attached to the water faucet and automatically and absolutely destroys all bacteria, rendering water thus irradiated safe for domestic purposes.

Summary. In this brief sketch of the therapeutic uses of light, I have endeavored to show

(*a*) That light penetrates the tissues.

(*b*) That in so doing the chemical rays produce fluorescence of the blood and serum which is reduced or absent in pathological states, as, for example, in malaria.

(*c*) That the action of light upon the blood stream reduces oxyhemoglobin and thus stimulates the chemistry of the tissues, that is to say, improves metabolism.

(*d*) That the most useful portion of the spectrum is not the heat or luminous portion, but the chemical portion.

(*e*) That the physiological effects of light flow easily from the marked penetration of the light rays, particularly the chemical portion of the spectrum.

(*f*) That the blue light has a peculiar field in the control which it has over pain and hyperemia.

(*g*) That red light by its exclusion of the chemical rays plays an important rôle in the treatment of smallpox.

Finally, I have given some illustrations of the efficient action of light, of artificial sunlight, and concluded with a brief description of the apparatus employed in light therapy.

My aim has been principally to show that the use of light for therapeutic purposes is rational and that it is a most important addition to the physician's equipment for the management of disease.

EXTRAPERITONEAL CÆSAREAN SECTION.

BY JAMES LINCOLN HUNTINGTON, M.D., BOSTON.

To realize why this operation was revived and why it was received with such enthusiasm in Germany, one must first bear in mind the condition of German obstetrics. Normal labor is there conducted almost entirely by midwives, who are required by law to call in the obstetrician when complications arise. This results in what we might call ultra-conservative obstetrics — cases come late to operation. The midwives, in spite of their thorough training in the schools under the supervision of the government, and their rigid examinations, are far from being keen diagnosticians or careful practitioners. The number of fatal cases of puerperal fever in Germany annually is still over five thousand. The first indication for operative interference taught the German student in obstetrics is fever during labor (a condition very rarely met with here in America). This is the commonest complication for which the obstetrician answers the cry for help from the German midwife; he comes and finds all too often on examination a contracted pelvis, os fully dilated, membranes ruptured and head above the pelvis brim. What is to be done? The answer was, and still is, in most German Kliniks, craniotomy. Yes, craniotomy on the living child has been far more common in Germany than here in America, and it is because of the frequency of infection during labor for which the midwife is the most constant contributing factor.

But if any one has done this operation, or even seen it executed, he will understand with what feverish ardor the obstetricians in Germany sought for a solution which would save them from performing this hideous operation. The operation of widening the pelvis was looked upon with favor for these cases until the fatalities following even the smallest wound in the vagina — and sometimes apparently without this break in technic — forced the obstetricians to regard infection as the strictest indication against this operation. Then the indefatigable researches into the realm of surgical possibilities revived this forgotten operation of entering the gravid uterus through a wound shut off from the peritoneal cavity.

Before deciding whether or not this operation has solved the problem they were facing, let us review the history of this surgical procedure.

In 1807 Jörg, viewing the high mortality of Cæsareans in the days before antiseptics, conceived the idea of a modified Cæsarean section by opening the vagina and cervix through a low lateral abdominal incision. Acting on his suggestion Ritgen modified this by not opening the vagina, but pushing the bladder to one side and opening the uterus extraperitoneally. In 1821 we have the account of his first attempt at such an operation — an attempt merely, because of uncontrollable bleeding which caused him to change the operation to the classical Cæsarean to save the child's life. The patient died two days later from hemorrhage.

In 1822 Physick, of Philadelphia, in a letter to Dr. Horner, proposed a similar operation, only that he used a transverse incision above the symphysis pubis instead of the median longitudinal incision which Ritgen employed. Again in France in 1823 we have an account of a similar attempt at an extraperitoneal Cæsarean changed during the operation to the classical because of difficulties.

In 1870 Dr. T. G. Thomas, of the College of Physicians and Surgeons in New York, ignorant of previous work along this line, conceived the idea of an extraperitoneal operation and performed such an operation on the cadaver of a young woman who died at term. He found the operation so simple that he resolved to employ it upon the next favorable opportunity. Shortly after this

he did perform the operation on a patient practically moribund with pneumonia. The object in this case was merely to save the child. He delivered a premature infant that expired an hour later. One of his colleagues, Dr. Skene, of Brooklyn, was much interested in the operation and on Oct. 29, 1875, performed the first successful extraperitoneal Cæsarean section on a primipara long in labor with a much contracted pelvis. The incision was made from the pubis to the right anterior superior spine sweeping upwards above Poupart's ligament. Peritoneum lifted up, exposing the junction of the vagina and cervix. An incision was made at this junction and the child delivered through the wound fifteen minutes after making the skin incision. The baby lived, and although the bladder was opened during the operation, the patient made a good recovery and was successfully operated upon for vesico-vaginal fistula one month later.

Other operations followed and Thomas reports cases with four living babies and a maternal mortality of 40%. In 1892 we have the same author discarding the operation in favor of the classical Cæsarean with aseptic technic.

Dr. Whiteside Hime, in Sheffield, England, was the first European to adopt this new precedure in July, 1878, — the baby lived but the mother died.

Dr. Edis, in London, the same year attempted the operation, but again the mother died.

In 1881 Fritz Frank, realizing the danger of peritonitis following migration of infection from the uterus into the peritoneal cavity, performed a Cæsarean with the incision low down in the anterior wall of the uterus and covered his wound in the uterus by building a tentlike fold connecting the broad ligaments and the parietal peritoneum.

Now we pass from the historical to the present, for the following operations, with but little modification, are in vogue to-day and all have their adherents.

Fritz Frank continued at work on the problem even after aseptic surgery had made the classical Cæsarean so safe an operation in clean cases. Could not some operation be devised for infected cases or for cases so long in labor that the danger of infection made the classical Cæsarean out of the question? On Jan. 14, 1906, he performed the following operation:

Trendelenburg position, abdominal incision transversely two fingers above the symphysis, 12 cm. in length; a like incision was made through muscle and parietal peritoneum. The bladder was now drawn forward exposing the lower portion of the visceral peritoneum covering the anterior surface of the uterus; this was also incised transversely for a like distance. Taking the upper margin of this cut in the visceral peritoneum, it was now freed from the uterus and directed upwards, exposing the lower uterine segment. This flap of visceral peritoneum was now united to the upper margin of the parietal peritoneum with a row of interrupted sutures. This left the bladder entirely separated from the peritoneal sac, and that organ was then pushed downwards exposing the lower uterine segment much thinned out. This was incised by a tranverse incision 8 cm. in length. The uterus was emptied, the child was alive and easily delivered through the incision. Uterus and abdominal wall closed in layers to wick, which was placed to drain the uterus. This wick was removed on the fourth day, after which the convalescence was uneventful.

In reporting a series of seven cases, Frank claimed that this operation was superior to the classical Cæsarean because it was less bloody for the following reasons: the distribution of blood to the uterus is mainly to the body of the uterus and to the sides of the cervix; the lower uterine segment has a very poor blood supply. Also the placenta, except in abnormal cases, is situated above the lower uterine segment and so the incision does not enter the placental site, which is a very common minor complication of the classical Cæsarean. He also claims that the danger of adhesions between the intestines and uterus is obviated. Finally, that with drainage the operation is applicable to infected cases.

This operation was the first to receive widespread acceptance, and with this came criticism which has continued to the present day. Cases died of peritonitis, and many authorities claimed that this method did not offer any great protection to the peritoneal cavity. Sellheim presented an operation similar to this in 1908 with the change of a vertical median incision both in the abdomen and the uterus instead of the transverse; this he advised for clean cases only. For infected cases he advised a permanent uterine fistula which would heal by granulation.

Meanwhile a pure extraperitoneal operation was devised by Latzko in contra-distinction to this transperitoneal operation. His technic is as follows: For clean cases he finds no advantage in either the transverse suprasymphysial or the median incision. In cases where there is a fair chance of infection, he prefers the median incision as safer. He advised filling the bladder with 150-200 ccm. of fluid before beginning the operation. He advocates pushing the bladder from the left towards the median line, as Martin has pointed out that at the end of pregnancy the bladder is pushed somewhat to the right, so that the left border of the bladder is approximately in the median abdominal line. In pushing the bladder off from the cervix very little bleeding is met with; a single hemostat is all that he has ever found necessary. The bladder and the right rectus are drawn to the right by a flat retractor. The thin drawn-out lower uterine segment and cervix are now exposed. A median incision is made in the cervix extending just through the boundary of the lower uterine segment. By this method one does not have to worry about the ureters and the large vessels.

After delivery of the child it is well to wait for at least one uterine contraction before beginning to repair in order that the parts may assume a little more normal relationship. In all clean cases he advises complete repair of all the tissues, sewing the abdomen up tight, but in infected cases he

advises putting a wick to the angle of the retrovesical space. Latzko was able to perform this operation to the delivery of the child in nine minutes, — consuming twenty minutes for the entire operation.

This operation seemed to have solved the problem. But as the number of operations on infected cases increased, the mortality rose. The technic is so difficult that often the peritoneum will be opened or so badly bruised that it loses the ability to longer resist bacterial invasion. Then, too, the bladder is often opened. Latzko still firmly maintains that infection of this region is not so likely to occur as is peritonitis when the peritoneum is opened, because of the greater resistence of these tissues. Also, that when infection does occur, it is not such an alarming complication as is peritonitis. But many disagree with him. Bumm, who three years ago considered that this operation had absolutely supplanted the classical Cæsarean, stated last March to the Obstetrical Society of Berlin that this operation, while he personally preferred it, had very little to offer over the classical method. He felt assured that this operation should only be employed in clean cases.

Walthard, in Frankfort, finds no advantage in the extraperitoneal Cæsarean section. He prefers entering the lower uterine segment because of the advantages this has to offer, but he makes no attempt to perform an extraperitoneal operation, feeling assured that sepsis in the retrovesical space is not only as likely to occur as peritonitis, but is as dangerous. He advises craniotomy in infected cases.

Döderlein uses practically the same technic as that of Latzko, but he considers the operation only indicated in clean cases where pubiotomy is contra-indicated, namely, in cases where there is great rigidity of the soft parts, as in most primiparæ, or where the pelvis is too small.

Hofmeier points out that in many of these cases the amniotic fluid has entirely escaped for a long time and the uterus has shut down on the child so firmly that all attempts at delivery are difficult and forceps or version through the abdominal wound often have to be resorted to. He also points out that in cases where a rapid delivery is imperative to save the child's life, the classical Cæsarean is the operation of choice, because no other method offers such a quick emptying of the uterus.

Küstner advises the transperitoneal operation in those cases where the membranes have not been ruptured, and the pure extraperitoneal section for those cases where the membranes have long been ruptured and the danger of infection is considerable. He has also designed a special pair of forceps for delivering the head through the abdominal incision.

Hartman states that in cases where the head is pushed firmly into the pelvic inlet and the membranes ruptured, his operation of choice is pubiotomy instead of extraperitoneal Cæsarean because of the difficulty in delivering the child through the abdominal wound.

But many critics have said that this operation of extraperitoneal Cæsarean section was fraught with great danger of rupture of the lower uterine segment in subsequent pregnancies. Their reasons for this have been on theoretical grounds because of the tendency of the lower uterine segment to rupture spontaneously. However, all observers state that such is not their experience. Lichtenstein reports a second extraperitoneal operation which showed absolutely no thinning of the lower uterine segment in the line of scar, and a second case that delivered herself of twins after forty hours twenty minutes in labor, having had with her previous pregnancy an extraperitoneal Cæsarean. Rubeska reports a case where on the second operation the scar in the lower uterine segment could not be discovered.

The advantages of these operations seem to be, first, that labor can be allowed to go on normally to see if the head will mold into the pelvis, and, when it fails so to do, to have a comparatively safe operation to fall back upon. Added to this are other considerations. The peritoneal cavity remains entirely out of the operation; blood, amniotic fluid and uterine secretions are all excluded. There is no danger of adhesions between the intestines and uterus or abdominal wall. There is less likelihood of hernia in scar. The placenta can be freed in the normal manner and be delivered in the physiological way. The lower uterine segment, because of its thin walls, can be much more quickly repaired. There is less likelihood of hemorrhage. Added to this in infected cases there is a questionable possibility of draining and obtaining a satisfactoty result. On the other hand, there is the difficulty of technic, which is made much more difficult, sometimes impossible, if labor has not progressed far enough to thin out the lower uterine segment.

This was the situation when Dührssen and Solms brought forward their new operation, which they claim has forever solved the question of craniotomy on the living child. Their claim for the operation was that it supplanted absolutely the premature induction of labor, the classical Cæsarean section, hebeostomy, perforation of the living child, prophylactic version and high forceps.

Their first operation was performed Dec. 22, 1908, with the following technic: at the beginning of labor a metreurynter was placed in the uterus and filled with 300 ccm. of fluid. An incision was made from the median line to the left anterior superior spine through skin, muscle and fascia. The blunt dissection of freeing the bladder from the uterus was very easy because the plica-vesico-uterina is but lightly attached at the sides, more firmly in the median line. This dissection was accomplished with very little bleeding. The lower uterine segment was now exposed; an incision was made a little to the left of the median line practically large enough to deliver the head of the child. But to make the operation of extraction easier, the metreurynter was now drawn down and the regular vaginal Cæsarean performed from below, so that the incision in the cervix joined the incision in the lower uterine segment. The

metreurynter was now removed and the child easily delivered above the pelvic brim by means of forceps through the abdominal wound. In clean cases the tissues are accurately repaired; in infected or suspicious cases a drain of iodoform gauze is placed in the abdominal wound and the anterior vaginal wall closed merely to the wick, thus draining the wound through the vagina. As yet only a few such operations have been performed and most of these by modifying the technic in so far as the vaginal operation is first performed and then the abdominal.

Liepman, after performing this operation successfully, passes the following judgment: "The Solms flank Cæsarean is, even for one trained in surgical technic, of all Cæsarean attempts the hardest to execute," but he adds the following summary: no other Cæsarean operation is so certainly extraperitoneal. Unlike other Cæsareans, it can be performed early in labor. It offers the best chance for efficient drainage. Here, as in no other method, the third stage of labor can take its normal course without delaying the operator. No other method is so distinctly limited to the lower uterine segment, thus removing practically all danger of rupture of the uterus in subsequent pregnancies. Finally, no other Cæsarean gives such cosmetic results, the scar being less noticeable than one after the operation for the cure of inguinal hernia.

Thus we have many operations aimed to supplant craniotomy as the treatment indicated for the complication of a contracted pelvis and infection during labor. All except the last have, in the opinion of most obstetricians, failed to accomplish their purpose. The last operation has not as yet been given the test of time. But these attempts have not been in vain, for they have given to midwife-stricken Germany a safer operation than the classical Cæsarean for uninfected cases advanced in labor.

It is a question what application we can make of any of these operations. But it would seem as if the experienced obstetrician should make himself familiar with the technic so that in a case of contracted pelvis, moderate in degree, the patient should be allowed the test of labor with the possibility of a successful Cæsarean and a living child should the head fail to enter the superior straight.

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Medical Progress.

PROGRESS IN SURGERY.

THORACIC SURGERY.

BY SAMUEL ROBINSON, M.D.

(Concluded from No. 23, p. 877.)

PROGRESS IN THORACIC SURGERY IN HUMAN BEINGS.

At least fifty surgical clinics are now provided with some form of differential pressure apparatus, and not less than two hundred operations have now been recorded. It is perhaps unfortunate, but at the same time readily understood, that many recent thoracic operations have been done with the application of apparatus for lung inflation which were originally undertaken without differential pressure. It is to be hoped that surgeons who have doubted the value of the use of differential pressure will not regard the reports of such cases as intended to advocate the necessity of this method in all thoracic operations. It has been necessary for operators to become familiar with the mechanism and application of such apparatus. There are furthermore certain thoracic procedures which may or may not result in impairment of respiration, and while some operators have been content with having apparatus at hand in case of need, others have employed it throughout the operation, knowing that its effects at least would not be harmful.

Differential pressure is proving to be of value under the following conditions:

1. For reinflation of the lung at the end of any thoracic operation followed by tight closure of the thoracotomy wound, a persistent pneumothorax being regarded as favoring infection and likely to produce respiratory and circulatory disturbances.

2. In operations upon the chest wall in which the pleura may be accidentally or intentionally

opened, the absence of pleural adhesions in such cases favoring the complete collapse of the lung, with possible fatal results.

3. Operations for lesions, such as abscess and gangrene or hemorrhage, to prevent the aspiration of blood or pus to the opposite lung.

4. For hemothorax following stab or bullet wounds of the lung, inflation of the latter facilitating the discovery of such lesions.

5. For all intrathoracic operations in which the absence of adhesions is suspected, a complete collapse of one lung being a fatal occurrence in certain individuals susceptible to a wide open pneumothorax.

6. Resections of the chest wall for tumors in which the surface of the lung is to be utilized to occupy the denuded area.

7. In certain cases of metapneumonic empyema in which after the evacuation of pus it may seem advisable to reinflate the lung and close the wound (Sauerbruch).

8. In thoracic operations in which possible laceration of the mediastinum (esophagus resections) may lead to double pneumothorax, the latter being invariably fatal.

9. In heart suture by the transpleural method to prevent retraction of the heart and pericardium, and to control the heart beat by regulated pressure.

10. In cases where normal respiration is labored by stenosis of the air passages.

11. In cases of lung excision to lower the pressure in the empty pleural space by hyperinflation of the remaining lung tissue.

It may be said that the greatest contribution of differential pressure to progress in thoracic surgery thus far has been that it has provided a means by which the thoracic cavity may be thoroughly explored on either side with almost as little shock to the individual as in exploratory laparotomy. Tiegel and Willy Meyer have thus explored cases of malignant diseases of the esophagus to determine the extent of involvement and adhesions. In those cases in which they have considered the lesions inoperable, with the aid of differential pressure they have obliterated the operative pneumothorax by reinflation of the lung, sutured the wound, and complete recovery from the operation has followed. Lilienthal has explored the thorax under intratracheal insufflation to localize an abscess of the lung.

While it is true that a large proportion of thoracic operations performed in the past could have equally well been done without differential pressure, it must be conceded that, thanks to this new resource to avoid the dangers of pneumothorax, another group of cases hitherto considered inoperable will be and have recently been attempted. The mortality of this new group will undoubtedly be high at the outset because the technic of certain procedures in the thorax has not been developed in the human being. The interest in the use of differential pressure has furthermore developed a renewed enthusiasm for investigation in the thoracic field, and for this reason it is evident that the general technic in certain operations is being improved, although the progress may not be directly attributable to the use of differential pressure.

We may, therefore, review the present status of surgery of different thoracic lesions in turn, whether the progress may or may not be due to the use of apparatus.

1. *Abscess and Gangrene of the Lung.* Inflammatory processes at the periphery of the lung with pleural adhesions and external signs continue to be operated with low mortality, the drainage in such cases being not unlike that of a localized empyema. Certain cases have been reported as fatal due to the aspiration of infectious material following the loss of reflexes under deep anesthesia. The recent developments in the use of non-toxic local anesthetics has encouraged the use of local anesthesia even to the extent of rib-resection for the drainage of pus cavities connecting with the bronchus. The use of positive pressure has demonstrated that, even under deep anesthesia, the secretions are forced peripherally as soon as the abscess is opened; but inasmuch as at this last stage of the operation the aspiration may have already occurred, use of local anesthesia and the maintenance of coughing and expectoration will doubtless be regarded as a preferable method to deep anesthesia even under positive pressure.

There is a small group of cases in which the abscess may be central and lacking localization by auscultation and percussion of physical signs. In exploratory thoracotomy, palpation of the lobes is facilitated by inflation. That portion of the lung found to contain the abscess cavity may be sutured to the chest wall in preparation for a second drainage operation. This technic of walling off a normal pleural cavity before opening the abscess is undoubtedly facilitated by the inflation resulting from the use of pressure.

The methods of Koerte and Lenhartz of excising an abscess cavity and suturing the skin and muscle flap to its base have attracted some attention, but have not as yet been generally accepted.

2. *Bronchiectasis.* The operative treatment of this condition has hitherto been most unsatisfactory. Those cases in which so-called bronchiectatic cavities have been drained by the usual methods have rarely resulted in final cure, and frequently in the establishment of bronchial fistulæ. It is conceivable that some of the more favorable cases known as bronchiectatic abscesses may have been localized lung abscesses not associated with diffuse bronchiectasis and not characterized by the presence of influenza bacilli, which have been found to be omnipresent in true bronchiectasis (W. H. Smith). More frequent have been operations in which one bronchiectatic cavity was drained without improvement of the patient because of the presence of multiple other cavities in the same lobe. The examination of such lung specimens at autopsy indicates that operative removal of the disease is only possible by at least the excision of one lobe to which in certain cases the disease may be confined. The investigators of the use of differential pressure who have learned the successes of lobe excision in animals are now attempting the same procedure

in the human. Willy Meyer has attempted lobe excision in three cases of bronchiectasis under positive pressure without success, although it must be admitted that the frank and detailed description of his operations is a great contribution and does not discourage further attempts. The presence of bronchial secretion during the preliminary anesthesia previous to the ligation of the bronchus and the firm adhesions between the lobe involved and neighboring structures and the poor resistance of such patient to operative procedure were factors which evidently influenced his results. Garré has successfully removed a bronchiectatic lower lobe. He performed rib resection to collapse the chest wall to the root of the bronchus, delivering the lobe extrathoracic and amputating it at a second operation. Kuettner reports two cases of diffuse bronchiectasis in which the lobes involved were freed from adhesions and a portion of the chest wall excised presumably to allow collapse A second operation for drainage was done in one patient whose wound remained unhealed. The other patient could not be traced. Lung excision was not performed in either case. Positive pressure and negative pressure were used respectively. Schmidt, Petersen and Forlanini report the cure of three bronchiectatic cases by the production of artificial pneumothorax with nitrogen injection.

3. *Tumors of the Lung.* The recent revival in accuracy in diagnosis and treatment of lung conditions has led to the conclusion that malignant disease in the lung and pleura is of more common occurrence than previously recognized. It is undoubtedly the least favorable condition for operative attack of all thoracic lesions save perhaps cancer of the esophagus. Two cases are reported by Kuettner, one recognized by sputum examination, the other at time of operation. One case died subsequently of cachexia in which excision is not reported; the other was improved by the removal of a sequestrum in the center of the malignant portion. The ever-present extensive adhesions associated with malignant disease of the lung will always continue to be an obstacle to the only possible surgical treatment, namely, excision.

4. *Empyema.* Patients afflicted with empyema in which the lung has become adherent are not prone to the serious symptoms which may in other conditions follow an operative pneumothorax. There are, however, certain cases of extensive purulent pleurisy immediately following pneumonia in which adhesions have not formed and in which the sudden onset of operative pneumothorax in conjunction with the existing pyothorax may cause some embarrassment of respiration. Such cases are rare, however, and the symptoms may be avoided by plugging the drainage opening at the end of expiration. When such conditions can be anticipated, the use of differential pressure is an additional safeguard. In cases of double empyema both sides may be operated at the same time under differential pressure, provided one chest is closed tight at the end of the operation. The report by Sauerbruch, in 1908, of two cases of acute empyema operated under differential pressure with tight closure of the wound after the evacuation of pus, resulted in recovery, and seemed to promise a new source of prevention of chronic empyema cavities. Willy Meyer has, on the contrary, operated upon three such cases, in two of which "pocketing" occurred and a second drainage operation was necessary. The duration of the disease was somewhat shortened, however. There is reason to believe that if fibrin and lymph clots are removed at the operation and the pleural surfaces treated with antiseptic preparations, it will be safe to re-expand the lung, approximating the pleural layers and hermetically closing the operative wound. Some progress will doubtless be made along these lines.

The antiseptic methods of Murphy and Beck with the injection of glycerine and formaline, or bismuth and vaseline, have undoubtedly contributed to the treatment of empyema. Toxic effects have been noted, but may be avoided with skillful application of the treatment. Certain cases have been reported as cured by the Beck method because the wound had closed. In such cases a cavity may persist which is filled with a sterile non-purulent material from which no toxic absorption occurs, and which is eventually obliterated by the thickening of the pleura and the slow formation of granulation tissue. As the methods of antiseptic injections and the use of differential pressure are improved, a marked diminution in the number of patients with chronic empyema may be looked for. Both positive and negative pressure have been successfully employed in the re-expansion of the lung during the convalescence from empyema operations. Some observers have employed pressure at the end of the drainage operation and attempted to seal the wound without suture with absorbent dressings. Subsequent changes of dressings have likewise been performed under differential pressure, and these observers have believed that the re-expansion of the lung was favored and the convalescence shortened by these procedures. It may be stated, however, that the faithful use of so-called "blow-bottles" should accomplish the same results; and it is doubtful if this repeated application of differential pressure apparatus will continue to be regarded as of particular value.

5. *Tumors of the Chest Wall.* Haecker and Sauerbruch have reported six favorable results from excision of portions of the chest wall with plastic operation of skin and muscle flap upon the exposed lung to cover the defect in the thoracic wall. Resection of chest wall tumors has always been attended with considerable success and will doubtless be attempted with greater persistency when differential pressure is available to maintain lung inflation both during and at the close of the operation. The success of such operations seems to depend largely upon the avoidance of leakage, and it may be said that the use of artificial lung inflation will favor the tight closure of the wound inasmuch as the lung itself can thus be utilized to assist in closing the defect.

6. *Foreign Bodies.* The extraordinary develop-

ments in bronchoscopy made by Bruening, Killian and others have resulted in the successful removal of foreign bodies even in the terminal bronchi, and the necessity of transpleural approach is thereby lessened. Meanwhile, however, the safety of exploratory thoracotomy which is guaranteed by the use of differential pressure justifies the transpleural route with good chances of ultimate success in cases beyond the reach of bronchoscopy.

7. *Oesophagus.* Thirty-seven cases of resection of the esophagus in human beings have been reported with a mortality of 100%, and a large majority of these have been performed under differential pressure. Attempts to approximate the end of the esophagus after resection of a cancerous portion have been even more unsuccessful than in animal experimentation. The common explanation is that this lack of success is due to infection of the pleural cavity which is presumed to occur from leakage in the suture. Schmieden believes that this leakage is favored by the suction present in the pleural cavity, a factor which is not present to disturb the healing of abdominal anastomoses. Injury due to a manipulation of the vagus nerve has contributed to death in certain cases (Kuettner and Meyer). There are doubtless other factors which contribute to failure, among which must be mentioned the resultant excessive tension following excision of any considerable portion of the esophagus. Janeway and Green report a case of resection of the lower esophagus and all but the prepyloric portion of the stomach by their combined thoracic and abdominal approach, with death from empyema despite their repeated successes with this operation in animals. It is agreed by those of the greatest experience in view of the recent failures in anastomoses that resection under double ligature with subsequent gastrostomy is the only justifiable procedure at the present time. It is conceivable that the transplantation of the small intestine from the abdomen to the thorax to occupy the gap in the esophagus may be successfully performed. As reported by Roux and others, the proximal end of the esophagus in the neck may be connected to the gastrostomy wound by a segment of transplanted intestine. It is not inconceivable that a like procedure may be undertaken within the thorax.

8. *Bullet and Stab Wounds of the Heart and Lungs.* It is commonly recognized that many cases of bullet wound of the lung heal spontaneously, and that operative interference has sometimes been more disastrous than beneficial. Statistics of such injuries collected by Kocher show, however, that the mortality of all gunshot wounds of the chest is high. The cause of fatalities is ordinarily either hemorrhage or valvular pneumothorax. Both of these conditions are subject to repair by suture after exploratory thoracotomy, which, as has been stated, is a recognized safe procedure under differential pressure. Before the introduction of this agent, injuries to the lung were sutured, but no attempt was made to reinflate the lung and prevent a persistent pneumothorax, the latter undoubtedly favoring sepsis, as demonstrated by a large series of animal operations. It may be concluded, therefore, that in those cases of lung injury in which the signs of increasing hemothorax are present, operation under differential pressure is indicated, and should lower the present mortality in such cases.

Of 128 reported cases of bullet and stab wounds of the heart, 67 have recovered. It is presumed that all successful cases have been reported, and that many failures have been omitted. Therefore, the percentage of recoveries according to these statistics may be misleading. Furthermore, in view of the fact that spontaneous recovery from heart wounds is not infrequent, it may be argued that certain of these reported cases would have recovered without operation. A large percentage of these cases have been performed without the use of inflation apparatus, although oxygen has frequently been employed by the usual methods. The method of attack has with few exceptions been by the interpleural approach. Every conceivable form of skin, muscle and osseous flap has been suggested, with and without removal of portions of the sternum to expose the pericardium without opening the pleura. A sufficiently high percentage of the recovered cases have been treated without subsequent drainage of the pericardium to persuade us that under aseptic precautions this feature is unnecessary.

Autopsies have repeatedly shown that wounds of the lung are not infrequent in conjunction with those of the heart. Such complications have been found to occur in some of the unsuccessful operated cases where the heart alone was sutured. The observations of Haecker and Sauerbruch are pertinent in this connection. By the transpleural route with intercostal incision and use of rib-spreader under differential pressure, the heart and lung are exposed. Without the use of apparatus, such an approach is not justifiable for three reasons. Upon opening the chest the heart will recede to a point where suture is difficult. The exsanguinated patient with weakened heart is more susceptible to the effects of pneumothorax. Reinflation of the lung and obliteration of pneumothorax are impossible without apparatus, and subsequent impairment of respiration and sepsis are favored. (It should be remembered that the intercostal stitch of Mikulicz has further guaranteed the air-tight closure of thoracotomy wounds, and all other forms of suture are frequently attended with leakage.) Under differential pressure, on the contrary, the inflation of the lung on the unoperated side forces the heart into an approachable position, produces a bubbling of air from the concealed perforations of the lung and, furthermore, facilitates the heart suture by controlling the force and rate of the heart-beat in the method which we have previously described under experimental progress. Brewster has, in a case of bullet wound of the heart, verified the recommendations of Sauerbruch and Haecker, demonstrating the possibility of checking the leakage from the perforated ventricle during suture by manual oc-

clusion of the great vessels at the base of the heart. Both these factors of controlling the pulse-rate by the employment of low differential pressure and diminishing the hemorrhage by direct pressure on the heart vessels are contributed by the transpleural method, and consequently are lacking by the more common direct approach through the anterior mediastinum.

CONCLUSIONS.

Gratification may be obtained then from the untiring efforts of many investigators within the last five years.

The perfection of apparatus for the use of both forms of differential pressure has resulted in its adoption in more than eighty surgical clinics, and it has justified its existence not only by making operable a group of intrathoracic lesions which had previously been abandoned, but has also throughout its required use in experimental observations on the dog contributed to the general technic of intrathoracic surgery.

Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

THIRTY-SECOND ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 3, 4, 5, 1910.

JAMES E. LOGAN, M.D., *President.*
JAMES E. NEWCOMB, *Secretary.*

(Continued from No. 23, p. 880.)

VII. THE INFLUENCE OF THE USE OF THE AUTOMOBILE UPON THE UPPER AIR PASSAGES.

By DR. D. BRYSON DELAVAN, New York.

The wide introduction of the motor vehicle makes it a matter of great human interest as well as economic importance to study its effects upon the physical welfare of the public. Little or nothing has been advanced with regard to its effects upon the upper air passages. The factors which work injury to the air passages may be divided into two groups: (1) Conditions relating to the air itself — temperature, air currents, air pressure; (2) impurities carried by the air — smoke, dust, emanations from plants, and small insects. Under conditions similar to those met with in some forms of automobile riding, as in walking in the face of a blizzard, great harm has been done to the air passages. Dust may be irritating from its mechanical properties as well as from the peculiarities of its nature, and the smoke of the automobile is undoubtedly capable of causing severe irritation to the upper air passages, even in healthy individuals. Where the membranes are already sensitive, as in patients suffering from asthma, bronchitis, tuberculosis, etc., the irritation is all the greater. Mucous membranes already irritated are especially liable to infections of a general nature. Theoretically, therefore, the use of the automobile should increase respiratory ills; whether this has actually resulted is a question.

In using the automobile prudence as to dress, and care should be observed. Chauffeurs might be supposed to suffer more than others, but as a matter of fact, they do not seem to suffer more from throat and lung troubles than others — probably on account of their youth and vigor, and because of the health-giving effects of life in the open air. Certain life insurance companies which formerly made an extra charge against chauffeurs have removed this and now accept them at the usual rate, having apparently found that they are not more liable to life-threatening respiratory diseases than are coachmen. Less serious affections are not noticed in the insurance statistics. Auto riding should be interdicted in acute coryza. Where tendency to involvement of the nasal sinuses exists, automobile riding offers many elements of danger. In chronic sinusitis and old suppurative conditions of the ear, incautious motoring is liable to be injurious. In patients suffering from tinnitus, motoring is often found to be objectionable, and it would seem to be contra-indicated in acute catarrhal conditions. On the other hand, in many subacute and chronic catarrh conditions it seems to be advantageous, and several cases of asthma have been reported as benefited. Prof. James Tyson has maintained that many cases of cardiac disease are markedly benefited by motoring, the fresh air, mild exercise, gentle stimulation of the circulation and mental diversion having an excellent influence; so, in properly selected cases of respiratory troubles, the patients thrive, owing to improved oxygenation and nutrition. It would finally appear that under certain conditions and in certain cases the motorist may expose himself to positive risks unless he exercise proper precaution in the selection of a machine, and wisdom in using it. Properly used, in suitable cases, the automobile may be a valuable therapeutic agent. These things being true, we should by this time have obtained sufficient knowledge to enable us to warn the public of the possibilities of danger and instruct them as to the best means of precaution. In addition to the precautions of a personal nature which those using automobiles should observe, the safety and comfort of the public would be greatly enhanced: (1) By good and well-kept roads; (2) by well-paved city streets kept free from the fine dust which is now allowed to remain after the coarser matters have been removed; (3) by the enforcement of the laws against automobile smoke in our cities, as such laws are enforced in Europe.

DR. E. L. SHURLEY, Detroit, said that living in a city where 60% of all the automobiles manufactured in the world are found, a number of observations have been made by him where the automobile was the etiological factor in the development of conditions in the respiratory tract. An absolutely new occupation has developed within the last few years, that of automobile tester. These men are subjected to the ill-effects of the exhaust pipes for a number of hours each day, and many of them have developed deflections and pathological conditions requiring interference which have not appeared in those following other occupations. The use of the automobile predisposes to the extension of acute conditions that are present, especially the open machine. He has seen a number of cases of wind paralysis with attending ear and throat complications in which the automobile was the particular etiological factor. Another point that develops from the high speed these testers employ is the "automobile face," with the open mouth, and such individuals are subjected to extra dangers of infection.

DR. JOHN O. ROE said that the automobile shield has done more to lessen the dangers from automobiling than any other device, especially cases of frontal sinus disease, induced by air pressure and strong currents, which are less frequent since the adoption of the shield.

DR. WILLIAM KELLY SIMPSON, New York, said that he would like some member to cite definite cases which were dependent upon the automobile.

DR. ROE replied that before the adoption of the wind shield he had a number of frontal sinus cases which were directly traceable to taking cold from the strong

currents to which the patients were exposed. In reply to a query from Dr. Cohen as to whether he attributed this to the excessive speed employed, he answered in the affirmative.

Dr. Emil Mayer, New York, said that, at a former meeting in Boston, he had reported a number of cases of accessory sinus disease in patients who had used the machine, and had called attention to the automobile as an etiological factor.

Dr. Casselberry, Chicago, said that there was a vagueness in such statements that does not carry conviction. So many people use the automobile nowadays that it would be a very uncertain factor.

Dr. Delavan, closing the discussion, apologized for bringing such a semi-popular paper before the Association, but said that the automobile is capable of doing much harm as well as good. The conditions which interdict its use are not always easy of recognition, and the question should be studied, so that its use may be recommended or discouraged, as the case may be.

VIII. INTRANASAL ROUTE FOR GROWTHS OF THE HYPOPHYSIS WITHOUT EXTERNAL INCISION, WITH REPORT OF A CASE OF INTRANASAL COMPRESSION.

Dr. Norval H. Pierce, Chicago.

Dr. John Mackenzie, Baltimore, said that his assistant, Dr. West, has been interested in this question for the past year, and had worked out the method on the cadaver in a very clear and practical way, though they had not yet so treated a clinical case. Dr. West was the first to carry out on the cadaver the operation on the hypophysis from the intranasal route, and has published his results in the *Journal of American Medicine*.

Dr. R. G. Myles, New York, said that he had had three cases where the tumor involved the sphenoid, in which it was necessary to remove the septum, and he had been much impressed with the broad field thus obtained for operative procedure.

Dr. T. Gordon Wilson, Chicago, said that Dr. Pierce had reported the subject of this paper before the Chicago Medical Society last year.

Dr. Pierce, closing the discussion, said that he had outlined the operation in November of last year and had sent the paper to the publisher, though through delay on the part of the printer it has not yet appeared. He understood that a man in Vienna had outlined the operation at the International Congress of Budapest. He himself was not contending for the question of priority, but merely wished to present this new subject.

IX. DIFFERENTIAL DIAGNOSIS OF DENTIGEROUS CYSTS OF MAXILLARY ANTRUM.

Norval H. Pierce, Chicago.

Dr. W. E. Casselberry, Chicago, said that he had been much interested in the paper and the beautiful slides shown by Dr. Pierce, hoping to have clarified a point of diagnosis upon which he had written several years ago, under the title, "Serous Diseases of the Maxillary Sinus." The condition, however, is not yet clear to him. The point for diagnosis is not of cases where there is bulging, but where there is no bulging; as to whether the straw-colored fluid is or is not cystic, whether it is not a primary stage which will become suppurative.

Dr. Cornelius G. Coakley, New York, said that in the early diagnosis of these cases, the precystic state, transillumination does not help a particle. The only way they have been able to diagnose such cases is by having a special x-ray plate with the negative plate placed inside the mouth, in order to get at the floor of the antrum. The information given by such a plate, where there is disease, is absolutely characteristic.

Dr. Pierce, closing the discussion, said that he had not considered the follicular variety of dentigerous cyst in his paper at all. As to the variety spoken of by Dr. Casselberry, the hydrops, the point is whether there is hydrops. When the antrum begins to bulge it is not due to the hydrops *ex vacuo*, but to the dentigerous cyst. He had written a paper describing a case in which a dentist had pulled a tooth, the extraction being followed by a grayish fluid. The patient came to him and he readily washed out the antrum through the antral opening, and the diagnosis was complete. Operation showed a membranous cyst which extended over the cavity.

PRESENTATION OF INSTRUMENTS FOR DIRECT INTUBATION.

By Dr. H. P. Mosher, Boston.

Dr. John R. Winslow, Baltimore, said that since reading his paper before the Association last year in Boston recording a case of chronic stenosis of the larynx treated by intubation by the direct method, he has treated several other cases in the same way. The method possesses great accuracy and exactitude. Dr. Mosher has improved and enlarged our armamentarium by the method described, which will be of great advantage in cases of chronic stenosis.

Dr. W. K. Simpson, New York, said that he had been much impressed with the presentation of the instrument, and had been glad to hear Dr. Winslow's remarks, for he had been wondering what was the advantage of the direct over the indirect method of intubation. He felt, however, that the same accuracy claimed by Dr. Winslow could be obtained with indirect intubation, for the sense of feeling and touch is very accurate, and in the great majority of cases it is better to operate with the head mirror. He is also inclined to think you can get more pressure by the indirect method. He wished to know if any one had had any experience with this method in children. The time required might be an objection to it.

Dr. Clark, Boston, said that he had used Dr. Mosher's instrument in a case of stenosis of the larynx in a child, and found it very useful in introducing and removing the tube.

Dr. Algernon Coolidge, Boston, said that without discussing the question of the kind of case in which it was the better method, it would seem that one was working less in the dark than when doing it indirectly.

TECHNIC OF A RADICAL OPERATION UPON THE MAXILLARY SINUS.

Presented by Dr. William L. Ballenger.

1. Incision under infiltration and cocaine anesthesia in the vestibule of the nares along the ridge formed by the naso-antral angle.

2. The periosteum over the anterior wall of the antrum was then elevated.

3. The naso-antral angle was then removed with rongeur forceps until the anterior angle of the antral space was opened on a level with the inferior meatus.

4. The entire naso-antral wall beneath the attachment of the inferior turbinal was removed through the opening at the anterior angle with Wagner forceps. The heavy portion of the mass at the floor of the nose was still further removed with a small chisel and mallet, thus making an opening extending from the extreme anterior angle to the posterior extension of the antrum, and from the floor of the nose to the attachment of the inferior turbinal.

The claims made by the author for this operation

were: (*a*) That it is as radical as the Denker operation, since it affords as complete access to the antrum for curettage, treatment and inspection; (*b*) that it is a much more conservative operation, as it does not injure the inferior turbinal, and may be done with much less loss of blood and under local anesthesia in a few minutes of time.

(*To be continued.*)

Book Reviews.

The Sexual Disabilities of Man and their Treatment. By ARTHUR COOPER, Consulting Surgeon to the Westminster General Dispensary; formerly House Surgeon to the Male Lock Hospital, London. Second edition, revised and enlarged. New York: Paul E. Hoeber. 1910.

That Dr. Cooper's book should so soon have reached a second edition is evidence that it has been read and appreciated. Though revised and enlarged, the present volume remains, seemingly, as small and readable as the original. Under general treatment, the section on matrimony seems particularly good, but a trifle short-sighted. In this respect the author might have succeeded better had he taken as his motto the quotation: "Let me not to the marriage of true minds admit impediment."

Cystoscopy as Adjuvant in Surgery. With an Atlas of Cystoscopic Views and Concomitant Text for Physicians and Students. By Staff-Surgeon DR. O. RUMPEL, Lecturer in Surgery at the University of Berlin. Only authorized English translation by P. W. SHEDD, M.D., New York. With 85 illustrations in color on 36 plates and 22 textual figures. New York: Rebman Company.

This book consists of about sixty pages of text followed by 36 colored plates representing cystoscopic pictures of bladder pathology. The text is divided into eight short chapters as follows: Anomalies, Congenital; Calculi; Cystitis; Foreign Bodies; Hypertrophy of the Prostate; Prostate; Tumors; Testing Renal Function. Each of these chapters contains a brief, practical discussion of the conditions under consideration, with constant reference to the plates which picture these conditions; and really the whole text is little more than an explanation of the plates embodied in the book. The text itself is also well and profusely illustrated. The whole book has for its basis a collection of cases in the writer's hospital and private practice, and as these patients nearly all came to operation, the cystoscopic diagnoses could be confirmed in almost every instance by the operation and by the subsequent histological examination. The plates are beautifully reproduced, representing the actual cystoscopic pictures seen in the series of cases referred to. The book is creditably executed, and while not one to appeal to the general medical public, will be of interest and really valuable to the genito-urinary surgeon and to all students of cystoscopy.

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MEDICAL EDUCATION AT HARVARD UNIVERSITY AND ABROAD.

COMPARISONS in educational as in other matters are often useful. It is of particular interest, from time to time, to compare methods of medical instruction as practised abroad with those of the best institutions of this country. In this connection, a painstaking study of conditions as found in various European countries has been made by Prof. L. J. Henderson, of the Harvard Medical School, and a comparison drawn between them and the school in which he is a teacher.

Dr. Henderson found that the Harvard School differs radically in several respects from every institution of medical education in Europe, disregarding Spain, Portugal, Russia, the Balkan States and some others. A striking difference at the outset is the fact that the age qualification for practise in Europe is everywhere lower than at Harvard and institutions of similar standing in this country. As is generally known, the student is permitted in Europe to begin his medical education immediately upon leaving school. The difference, however, in the preparatory schools should be borne in mind before too radical deductions are drawn from this statement. The student in Europe is not required to do work of a non-medical character, with the exception that in some British universities, if he desires an A.B. degree, such work is required in insignificant amounts. Even at Oxford, however, it is very unusual for a student to undertake work of an unnecessary kind unless it be advanced study or research in a natural science. It is, therefore, exceptional in England for students to devote time to outside studies before beginning the practice of medicine. In Europe the rudiments of chemistry, physics and general biology are uni-

versally required as parts of a medical education. Time given to academic exercises is very much greater here than in Europe, nor do students in Europe spend so many hours in laboratories doing class work in the medical sciences. It is also noticeable that the Harvard Medical School is much more given to examinations covering small parts of the curriculum at frequent intervals.

The individuality of the student is far less developed here than in Europe, as shown by the fact that the first three years of the medical course at the Harvard Medical School, for example, is essentially the same for all students, whereas much more liberty is allowed abroad. As Dr. Henderson expresses it, nowhere in Europe, save in England, is there so much "spoon feeding" as there is here, but in England there appears to be more. Dr. Henderson concludes his observations by the general statement that Harvard students work more, study a great deal less and "cut" less than their European *confrères;* and that Harvard students less often than Germans, Austrians, Swiss and Dutchmen undertake work of an unusual character, such as physiological research, advanced courses in pure chemistry and the like.

SOME ASPECTS OF HEREDITY.

Heredity has at all times been a rather alarming, and at some times a terrible, word. In the early days, when it was first given general scientific currency by Darwin and his contemporaries, it acquired a connotation of baneful significance, as if representing a cumulative curse bequeathed from one generation to another. Diseases, deformities and evil tendencies of all sorts were described as hereditary, until most of the laity and many physicians came to think of heredity as a malign Dagon from whose predestined doom none could hope to escape.

Following the demonstration that tuberculosis is not a directly heritable disease, there was somewhat of a reaction from this fatalistic view, and some came even to regarding heredity as of no importance at all. Doubtless the truth lies midway between these attitudes, but at the present time there seems still a tendency to overemphasize the gloomy side of the prospect.

It is probably true that the mental and nervous instability which predispose to insanity are heritable, that susceptibility to cancer, to diabetes, to tuberculous and other infections are heritable. Nevertheless it should be remembered that insusceptibility and immunity, relative or absolute, are probably also heritable, and that there is probably a blessed tendency to the self-eradication of defects. For experiments in breeding show that, on the whole, offspring do not often inherit a defect from one parent. Only when there is the same defect in both does hereditary transmission become the rule. If it were not for this, our poor human race would long since have succumbed to disaster.

Heredity is really our friend; it helps us more than it harms. The newly established science of eugenics may be described as the science of applied heredity, whereby we may hope deliberately to aid and hasten the results that are being blindly but unerringly worked out by time. Medically, heredity should never be used as a bugaboo to scare the timid with horrible prospects of inevitable misfortune. It should be presented not as a demon, but as a kindly, though sometimes stern, guardian. To heredity one generation owes what is good in it; it owes to posterity the transmission of that good augmented by the same agent. Heredity is the silver cord that links the ages of man through his evolution, that leads from the shrine of animalculate existence to perfections as yet unimagined.

CONTINUANCE OF DROUGHT IN MASSACHUSETTS.

In several issues of the Journal this fall we noted the prevalence of drought in Massachusetts, and the imminence of water famine in various towns of the state. This situation was temporarily somewhat relieved by the rainfall of last month, but the advent of freezing weather prevented much of this rain from reaching reservoirs where it could be available for drinking purposes during the winter. The precipitation of the year is now fourteen and one-half inches short of the normal annual average. The towns at present most seriously affected by the deficiency are Salem, Athol, Whitinsville, Palmer, Monson, Montague, Milford, Westboro, Greenfield and Belchertown. In certain places in Maine and New Hampshire also there is shortage of water for bathing and drinking and for watering cattle; and several mills near Manchester, N. H., and at Milford and Stillwater have been obliged to shut down for lack of power. This failure of water-supply throughout New England may perhaps be only a coincidence, or may represent the result of far-reaching causes. It is a situation which demands earnest consideration on the part of publicists as well as of water commissioners and boards of health.

PROSECUTION OF THE ORDINANCE AGAINST SPITTING.

THERE seems a determined intention on the part of the Boston Police Board to enforce rigorously the municipal ordinance against promiscuous public expectoration. During the first seventeen days of the recent special enforcement of this law, 459 persons were arrested for spitting. At first a fine of $2 was usually imposed. Later, as there seemed to be no cessation in the amount of spitting, the fine was increased to $5. One man, arrested for a second offense, was fined $10; and one who refused to pay his fine, though able to do so, was sentenced to eight days in the House of Correction. Of the 459 persons arrested, only 1 was a woman; 283 were men between twenty and forty; only 2 were juveniles; 205 were married and 254 single, though it seems questionable whether this should be taken as corroborative evidence of the supposed disciplinary value of matrimony or of the fact that "single men in barracks don't grow into plaster saints." In any event, persistence in the present laudable campaign seems indicated, for the latest general order from police headquarters concludes as follows:

"All members of the force, and especially division commanders, are to understand that the enforcement of this law is to be thorough and continuous. Signs of its violation in any particular section of the city will be regarded as evidence of inattention to duty on the part of the police responsible therefor."

EPISODES IN THE SUPPRESSION OF THE ILLEGAL SALE AND USE OF DRUGS.

THREE prisoners were arraigned before the Boston Municipal Court last week on the charge of selling drugs illegally. Two sold opium and one cocaine. The cases were all continued, and the defendants held in $500 bail each. Four other men were also arrested in Boston last week on a charge of selling morphine illegally and one for selling opium. In this connection it is interesting to note that in Pittsburg, Pa., a man, arrested because an opium outfit was found in his house, has made the defense that it was solely for his own use and that the police have no authority to interfere with his addiction to the drug.

The decision in this case may prove an important precedent as to the right of an individual to practise the use of a deleterious drug. The once divine right of every man to go to the bad in his own way, provided he harm no one else, has come in question like the anointed authority of kings. The real fact of the issue is that all individual wrong doing, whether moral or hygienic, does harm others, who, therefore, have a right to undertake its inhibition.

MEDICAL NOTES.

A CENTENARIAN. — Mrs. Bridget Mahar, who died last week at Hampton, N. Y., was locally reputed to have been born in 1805. She came from Ireland to the United States as a young girl and had been a resident of Hampton for over sixty years. She is survived by one daughter and one son.

OPENING OF A NEW HOSPITAL IN ST. LOUIS. — It is announced that the new building of the Barnard Free Skin and Cancer Hospital at St. Louis, Mo., has been completed and will be opened for inspection on Tuesday, Dec. 20.

PLAGUE IN MANCHURIA. — It is reported from Harbin that the epidemic of bubonic plague in Manchuria is rapidly spreading and that many physicians are being sent by the government from Siberia to attempt its suppression. Traffic with China has already been restricted and may be suspended in the effort to check extension of the infection.

FIRE MENACES A CANADIAN HOSPITAL. — News from Winnipeg, Canada, states that on account of fire in a neighboring lumber mill, which menaced Stroch's Hospital in that city, 80 patients in the hospital were safely moved to another institution. The thermometer at the time was sixteen degrees below zero.

DEPORTATION OF HINDUS FOR UNCINARIASIS. — It is reported from San Francisco, Cal., that of 15 Hindus who reached that port on Dec. 11 on the steamer *Manchurian*, 11 were found to have uncinariasis and were, therefore, ordered by the local medical inspector to be immediately deported.

TYPHOID FEVER AT ANNAPOLIS. — During the week ending Dec. 10, five more new cases of typhoid fever were reported among students in the United States Naval Academy at Annapolis, Md., making a total of twenty-nine cadets now ill with the disease. There have as yet been no fatalities. It is believed that these new cases are derived from the original source of infection, not from other cases that developed earlier after a shorter period of incubation.

Medal Awarded to Dr. Wiley. — Report from Philadelphia states that the Franklin Institute of that city has recently awarded to Dr. Harvey N. Wiley, chief chemist to the Department of Agriculture, an Elliott Cresson medal for "distinguished, leading and directive work in the fields of agricultural and physiological chemistry."

Provision of Rank for Naval Dentists. — In the issue of the Journal for Oct. 27, we commented editorially on the lack of suitable recognition, by the United States government, of dentists in the army and navy. Report from Washington, D. C., states that the House Committee on Naval Affairs has recently reported favorably "a bill entering members of the dental corps as acting assistant surgeons, with provision that after eleven years' service there may be developed from them automatically one lieutenant commander, four passed assistant surgeons and twenty-five assistant surgeons. This bill, if enacted into law, should seem to provide the desired recognition in rank for dentists in the navy, and presumably similar provision in the army might be expected to follow.

The Free Lunch Problem in Schools. — In last week's issue of the Journal we commented on the questionable desirability of furnishing free lunch to public schoolchildren. It is stated that in the open-air school at Indianapolis, Ind., pupils are required to pay three cents each a day for the hot milk, soup or cocoa with which they are supplied, the balance of the cost being paid by the school department. It would seem that in any project for feeding schoolchildren, whether tuberculous or healthy, at least half the expense should be met by the children or their parents, though it is also questionable whether the acceptance of such a half-charity be not as destructive to self-reliance and self-respect as that of a complete bounty or subsidy.

Food Poisoning in Germany. — Report from Berlin states that an entire family of seven persons has recently died at Grandenz, Prussia, of supposed poisoning from impure food, and that during the first week in December there were several hundred cases of similar poisoning in Düsseldorf and Hamburg, with several fatalities in the latter city. It is alleged that a consignment of artificial butter manufactured from rancid French fat was the cause of these poisoning cases. In this explanation, however, there might seem a possible suggestion of racial animus. Any one who has had experience of the German custom of eating raw ham and sausages would not be surprised if this abominable gastronomic usage were proved to be the real source of the trouble.

The Cholera Epidemics. — During the week ending Dec. 10, 29 new cases and 11 deaths of Asiatic cholera were reported from Italy, as against 27 cases and 3 deaths the preceding week. Palermo in Sicily seems now to be the residual center of the infection in that country.

The epidemic of cholera in Madeira, to which we referred in last week's issue of the Journal, has apparently reached considerable proportions. Advices from Funchal, the capital of the island, state that the total number of cases is now 422, of which 136 have died. Riots are said to occur daily, and there is great destitution on account of the cessation of business. It is reported from Lisbon, Portugal, that the Portuguese gunboat *Zaire* has been despatched from that city to Madeira with food supplies, troops and medicines.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Dec. 13, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 53, scarlatina 34, typhoid fever 14, measles 17, smallpox 0, tuberculosis 51.

The death-rate of the reported deaths for the week ending Dec. 13, 1910, was 16.18.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 10, 1910, was 226, against 203 the corresponding week of last year, showing an increase of 23 deaths and making the death-rate for the week 17.49. Of this number 118 were males and 108 were females; 218 were white and 8 colored; 124 were born in the United States, 99 in foreign countries and 3 unknown; 42 were of American parentage, 158 of foreign parentage and 26 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 62 cases and 1 death; scarlatina, 31 cases and 2 deaths; typhoid fever, 16 cases and 4 deaths; measles, 18 cases and 1 death; tuberculosis, 51 cases and 15 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 41, whooping cough 0, heart disease 35, bronchitis 4. There were 14 deaths from violent causes. The number of children who died under one year was 33; the number under five years 50. The number of persons who died over sixty years of age was 69. The deaths in public institutions

were 88. Cerebrospinal meningitis, 1 case and 2 deaths. Acute anterior poliomyelitis, 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 1 case. Diphtheria, 1 case. Scarlet fever, 3 cases and 1 death.

Deducting deaths of non-residents, the total is 208 and the death-rate is then 16.10.

CHARITABLE BEQUEST TO A HOSPITAL. — The will of the late Lucretia Dyer, of Randolph, Mass., allowed for probate in court last week at Dedham, Mass., bequeathes her savings-bank deposit to the New England Hospital for Women and Children, Boston.

RECOMMENDED APPROPRIATION FOR CITY HOSPITAL. — The trustees of the Boston City Hospital have recently recommended an additional loan appropriation of $297,800 for the construction of new buildings, and changes and other improvements in the South Department for contagious diseases.

SCARLET FEVER IN HULL. — Six cases of scarlet fever have recently developed among children at Hull, Mass. To prevent spread of the epidemic, the village school has been ordered closed and fumigated and the school-books destroyed. Civilians of the town have been forbidden to enter the government fortifications in the vicinity lest they communicate the infection to the troops stationed there, and members of the garrison have been warned not to mingle in crowds in the town or to go skating on the local pond.

CONVICTIONS IN SALE OF MILK AND VINEGAR. — Before the Boston Municipal Court last week, seven local milk dealers were fined from $10 to $30 for selling milk without a license, most of them after having had their licenses revoked for previous infraction of law relative to sale of milk. Four other dealers were convicted of having for sale milk not up to the required standard, and were fined $10 each. Two were fined $10 each for putting coloring matter in vinegar. Another dealer was charged with having in possession with intent to sell milk not up to the standard, but his case was continued for further hearing.

Before the Malden District Court a large contractor was fined $100 last week for having milk below the standard. In defense his attorney averred that the milk was to be mixed, before sale, with richer milk which should bring the whole up to the standard.

NEW YORK.

RECOMMENDATION FOR ORGANIZATION OF AN AMBULANCE COMPANY. — Among other recommendations of the State Militia Council which Governor White approved on Dec. 2 was one for the organization of an ambulance company at at Albany, to be attached to the National Guard headquarters.

A CENTENARIAN. — Josiah Zeitlein, of Brooklyn, N. Y., said to be the oldest man in that borough, died on Dec. 1 at the age of one hundred and six years. He was born in 1804 in Lodz, Poland, and is stated to have been living with his parents in Moscow when in 1812 the Russians burned that city on the advance of Napoleon. He retired from business in Moscow thirty years ago and came to reside with a son-in-law in Brooklyn. He leaves three sons, the oldest of whom is seventy-six, and fifteen grandchildren. The old man was quite active physically up to the time of his death, and, occupying a room on the top floor of the four-story house, he would each night climb unaided the three flights of stairs. It is related of him that he was accustomed to rise early every morning and, after swallowing some tea, would take several drinks of whiskey, smoke two pipefuls of tobacco, and then go back to bed. Later in the day he would get up again and repeat the performance. He is reported to have attributed his longevity to moderation in these and in all other things.

SPECIAL MILK CONFERENCE. — A special conference on milk was held on Dec. 2 and 3, on the invitation of the New York Milk Committee, and there was a large attendance of sanitarians, as well as milk producers and dealers. Among those present were Prof. W. T. Sedgwick, of the Massachusetts Institute of Technology; Dr. J. W. Kerr, Assistant Surgeon-General, U. S. Public Health and Marine-Hospital Service; Dr. W. A. Evans, Health Commissioner of Chicago; Dr. John Amyot, Health Officer of Toronto; Dr. G. L. Magruder, of Washington; and Dr. Henry L. Colt, of Newark, N. J. John P. Mitchell, President of the New York Board of Aldermen, opened the conference with an address in which he alluded to the large death-rate in infants. He said that the city authorities were anxious to do all in their power to save the children, and finally submitted fourteen questions which, he stated, the Board of Estimate desired to have answered in order to be able to act intelligently in the mat-

ter. There was considerable discussion and much difference of opinion on the matter of pasteurization, and a resolution calling for general pasteurization was tabled. Deputy Attorney-General Coleman advocated the establishment of a non-partisan State Milk Commission, the members of which should be appointed by the governor on the recommendation of milk committees and boards of trade. At present, he said, there was no way of controlling combinations among the large milk companies, and among the other functions of the commission should be the fixing of the minimum price for the producer and the minimum price to the consumer. The New York Milk Committee, which has for its principal objects the improvement of the milk supply of the city and the education of the public in the proper use of milk for infant feeding and other purposes, has decided to call a similar conference annually.

Current Literature.

Medical Record.

Dec. 3, 1910.

1. *Clarke, T. W., and Curts, R. M. *Sulph-hemoglobinemia, with a Report of the First Case in America.*
2. Magnus-Levy, A. *Chemical Problems in Diabetes.*
3. Neff, M. L. *Occupation as a Therapeutic Agent in Insanity.*
4. Evans, W. A. *Ventilation of Cars.*
5. Holmes, B. *Diagnosis and Treatment of Osteal Tuberculosis without Abscess Formation.*
6. Cocks, E. L. *The Treatment of the More Common Diseases of the Skin.*

1. Clarke and Curts report a case of sulph-hemoglobinemia, or idiopathic enterogenous cyanosis, as it is sometimes called. This rare condition is probably due to the absorption of an excess of sulphuretted hydrogen from the bowel and can generally be cured by systematic purgation. Suph-hemoglobin is a purple pigment, distinguished from methemoglobin by the spectroscope. Both methemoglobin and sulph-hemoglobin give a black absorption band in the red of the spectrum. The addition of a drop of dilute ammonium sulphide removes the band of methemoglobin, but has no effect on that of sulph-hemoglobin. In both methemoglobinemia and sulph-hemoglobinemia the striking symptom is cyanosis unaccompaned by dyspnea or other signs of cardiac or pulmonary disease. Methemoglobinemia usually occurs in men with chronic enteritis; sulph-hemoglobinemia in constipated women. If the patient is put on a strict milk diet, methemoglobinemia disappears within forty-eight hours. No such effect is produced in sulph-hemoglobinemia. [L. D. C.]

New York Medical Journal.

Dec. 3, 1910.

1. Woodbury, F. T. *Iodine.*
2. Bierhoff, F. *Concerning the Protest by the Committee Representing Various Women's Clubs against Paragraph 79 of the Bill Relating to the Procedures of the Lower Courts of the City of New York.*
3. Blackburn, I. W. *Hypernephroma.*
4. Buerger, L. *The Operative Technic of Cysto-urethroscopy.*
5. Jackson, J. A. *Report of a Case of Hypernephroma.*
6. *Runnels, S. C. *The Carbon Compounds of Arsenic in the Treatment of Syphilis.*
7. Knott, J. *Centenarians.*
8. Sawyer, H. C. *The Treatment of Diabetes Mellitus.*
9. Stimson, C. M. *Cholelithiasis.*
10. Yawger, N. S. *Cocaine Intoxication.*

6. Runnels concludes an exhaustive article on the use of the carbon compounds of arsenic in syphilis. He is particularly impressed with the value of pure sodium cacodylate in many cases. This has several decided advantages over Ehrlich's "606" — it is accessible to all in the United States; it is inexpensive; its injection is not painful; it is more stable; it contains a greater percentage of arsenic, and all the arsenic in it is absorbed. [L. D. C.]

The Journal of the American Medical Association.

Dec. 3, 1910.

1. *Reynolds, E. *Etiology of Ptoses and Their Relation to Neurasthenia.*
2. Rennie, W. H. *Relation of Recruiting to Preventive Medicine.*
3. *Kaplan, D. M. *Conservative Utilization of the Wassermann Reaction.*
4. Stern, H. *The Colonoscope.*
5. Weissenburg, T. H. *Exophthalmos in Brain Tumor, with Report of Eight Cases.*
6. Langdon, F. W., and Kramer, S. P. *Brain Tumor of Psychomotor Area Causing Jacksonian and Generalized Convulsions, Visual Hallucinations, Somatic Delusions, Astereognosis and Hemiplegic Paralysis. Operation; Recovery, Mental and Physical.*
7. Grinker, J. *Three Cases of Tumor in the Cerebello-Pontile Angle.*
8. Hoppe, H. H. *The Topographic Diagnosis of Subtentorial Brain Tumors.*
9. Marks, L. H. *Ehrlich's Biochemical Theory; Its Conception and Application.*
10. Richardson, W. W. *A Case of Torsion of the Great Omentum.*
11. Miller, R. T. *Myiasis Dermatosa Due to the Oznarth Flies.*
12. Wright, J. H. *Revised Directions for Making and Using the Wright Blood-Stain.*

1. Reynolds brings out and emphasizes many important points in treating of the etiology of ptoses and their relation to neurasthenia. He does not believe that the spontaneous relaxation of the supports of some one organ is anywhere near as common as supposed, but that muscular relaxations are always general in their character. Rapid loss of fat is by far the most important element in the causation of this class of cases in which ptosis is the result of purely passive lengthening of the normal supports. In this class of cases operative treatment is almost never indicated. Most of the operative failures are due to the adoption of routine operative measures without determining the cause of the individual ptosis. One of the greatest causes of ptosis is the round-shouldered, hollow-backed attitude which allows of intestinal pressure on the uterus, forcing it backward. In these cases rectification of incorrect posture is the first step, and this is often best done by the proper therapeutic corset instead of by the complicated brace. In nephroptosis, belts and pads to make direct pressure on or below the prolapsed kidney are less effective than a corset which exerts the proper abdominal pressure and support throughout the whole abdomen. One of the most common of the pelvic ptoses are infections of the Fallopian tubes which drag the uterus out of position by adhesive bands.

3. Kaplan believes that only 66 to 88% of tabetics are syphilitic. In patients in the active forms of the disease with a negative Wassermann reaction, mercury did no good, and in some cases harm. The disappearance of the Wassermann reaction from a case of syphilis can only

be taken as a favorable sign, provided the clinical manifestations go hand in hand. The laboratory report on a Wassermann should always be collated with the clinical findings in each case. [E. H. R.]

THE ARCHIVES OF INTERNAL MEDICINE.

NOVEMBER, 1910.

1. MACRAE, T., EISENBREY, A. B., AND SWIFT, H. F. *The Use of Pure Lipoids and Alcoholic Extracts with Active and Inactive Serum in the Complement-Fixation Tests for Syphilis.*
2. PEARCE, R. M. *The Wassermann Reaction in the Pathology, Diagnosis and Treatment of Syphilis.*
3. HERRICK, J. B. *Peculiar Elongated and Sickle-Shaped Red Blood Corpuscles in a Case of Severe Anemia.*
4. *HESS, A. F. *The Elimination of Bacteria from the Blood through the Wall of the Intestine.*
5. MACE, L. S. *Experimental Lung Anthracosis.*
6. *SWEET, J. E., AND PEMBERTON, R. *The Induction of Pancreatic Activity by the Removal of the Adrenals.*
7. *BROOKS, H. *A Case of Fatal Sodium Chloride Poisoning with a Brief Study of the Effects of the Excessive Administration of Salt on the Tissues.*
8. *JANEWAY, T. C., AND PARK, E. A. *An Experimental Study of the Resistance to Compression of the Arterial Wall.*
9. HIRSCHFELDER, A. D. *Cutaneous Tests with Corn Extracts in Pellagrins.*

4. Hess injected small quantities of Bacillus prodigiosus into the veins of dogs and rabbits, after having tied off and severed the intestine below the entrance of the biliary and pancreatic ducts, and within a few hours recovered the bacillus from the small intestine. The bile, he found, always contained many bacilli, the urine a few, the pancreatic juice practically none.

6. Sweet and Pemberton are conducting a series of experiments regarding the relation of certain ductless glands to pancreatic activity. Since removal of the adrenals causes marked increase in pancreatic secretion, they hold that these glands exercise an inhibitory influence upon the pancreas. There is some evidence to show that the mechanism of this phenomenon has to do with the increase of prosecretin in the duodenum.

7. Brooks reports the case of a young woman, operated upon for chronic appendicitis, who died as a result of receiving by mistake enemata amounting to 9 oz. of concentrated "stock solution" sodium chloride. By putting into the stomachs of rabbits a large dose of the same kind of solution, he obtained similar clinical symptoms. Autopsy showed great concentration of blood, with dryness of some organs, notably the central nervous system, and edema of others. The intestines contained much gelatinous lymph. Brooks suggests that the cerebral symptoms in cholera and other dessicating diseases, and in some cases of poisoning by over-heavy dosage with Epsom salts, may be caused in the same manner.

8. Janeway and Park, from a study of the resistance of arterial walls to pressure, conclude that for clinical purposes the resistance even of atheromatous vessel walls causes an error of no more than 10 mm. Hg. They advise reading the manometer at the moment of return of the pulse wave after compression rather than at that of its disappearance. [G. G. S.]

ANNALS OF SURGERY.

NOVEMBER, 1910.

1. *WALKER, J. W. T. *Atony of the Bladder without Obstruction or Signs of Organic Nervous Diseases.*
2. *BOTTOMLEY, J. T. *Certain Congenital Strictures of the Ureter.*
3. CUMSTON, C. G. *Primary (Congenital) Hydronephrosis.*
4. *BRAASCH, W. F. *Recent Developments in Pyelography.*
5. HAGNER, F. R. *Note on Removal of Carcinoma of the Fundus of the Urinary Bladder.*
6. TENNANT, C. E. *Intraperitoneal Cystotomy.*
7. KELLY, H. A. *A Chart to Aid in the Treatment of Cystitis by Distentions of the Bladder.*
8. MURRAY, R. W. *Is the Sac of a Femoral Hernia of Congenital Origin, or Acquired?*
9. WIENER, J. *Silver Wire and Linen Thread for the Cure of Hernia.*
10. BUNTS, F. E. *A Pneumatic Tourniquet.*
11. *THOMAS, J. L. *The Control of Hemorrhage by Means of Forceps Tourniquet in Major Amputations.*
12. CORNER, E. M. *Figures about Fractures and Refractures of the Patella.*

1. Walker presents twelve cases of atony of the bladder in which there were no signs of organic disease of the nervous system, in which the urethræ were unobstructed and in which the prostates were healthy. The stream of urine did not start promptly and was feeble, often intermittent and sometimes projected only by forced efforts of the abdominal muscles. In one case the urine escaped on coughing. In four cases there was chronic distention of the bladder. Most cases showed a residual urine (4–10 oz.). All cases showed a marked trabeculation of the bladder, usually the lateral walls, occasionally universal (except the trigone). The trabeculation differs from that of an obstructed bladder in that the muscular ridges are fine, evenly set, and with regular branchings rather than thick, irregular and with uneven branchings, and the interspaces are shallow and usually saucer-shaped rather than deep and narrow. Walker believes this trabeculation is a hypertrophy of intact muscle-bundles subsequent to a primary atrophy of a greater or less number of muscle bundles dependent upon some lesion of the sympathetic reflex center.

2. Bottomley places on record a congenital complete stricture of the left ureter one and a half inches above the bladder, in a boy of six. The hypernephrotic kidney and its ureter dilated to the size of a small intestine were successfully removed. He has collected and epitomized 55 other cases, 17 showing protrusion into the bladder, and the remainder without such protrusions. The paper is a comprehensive study of congenital ureteral strictures, partial, complete or accompanied by aplasia (imperfect development), which open, or were evidently intended to open, into the urinary bladder. Sex had no particular influence. The defect may be immediately incompatible with life, may soon become so, may remain latent a greater or lesser period until infection occurs, or may exist unsuspected during life and be found at autopsy after death from other causes. Forty-five cases occurred in single ureters, 11 in supernumerary ureters. With the exception of great rareties, the stricture in single ureters is usually in or very close to the bladder. The blind end at the stricture may be just beneath the bladder mucosa, in the bladder muscle layer, or may just reach the outer bladder wall (rather unusual). The ureter is almost invariably dilated, thin-walled (rarely thick), and tortuous (perhaps having appearance of string of sausages). Hydronephrosis of varying degree is the rule, but marked primary atrophy may result from strictures of the same location and character. Some cases are symptomless. Other cases present so varied a symptomatology that no single symptom or symptom-complex definitely indicates the condition. The urine is usually negative, although hematuria may occur.

4. Braasch presents the results of further studies in pyelography. He usually uses a 10 to 15% collargol solution. Dilated pelves are beautifully demonstrated, even when the catheter does not pass the etiologic ureteral obstruction, for in such cases enough collargol can frequently be injected past the obstruction to outline the pelvis quite definitely. The site of obstruction is furthermore shown. A pelvis dilated from mechanical obstruction casts a regular shadow — even lines of the pelvic wall and rounded ends of the dilated calyces. An inflammatory pelvis casts an irregular shadow, often associated with detached shadows from cortical abscesses connected with the pelvis. A tumor may distort the pelvis by retraction, in which case the pelvis may be irregularly large or a single calyx may be distended even three or four inches, or the ureteropelvic juncture may be abnormally broad or square. A tumor may distort the pelvis by encroachment, in which case only narrow slits may persist or complete obliteration may occur. In possibly a third of the cases of renal tumor the pelves may not be sufficiently distorted to produce distinctive shadows. Braasch has found pyelography valuable, also, in the differentiation of abdominal tumors, extrarenal and renal shadows; in horseshoe, median-lying

and solitary kidneys; in cystic kidney; in hydro-ureter; and in ascertaining renal functional capacity.

11. Thomas reports further success with his forceps-tourniquet first described in 1898. The instrument is somewhat similar to Doyen's stomach-clamp. One blade, the internal, has rounded edges and tip. The other blade is roughened to prevent slipping and has a shoulder to prevent compressing the skin near the articulation of the blades. In amputating at the hip a stab puncture is made just below the anterior superior spine of the ilium, through which the internal blade is forcibly pushed toward the neck of the femur in a direction parallel to Poupart's ligament. The leg is exsanguinated as much as possible by vertical elevation. The forceps is then clamped, effectually and simultaneously compressing the femoral vessels. Upon turning up the anterior flap the vessels are seized with hemostats and the clamp removed. Vessels in the posterior flap are controlled by applying the clamp behind the neck of the femur. [T. W. H.]

Surgery, Gynecology and Obstetrics.

November, 1910.

1. Alessandri, R. *Tuberculosis of the Body of the Uterus Confined to the Myometrium.*
2. Sieligmann, G. *Thrombosis of Pelvic Veins following Septic Abortion. Extirpation. Recovery.*
3. *Crouse, H. *Tumors and Retention Cysts of the Appendix.*
4. Else, J. E. *Further Studies in the Etiology of Cholecystitis.*
5. Herrick, A. B. *Abscess of the Liver. A Study of Forty-seven Cases of Abscess of the Liver, with Special Reference to the Diagnosis, Prognosis and Treatment of the Individual Cases.*
6. Polk, W. M. *The End Results of Surgical Operations for Relief of Neurasthenia Associated with the Various Visceral Ptoses.*
7. Staehlin, E. *A Contribution to the Study of Blood Supply of the Liver. With the Report of an Illustrative Case.*
8. *Quinby, W. C. *Surgery of the Thorax. Intratracheal Insufflation by the Method of Meltzer and Auer.*
9. Crump, W. G. *A New Oil in the Treatment of Postoperative Adhesions.*

3. Crouse considers that the diagnosis of malignant disease of the appendix is practically never made before operation or autopsy. The symptoms are those of appendicitis. The disease, however, is not rare. Simple removal of the appendix generally effects a cure, particularly in the sphenoidal cell type. The growth is generally found as a small hard nodule at the distal end of the organ. Many authors comment on the early years at which this disease is found. The prognosis, with removal before any extension has occurred, is excellent.

8. Quinby's paper on intratracheal insufflation is most interesting and practical, illustrating an entirely new and simple means of preventing operative pneumothorax. It takes advantage of the principle of internal respiration, and by means of a properly loosely fitting soft rubber tube introduced nearly to the bifurcation of the trachea, a continuous interchange of oxygen and carbon dioxide is effected without the necessity of the respiratory movements of the lungs or the chest wall. The patient is breathed for instead of breathing. By this method the interchange of oxygen is so perfect that it is impossible to over-etherize a dog with the intratracheal tube working. It also does away with the very cumbersome and expensive differential pressure cabinets and chambers. It is a method which is simplicity itself and deserves thorough trial by many workers and surgeons. [E. H. R.]

The Lancet.

Nov. 5, 1910.

1. Allbutt, C. *FitzPatrick Lectures on Greek Medicine in Rome. Lecture I.*
2. Glynn, T. R. *The Traumatic Neuroses.*
3. *Morison, R., and Drummond, H. *Desmoid Tumors.*
4. Bousfield, E. C. *Notes on Some Cases Treated by Vaccines of Unknown Organisms.*
5. *Boutor, S. *Primary Acidosis; Recovery.*
6. Hernaman-Johnson, F. *The Use of the Faradic Current in the Treatment of Persistent Aphonia following Laryngitis; Two Cases.*
7. Curtis, J. C. *Notes on a Case of Phlegmasia Alba Dolens, followed by Pulmonary Embolism and Infarction of the Lung. Recovery.*
8. Smith, H. L. *The Influence of Quinine and Morphia upon Phagocytosis.*
9. Hirsch, C. T. W. *The Motor Exhibition at Olympia, London.*

3. Morison and Drummond describe an interesting and rare class of fibrous tumors which occur in the muscles or muscular fasciæ of the abdominal wall which possess certain characteristics apart from fibromata elsewhere. Such tumors they call "desmoid tumors." They are rarely found in connection with other muscles. Their association with pregnancy is so frequent as to constitute more than a coincidence. Possibly traumatism, by muscle stretching or tearing, is of etiologic significance. A firm but not tender sausage-shaped tumor with some mobility across, but not in the direction of the fibers of the relaxed muscle with which it appears to be associated, fixed when the muscle is made tense, and occurring in a woman recently pregnant, is a desmoid tumor. The treatment is immediate excision.

5. Boutor gives the details of an interesting case of primary acidosis. The rarity of this condition and the difficulties of differential diagnosis make the report of the case of some value. [J. B. H.]

British Medical Journal.

Nov. 5, 1910.

1. Brunton, L. *The Clinical Measurement of Diastolic Blood Pressure and Cardiac Strength.*
2. Allbutt, T. C. *The FitzPatrick Lectures on Greek Medicine in Rome.*
3. Cressy, A. Z. C. *A Bad Case of Strangulated Omental Hernia, with Very Few Symptoms.*
4. Hobbs, R. A., and Sheaf, E. W. *A Case of Tetanus Treated by Chloretone.*

British Medical Association.

Section of Pathology.

5. Shattock, S. G. *Introductory Remarks by the President.*
6. Mott, F. W. *The Nervous System in Chronic Alcoholism.*
7. *Willcox, W. H., and Collingwood, B. J. *The Therapeutic Use of Alcohol Vapor Mixed with Oxygen.*
8. Glynn, E., and Knowles, R. E. *Some Observations on Fatal Cases of Pulmonary Tuberculosis.*
9. Achard, C. *A Method of Distinguishing Dead from Live Leucocytes.*
10. Hicks, J. A. B. *The Effects of Artificial Respiration on the Stillborn.*
11. Price-Jones, C. *The Variation in the Sizes of Red Blood Cells.*
12. *Ward, G. R. *Polychromasia and the Pathology of Hematomata.*
13. Boycott, A. E. *The Action of Oleic Acid and Its Soaps on the Blood.*
14. Addis, T. *The Pathogenesis of Hereditary Hemophilia.*
15. Beckton, H. *On the Absence of Altmann's Granules from the Cells of Malignant New Growths.*
16. Goodhart, G. W. *Chloroform Necrosis of the Liver.*

Combined Sections of Pathology and Bacteriology.

17. Wassermann, A. *The Diagnostic Use of the Complement Fixation Method.*
18. Bayly, H. W. *The Practical Value of the Wassermann Reaction.*
19. Muir, R. *The Fixation of Complement in General.*
20. Smith, J. W. *On the Structure of Complement in Relation to Deviation.*
21. Bassett-Smith, T. W. *The Diagnosis of Syphilis by the Complemental Deviation Method.*
22. McKenzie, I. *Individual Properties of Complement and Organ Extract.*
23. Dean, H. R. *Comparison of the Original Wassermann Method with Some of Its Modifications.*

24. HARRISON, L. W. *The Guidance afforded by Complement Fixation Methods.*
25. BROWNING, C. H. *Lecithin and Cholesterin as Reagents for the Detection of Syphilitic Serums.*
26. BARRATT, J. O. W. *Complement Deviation in Relation to Carcinoma.*

7. Willcox and Collingwood, after a careful study of the therapeutic effects of alcohol vapor mixed with oxygen, conclude (1) that oxygen bubbled through absolute alcohol is a marked cardiac stimulant in cases of heart failure, and that it is pleasant and non-irritating, causing no ill-effects to the lungs or bodily system. (2) A rapid feeble pulse is slowed by some ten to twenty beats with marked improvement in its force and volume. The blood pressure is raised from 10–30 mgm. The full effect is obtained after five minutes and lasts for several minutes afterward; as it passes off it should be repeated.

12. Ward describes certain studies he has made, which go to show that the phenomenon occasionally seen in blood known as polychromasia or polychromatophilia is a regenerative one and not degenerative. All normal blood is potentially polychromatophilic, only under certain stimuli these cells are more in evidence. [J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 45.

Nov. 10, 1910.

1. JUNG, H. *Vaginal Methods of Aid in Delivery.*
2. SCHRÖDER, G. *Treatment of Laryngeal Tuberculosis.*
3. FRIED, R. *Cure of Tubercular Pneumothorax Spontaneously after Six Months.*
4. PERNICE. *Cancer of the Esophagus High Up and Its Treatment.*
5. *FRANKENSTEIN, K. *Critical Observations on the Use of Subcutaneous Salt Infusion in Eclampsia.*
6. FRAENKEL, E. *Treatment of Eclampsia according to Stroganoff.*
7. LOEWENTHAL, S. *Method of Measuring and Unity in Biological Radium Research.*
8. SCHINDLER. *Question of the Treatment of Myoma with Roentgen Ray.*
9. BAUER, H. *An Objective Härtemesser with an Index Scale for Roentgen Ray Management.*
10. SCHALL, M. *New Technical Devices in the Field of Medicine.*

5. Frankenstein mentions the fact that in kidney disease a salt-free diet is urged. In eclampsia, when there is evidence in the urine of kidney disease, it is frequently advised to give enormous quantities of salt solution intravenously or subcutaneously. He asks, Is this rational? and cites cases which might be used to answer the question either way. In cases of heart collapse approaching he considers the infusions dangerous. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 44.

Nov. 1, 1910.

1. STERN, R. *Differences of Resistance of Bacteria when Inside or Outside the Infected Organism.*
2. *ROLLY. *The Influence of Various Diseases on the v. Pirquet Tuberculin Reaction.*
3. MEYER, H. H. *The Action of Calcium.*
4. *ZABEL. *Sudden Changes of Blood Pressure and Their Causes.*
5. JASCHKE, R. T. *The Field of Usefulness of Pfannenstiel's Fascia Splitting.*
6. METHLING. *The Forensic Value of the Hemochromagen Test for Blood.*
7. HAYMANN, L. *Experimental Study of the Causes of Otogenetic Pyemia.*
8. REICHMANN, V. *An Unusual Filarial Disease; Cure by Ehrlich-Hata.*
9. GLAESSNER, P., AND MILAVEE. *Epicondylar Fracture of the Humerus.*
10. HOFSTÄTTER, R. *Polythelia and Axillary Milk Glands.*
11. HOFFMANN, R. *Influencing Basedow's Exophthalmos from the Nose.*
12. TANAKA, Y. *Pathogenicity of the Ameba Dysenteriæ.*
13. HAGER, A. *Extrophia Vesicæ Urinariæ with Adenocarcinoma Gelatiniforme.*
14. MAYER, M. *Suicide by a Cut in the Neck in Paratyphoid.*
15. DAVIDSON, A. *Diagnosis of Unilateral Deafness.*
16. WOLFER, L. *A Method for Determining the Right Size for a Seat.*
17. PAPPENHEIM, M. *The Origin of the Substances which Bring About the Wasserman Reaction.*

2. Rolly says that his studies on humans have led him to the conclusion that in a great number of patients during the course of various diseases a negative cutaneous tuberculin test occurs; and that in convalescence it becomes positive. He believes the change due to modifications in the skin rather than to changes of immunity.

4. Although not entirely new, the observations of Zabel have been so thoroughly carried out that the results merit the attention of all who use the blood-pressure test in clinical work. The patients were put on a routine mode of life and pressures were taken daily at the same hour and under similar circumstances. He says in conclusion that the normal blood pressure is subject to irregular variations which differ in individuals; that stimuli of all sorts can produce a rise of blood pressure temporarily; and that the variations in a series of fifty measurements taken under the same circumstances is generally greater at first than later.

If the cuff of the apparatus is cold when applied, if cold air strikes the arm of the patient, or if he is frightened or hurt by the apparatus, a rise of blood pressure may follow. Neurasthenic or hysterical people and convalescents from acute disease generally show greater variations of blood pressure due to psychic influences or external stimuli than do normal individuals. These variations may be so great as to lead to wrong conclusions if their cause is not appreciated. (The article should be read to be appreciated.) [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 46.

Nov. 14, 1910.

1. GENNERICH. *Results Concerning the Method of Application and the Dose in Ehrlich's Anti-Syphilitic Treatment.*
2. STEFFENHAGEN, K., AND CLOUGH, P. W. *Biological Researches concerning the Origin of Bone.*
3. GOLDSCHEIDER. *Problems and Aims of Clinical Instruction.* (Concluded.)
4. BOAS, H., AND DETLEFSEN, C. *The Occurrence of Much's Tubercular Bacillus in Lupus Vulgaris.*
5. WYNHAUSEN, O. J. *Quantitative Diastase Determination in the Urine, with Especial Reference to Its Relation to Nephritis and to Diabetes Mellitus.*
6. *BOCKENHEIMER, P. *Case of Extra-Uterine Pregnancy which had Ruptured into the Rectum. Successful Operation Performed through the Rectum.*
7. BENDA, C. *Foreign Body in the Superior Mesenteric Vein.*
8. MÜNZER, A. *The Internal Secretion of the Generative Glands.* (Continued.)
9. VOIGT. *Cocaine and Alypin.*
10. RUNGE, E. *Carcinoma of the Stomach in Its Relation to the Female Organs of Generation.*

6. The author reports the case of a patient who came to him with the complaint that she was passing bits of bone with her stools. The patient was taken to the hospital, where examination revealed that just above the sphincter ani was a hole in the anterior wall of the rectum containing many bones. This was thoroughly cleaned out and besides some forty bones and the calcified larynx of an apparently seven months' old fetus, shreds of tissue and blood clot were also found. The cavity was then washed out and packed with iodoform gauze. This was gradually removed and patient made a speedy recovery, improving very much in general condition. The patient at first gave no history that could explain the condition, but later gave the fact that some five years before a supposed pregnancy terminated with sharp pain in the lower abdomen and a gradual return to her normal figure. This case, with others quoted from the literature, is advanced as evidence that in cases of probable extra-uterine pregnancy an operation should always be performed to save the patient from subsequent suffering and danger. [J. L. H.]

Deutsches Archiv für Klinische Medizin. Band 100. Heft 3–4. Oct. 17, 1910.

1. Beck, R. *Orthodiagraphic Investigation of the Size of the Heart in Tuberculosis.*
2. *Schlaepfer, V. *Essay on the Histology of the Intestine in Pernicious Anemia.*
3. Ellermann, V., and Erlandsen, A. *Leucocyte Count and Lack of Homogeneity.*
4. *Jemma, R. *Infantile Splenic Anemia caused by Leishman's Parasite.*
5. *Koll, E. *Chronic Intestinal Disease and Bone Changes.*
6. *Abend, L. *Parasitic Hemoptysis.*
7. Lüdke, H., and Schüller, L. *Effect of Experimental Anemia on the Size of the Heart.*
8. Voswinkel and Dunzelt. *Acute Leukemia with an Infection of Paratyphoid B. Bacillus.*
9. Beyer, W. *Albuminous Expectoration after Thoracentesis.*
10. Lüdke, H. *Experimental Production of Leukemic-like Blood Picture.*
11. Wacker, L., and Poly, F. *Investigation on Carbohydrate Exchange.*
12. Lüdke, H., and Sturm, J. *Clinical and Experimental Investigation on the Origin and Course of Fever.*
13. Gräfe, E., and Röhmer, W. *Presence of Hemolytic Substance in Stomach Contents and Its Importance in the Diagnosis of Cancer.*
14. Strasburger, J. *Observations on Pulsus Alternans.*
15. Müller, J. *Induced Electric Phenomena in the Human Body and Tone of the Skin Dependent Thereon.*

2. Schlaepfer reports on the histologic appearance of the intestinal mucous membrane in pernicious anemia. Throughout the large and small intestine he found areas of slight chronic inflammation in the mucous membrane. These areas were marked by infiltration of cells of the lymphocytic series. Also there was proliferation of the lymph follicles. In these chronic inflammatory areas were small nucleated fat-containing cells which he considered a further example of a slight inflammatory process.

4. Jemma reports on some cases of infantile anemia from which, by splenic puncture, a parasite similar to the parasite of Leishman was obtained. He experimented with this parasite by injecting blood from the spleen of these cases into dogs and had fairly successful results in showing that the disease could be transmitted by inoculation. The parasite is very similar to that which causes kala azar, but he does not consider that this tropical disease and his cases of splenic anemia are the same disease.

5. Koll reports several cases of chronic foul diarrheas which show bone changes by means of the x-ray. Some of these cases improved in regard to their bone symptoms when the diarrhea was relieved. He considers there is some relation between the intestinal putrefaction and the bone injuries.

6. Abend emphasizes the importance of searching the sputum for evidences of animal parasites in cases of hemoptysis in which tuberculosis can be excluded. The eggs may frequently be found in the sputum. [C. F., Jr.]

Obituaries.

JOHN CUMMINGS MUNRO, M.D.

Dr. John Cummings Munro died at his home in Boston, Dec. 6, in his fifty-third year. Dr. Munro was born in Lexington, Mass., March 26, 1858. He came of distinguished ancestors; his grandfather took part in the battle of Lexington, and four professors, all bearing the name Alexander Munro, for upwards of a hundred years filled the chair of anatomy and surgery at the University of Edinburgh.

Dr. Munro received his preliminary education at the Boston Latin School and Harvard University, receiving his degree of A.B. in 1881, and the degree of M.D. from the Harvard Medical School in 1884. As was customary at that time, he began active work as a general practitioner, but his interests soon began to turn to surgery, a branch of medicine in which he early made a distinguished place for himself. From 1889 to 1905 he was connected with the Harvard Medical School in a teaching capacity. He was assistant in anatomy from 1889 to 1903, assistant demonstrator of anatomy the following year; thereafter he held respectively the position of assistant in clinical surgery, instructor in surgery and lecturer in surgery. It will be seen, therefore, that his special training for surgery came through a long course of anatomical teaching, which, no doubt, accounted, at least in a measure, for his exceptional skill. In addition to his teaching positions, which he never allowed to occupy an undue share of his time, he was surgeon at the Boston City Hospital for ten years, from 1893 to 1903, when he resigned to accept the position of surgeon-in-chief at the Carney Hospital, instituting thereby the first continuous surgical service in New England. He was also consulting surgeon to several suburban hospitals. His society membership was large. Among the organizations to which he belonged were the American Surgical Society; the Society of Clinical Surgery, of which he was president in 1905; the Association of American Anatomists; the American Medical Association, in which he always took a deep interest and in which he was chairman of the Surgical Section in 1909; The Massachusetts Medical Society; the Southern Surgical and Gynecological Association; the Boston Society of Medical Sciences; the Boston Society for Medical Improvement, together with various honorary memberships.

The work which proved to be Dr. Munro's greatest opportunity for development was undoubtedly the surgical clinic at the Carney Hospital, over which he presided with rare judgment for seven years. Not only did this continuous service give him an opportunity to carry on surgical work in the most satisfactory possible way, but it also demonstrated the usefulness of such a continuous service, in regard to which there have been differences of opinion in this community. Under his administration the Carney Surgical Clinic became widely known and much visited by men in search of high ideals of work, and by those interested in the progress of medicine in general. An attempt was also made at this clinic, and with a marked degree of success, to avoid the abuse of medical charity. Those who were able to pay for services rendered were expected to do so, while the deserving poor were treated free of charge as at other public hospitals.

Dr. Munro's contributions to medical literature were numerous, though not so extensive as those of many men of less mark. He wrote only when he believed he had a mission, and not infrequently his contributions assumed a somewhat militant tone. He was an ardent and uncompromising believer in surgical procedures and had small patience with the conservative members of the profession who counciled delay in surgical

measures which, to his mind, gave promise of more immediate relief. He was a man of marked definiteness of opinion but was always fair in discussion, spoke keenly and to the point and never allowed words to obscure thought. One of his last contributions to medical literature was the annual discourse before The Massachusetts Medical Society delivered on June 8 of this year. His subject was "Dyspepsia and Indigestion viewed from a Surgical Standpoint." The final paragraph of this excellent paper sums up his general attitude toward medical problems so well that its quotation here is justified. "To conclude very briefly I would again beg the general practitioner to consider the probability of some simple surgical lesion of the abdominal viscera in his cases of persistent recurrent indigestion; that where such a lesion does exist surgery is the safest and surest means at our disposal to bring about a permanent cure; that his neurotics with indigestion secondary to surgical lesions have the right of relief from their local trouble; that finally there is a type of dyspepsia most naturally ascribed to gastroduodenal ulcer, but which is really secondary to an appendicitis, and which is curable to a degree not yet definitely determined, by a simple appendectomy."

As a surgeon, Dr. Munro was distinguished for his dexterity, his judgment and his fearlessness in undertaking operations before which a less skilled man might well have hesitated. His success and his personality were such that he had a very large following, and he undoubtedly added greatly to the science and art of surgery in this community, and indirectly in the country at large. As a man, he was modest, honest, simple and clean in life, and straightforward in all his actions. To those who knew him well, he was a delightful companion and a firm and uncompromising friend. As was natural in such a personality, he had a strong and beneficent influence upon younger men and undoubtedly did much to encourage many struggling practitioners, although for some years before his death he had not been brought into close contact with medical students. He met his last distressing illness with the courage and determination which one would have expected from such a character as his. He was to an unusual degree devoted to his professional work and enthusiastic in its accomplishment. Death was to him particularly unwelcome, since at the age of fifty-three his work was far from completed and his enthusiasm for his chosen field of endeavor was waxing rather than waning. In spite of this, he died with heroism and with the sympathy of his colleagues and friends to a degree hardly to be expressed in words. In his private life, Dr. Munro showed the same attributes as in his professional work. He was a devoted father and husband and gladly gave what time was not devoted to his profession to the interests of his family. He was skilled as a musician, an interest which he had fostered since his college days when he had taken active part in his college orchestra and similar musical organizations.

He was married on Nov. 17, 1887, to Miss Mary Squibb, of Brooklyn, N. Y., who always followed his professional career with peculiar interest and sympathy and often accompanied her husband to medical meetings in various parts of the country. So definite was Dr. Munro's attitude toward medical questions, and so pronounced his opinion on many matters of medical or surgical import, that his place will not soon be filled or the memory of his personality and of his accomplishment fade.

CHRISTIAN ARCHIBALD HERTER, M.D.

DR. CHRISTIAN ARCHIBALD HERTER, of New York, professor of pharmacology and therapeutics in Columbia University, died from pneumonia on Dec. 5, in the forty-sixth year of his age He was born in Connecticut, and was a maternal grandson of Dr. Archibald Miles of that state. He has graduated from the College of Physicians and Surgeons in 1885, and afterwards took up post-graduate work under Professors Welch, of Johns Hopkins University, Baltimore, and August Forel, of Zürich, Switzerland. Inheriting wealth, he never engaged in private practice. At first, he devoted himself more particularly to the study of neurology, and wrote a textbook on the "Diagnosis of Diseases of the Nervous System," which was published in 1892. Later, he gave his attention largely to the chemical aspects of disease. He early fitted up a splendidly equipped laboratory in his own home, and his original research work attracted widespread attention in the profesion. His studies in metabolism, the physiology and pathology of the intestinal tract, the etiology of arthritis deformans, and the action of adrenalin on the pancreatic secretion were among many investigations of his which proved of great interest and value. From 1897 to 1903 he was professor of pathological chemistry in Bellevue Hospital Medical College, and on resigning that position to accept the chair in the Columbia Medical School he established the Herter lectureship at Bellevue. Under this, courses of lectures have been given by such distinguished foreigners as Von Noorden, Halliburton Friedrich Müller, Starling and Cohnheim. He also established a similar lectureship at Johns Hopkins where lectures have been given by Ehrlich, Von Meyer, Schaefer and Chiari.

For ten years he was visiting physician to the City Hospital on Blackwell's Island, and at the time of his death was consulting physician to this hospital. He was a member of the Reference Board, appointed by President Roosevelt, to investigate the influence of food preservatives on the human body, and his studies on this subject were conducted in his own laboratory. From the beginning, he was one of the directors of the Rockefeller Institute for Medical Research, and during the last two years he had devoted much time and study to the plans for the hospital of the institute, to which, on its opening recently, he was appointed chief physician.

Dr. Herter has been indeed a pioneer in research, and his untimely death is deeply deplored,

for, remarkable as were his achievements, it may well be believed that had his life been spared he would have accomplished still more brilliant results and left a record such as is seldom made.

JOHN CHALMERS DA COSTA, M.D.

Dr. John Chalmers Da Costa, who died on Dec. 6 at Philadelphia, was born in that city on Nov. 15, 1863. He graduated from the scientific department of the University of Pennsylvania in 1882, and in 1885 received the degree of M.D. from the Jefferson Medical College. He served at the Philadelphia Hospital as resident physician in 1885–6, and as assistant physician in the insane department in 1886–7. In 1887 he became assistant demonstrator of anatomy at the Jefferson Medical College, and later demonstrator and professor of surgery. Since 1895 he had been surgeon to the Philadelphia Hospital and since 1896 to St. Joseph's and St. Agnes hospitals. At the time of his death he was president of the Philadelphia Obstetrical Society, a fellow of the American Surgical Association and the College of Physicians of Philadelphia, and associate member of the Society of Gynecology and Surgery of Bucharest. He was author, or editor, of several important medical works and a frequent contributor on surgical subjects to scientific periodicals. His death unhappily terminates the activity of a distinguished member of a distinguished American medical family.

Miscellany.

CLASSIFICATION AND EXAMINATION OF MEDICAL INSPECTORS OF SCHOOLS.

In last week's issue of the Journal we commented on the proposed change in the number and salary of school physicians in Boston. The following letter from the chairman of the Civil Service Commission to one of the daily newspapers relative to the classification and examination of medical inspectors of schools seems timely and deserving of republication:

"In a recent interesting editorial your paper speaks of 'the action of the Civil Service Commission in permitting the Boston Health Board to appoint school physicians without previous examination for fitness.'

"It occurs to me that the general public may be interested in a fuller statement of the situation. For some years physicians have been appointed by the Health Board to inspect schoolchildren and have been designated in the pay-roll lists as 'medical inspectors.'

"The Civil Service Commission has considered these persons as subject to the civil service law and rules; but, owing to the small salary paid, the probable difficulty of establishing eligible lists and the pressure of other duties, it has never held an examination.

"When the question of the appointment of the proposed new school inspectors, at a reasonably high salary, arose, the commission informed the Health Board that it considered the positions classified under the civil service law and rules, and that it would probably hold an examination. Such an examination would be based wholly on the physician's training and experience and upon his technical qualifications for the place.

"At the request of the school board, the commission presented to the attorney-general, its official legal adviser, the question whether or not these school physicians were subject to the civil service law and rules and classified as 'inspectors.' The attorney-general ruled, this autumn, that the positions were not classified.

"This ruling, therefore, has taken the positions out of the jurisdiction of the commission and thrown all appointments into the hands of the Health Board, unrestricted by any requirements, except such as that board itself shall fix.

"'As exactly similar positions in New York City and in other large cities are subject to the civil service law, and as it seems highly desirable that appointments to such positions should be made solely on merit and without regard to other influences, it would seem highly desirable that legislation should be enacted subjecting the positions to the civil service law. In making this suggestion, however, I do not mean to intimate that the appointments by the Health Board will be made on qualifications other than merit, but I feel that such positions should by law be removed from the possibility or attempts to introduce other considerations."

Correspondence.

"INFECTIOUSNESS AND PROPHYLAXIS OF CROUPOUS PNEUMONIA."

Boston, Dec. 2, 1910.

Mr. Editor: Your timely editorial upon the infectiousness and prophylaxis of croupous pneumonia is of great interest and importance. Only in one instance, but that a very noticeable and serious one, must I differ from your statements and advice. In regard to nightly cleansing of the "nose, throat and mouth," so many people take your advice literally and actually try to cleanse the nose by artificial means that a renewal of warnings issued by ear specialists forty years ago should be added to any suggestions of this sort. The very serious inflammatory processes within the middle ears and extending to the brain or to the mastoids from infectious material actually forced into the tympana by nasal douches or by post-nasal syringing have caused so much trouble for patients and aurists that such warnings are pertinent. On the whole, it is unsafe to make use of any fluids for "cleansing the nose." The reason for this is obvious to all who have studied the anatomy and physiology of the upper air passages. The initial source of infection must necessarily be placed where ordinary methods of "cleansing" cannot prevail. By these I mean the action of the ciliated epithelium, to bring particles outwards by forcible blowing of the nose and by swallowing. The acts of coughing and of sneezing, the latter not volitional, are somewhat effective.

The location of the only "site of infection" is behind the nose, and upon the nasopharyngeal wall. At this spot is situated the first tonsil, named after Luschka, who described it. Without going into detaills, it may be stated that this tonsil is usually hypertrophied or hyperplasic, in either case not normal; consequently any increase in the amount of work required of it cannot be performed. Its functions then are impaired, and if during the time when it is pathologic any excessive amount of virulent microorganisms invade it, they may develop without interference from phagocytes to produce soluble toxins which,

together with bacilli, enter the economy through the lymph channels.

A proper "cleansing of the nose" must mean partial or complete sterilization of the "site of infection" in the nasopharynx. This can never be accomplished by anything short of direct application to the diseased surface of sterilizing agents or of stimulants. These should be used regularly in cases of badly diseased throats and frequently in cases of acute infections. Their value as preventive measures in health is purely psychological.

Very truly yours,
EDMUND D. SPEAR, M.D.

STAINING CAPSULATED BACTERIA IN BODY FLUIDS.

NEW BRIGHTON, STATEN ISLAND, N. Y.,
Dec. 1, 1910.

Mr. Editor: Referring to the article published in the BOSTON MEDICAL AND SURGICAL JOURNAL, date of Nov. 24, on "A Method of Staining Capsulated Bacteria in Body Fluids," I would like to add a very simple method of staining capsulated bacteria which I have found to give uniformly good results and using only stains that would be found in the smallest office laboratory. It is almost the same method so long used for staining the tubercle bacillus except that no decolorizing methods are used.

The thinly spread smear is fixed by heat in the usual manner, covered with Ziehl's carbol-fuchsin solution and steamed gently for one to two minutes. Wash in water and cover with methylene blue, 1% solution, for one-half minute, warming gently. Wash in water, dry and the specimen is ready to be examined. The capsules appear as very clear and distinct areas about the dark-blue stained micro-organisms.

Very truly yours,
HENRY A. CRAIG, M.D.,
Assistant Physician and Bacteriologist,
Sailors' Snug Harbor Hospital.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 3, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,312	330	Pittsfield	3	—
Chicago	651	155	Brookline	7	2
Philadelphia	—	—	Gloucester	7	2
St. Louis	—	—	North Adams	5	1
Baltimore	—	—	Northampton	6	1
Cleveland	—	—	Chicopee	1	1
Buffalo	—	—	Medford	3	—
Pittsburg	—	—	Beverly	4	—
Cincinnati	—	—	Leominster	6	1
Milwaukee	—	—	Hyde Park	3	0
Washington	—	—	Melrose	1	0
Providence	—	—	Newburyport	4	1
Boston	219	50	Revere	2	1
Worcester	38	11	Westfield	10	1
Fall River	37	15	Woburn	0	—
Cambridge	29	4	Peabody	5	2
Lowell	40	13	Marlboro	3	0
New Bedford	38	14	Attleboro	7	0
Lynn	21	4	Adams	3	—
Springfield	22	4	Clinton	2	—
Lawrence	18	6	Gardner	3	0
Somerville	19	4	Milford	—	—
Brockton	13	5	Watertown	3	1
Holyoke	14	6	Plymouth	—	—
Malden	15	3	Southbridge	3	3
Chelsea	14	1	Weymouth	—	—
Newton	11	3	Framingham	—	—
Salem	13	5	Wakefield	1	—
Haverhill	26	3	Webster	2	1
Fitchburg	—	—	Arlington	—	—
Everett	7	—	Greenfield	—	—
Quincy	—	—	Methuen	—	—
Taunton	8	—	Winthrop	—	1
Waltham	4	0			

ANATOMIST (MALE).

ARMY MEDICAL MUSEUM.

THE United States Civil Service Commission announces an examination on Jan. 18, 1911, to secure eligibles from which to make certification to fill a vacancy in the position of anatomist (male), at $1,600 per annum, in the Army Medical Museum, Office of the Surgeon-General, and vacancies requiring similar qualifications as they may occur, unless it shall be decided in the interest of the service to fill the vacancy by reinstatement, transfer or promotion.

SOCIETY NOTICE.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY.—Surgical Section meeting, John Ware Hall, Wednesday, Dec. 21, 1910, at 8.15 P.M. "Non-Malignant Strictures of the Rectum." Dr. James P. Tuttle, New York. Discussion by Drs. F. B. Harrington, C. L. Scudder, T. C. Hill, F. J. Cotton and J. S. Stone. Light refreshments after the meeting.

WILLIAM C. QUINBY, M.D., *Secretary,* 396 Marlborough St.
CHARLES A. PORTER, M.D., *Chairman,* 254 Beacon St.

RECENT DEATHS.

MUNRO, JOHN CUMMINGS, M.D., M.M.S.S., died in Boston, Dec. 6, 1910, aged fifty-two years.

DR. HORACE BABCOCK, a retired physician of Gowanda, Cattaraugus County, N. Y., died on Dec. 6, in his eighty-seventh year. He was a graduate of the medical department of the University of Buffalo, and practised in Wisconsin until 1862. He then was appointed surgeon of the Second Wisconsin Regiment, and while serving in this capacity was captured at Gettysburg. After the war he located at Gowanda.

DR. JOB B. M. DICKINS, who died of cerebral hemorrhage last week in Newburyport, Mass., was born at Haverhill, Mass., in 1845. He obtained his medical education partly in Cincinnati, partly in New York. He practised at first in Cambridgeport, Mass., but removed later to Newburyport.

DR. JAMES DUNN, of Winthrop, Mass., who died of bilateral pneumonia last week at the Boston City Hospital, was born in 1883. He was a graduate of the Tufts Medical School. He is survived by his mother, one sister, and one brother.

DR. HENRI HUCHARD, of Paris, France, died in that city on Dec. 11. He was a specialist on diseases of the heart.

MCDONALD, JAMES ATHANASIUS, M.D., M.M.S.S., retired, died in Charlestown, Dec. 8, 1910, aged seventy years.

DR. JAMES ATHANASIUS MCDONALD, who died of pneumonia on Dec. 8, in Charlestown, was born in Charlottetown, P. E. I., on May 2, 1840. In 1866 he received the degree of M.D. from the Harvard Medical School, and immediately settled in the practise of medicine in Charlestown. In addition to the activities of a busy professional life, he served in 1875 as a representative to the General Court, and for many years as a member of the school committee. From 1870 to 1874 he was surgeon to the Ninth Regiment. He is survived by his widow, one daughter, and two sons, likewise physicians.

DR. WALTER H. WENTWORTH, who died of cerebral hemorrhage last week, at Providence, R. I., was born in Stockbridge, Mass., on March 7, 1841. After graduating from the College of Physicians and Surgeons, New York City, he entered the Union Army and served as a surgeon throughout the Civil War. In 1869 he settled in Pittsfield, Mass., where he had continued in practise ever since. He was a member of the Berkshire Medical Society. He was a widower, but is survived by four children.

BOOKS AND PAMPHLETS RECEIVED.

Treasury Department. Public Health and Marine-Hospital Service of the United States. Reprint from Public Health Reports No. 54. Preliminary Notice on a Simple and Inexpensive Apparatus for Use in Safe Disposal of Night Soil. By L. L. Lumsden, Norman Roberts and Ch. Wardell Stiles.

E. Merck's Annual Report of Recent Advances in Pharmaceutical Chemistry and Therapeutics. Darmstadt, 1910.

Treasury Department. Public Health and Marine-Hospital Service. Reprint from Public Health Reports No. 55. Cholera. Its Nature, Detection and Prevention. By A. J. McLaughlin.

Ministero della Marina. Ispettorato di Sanita. Statistica Sanitaria dell' Armata per gli anni 1905 e 1906. Roma, 1910.

The Non-Surgical Treatment of Duodenal Ulcer. By George Herschell, London, 1910.

Infantile Mortality of Boston. By John Ritchie, Jr. Reprint.

Internal Secretions. By Isaac Ott, Easton, Pa.

Original Articles.

THE CARE AND MANAGEMENT OF THE TABETIC BLADDER. 1. DIAGNOSIS.

BY J. DELLINGER BARNEY, M.D., BOSTON,

Assistant Surgeon to the Genito-Urinary Out-Patient Department, Massachusetts General Hospital.

(From the Genito-Urinary Out-Patient Department, Massachusetts General Hospital.)

In this paper I shall discuss the bladder disturbances of tabes dorsalis with special reference to their diagnosis with the cystoscope. In a second article I shall attempt to explain them, while in a third article I shall deal with their prognosis and treatment.

The following case was seen in the Genito-Urinary Out-Patient Department of the Massachusetts General Hospital in February, 1909.

M. S., fifty years old, born in Turkey.

Past history. — Unimportant. Denies venereal disease.

Present illness. — For the past two months some difficulty of micturition.

Stream starts slowly and sometimes stops. Never had to be catheterized. No pain, no incontinence. Frequency, day three or four times; rarely gets up at night.

Physical examination. — Abdominal examination shows distended bladder. Rectal examination shows small, normal prostate. Residual urine, 16 oz. (on two occasions). Urine clear, amber, acid, specific gravity 1,021, no albumen or sugar. No. 30 French sound goes easily to bladder.

Cystoscopy by Dr. Lincoln Davis. Bladder normal except for *marked trabeculation*. Ureters normal; prostate does not protrude into bladder.

In other words, there was no mechanical obstruction to the outflow of urine.

The case was then sent to the Nerve Department for their opinion.

The pupils were irregular, right larger than left, and did not react to light (Argyll-Robertson pupil). Patella and Achilles tendon reflexes present and equal. Romberg's sign absent. On this basis a diagnosis of early, high tabes was made. The patient has since been lost sight of.

After seeing this case it occurred to the writer that a study of a series of similar cases might prove valuable, not only from a diagnostic but also from a therapeutic point of view. This investigation has convinced me that far too little attention is given to the bladder in tabes, and that a great deal can be accomplished by careful, systematic treatment of the urinary tract.

An examination of the literature shows that disturbances of micturition are often the first, and always one of the commonest, symptoms of tabes dorsalis, as well as of many other diseases of the spinal cord. Indeed, as Gowers says, "It may be only for them that the patient seeks medical advice." One might go further and say that the genito-urinary surgeon not uncommonly sees patients "for diagnosis or treatment where from the symptoms only an organic bladder or prostatic lesion has been suspected" (Squier).

The frequency of bladder symptoms has been noted by Erb (80%), Bramwell (74.1%), Häuel (75%), Starr (80%), Gowers, Frankl-Hochwart, Oppenheim, Hirt, Neuhaus, Böhme and Sachs; indeed, by all who have looked into the subject.

That these disorders of micturition may often be the earliest of all symptoms is also agreed to by most. With this evidence in mind it seems to me that the importance of an early and complete investigation of the urinary tract in all cases of tabes cannot be overestimated.

These disturbances are many and varied. Usually a certain sluggishness of micturition is first noticed; the stream starts with difficulty, and cannot be hastened except by considerable effort. The desire to urinate may be infrequent, occurring only once or twice perhaps in the twenty-four hours. Occasionally complete retention is seen at the outset. Following this, or combined with it, there is often slight incontinence, usually at night. Or the patient complains that during coughing, sneezing, sudden muscular effort, etc., a little leakage of urine occurs. This is a very characteristic symptom. This "patchy" nature of the symptoms I consider to be of great diagnostic value. As the disease progresses complete retention (requiring catheterization), incontinence (usually the overflow from a full bladder, and necessitating the use of a urinal), or even an alternation of the two may supervene. Micturition is seldom painful, but true vesical and urethral crises may occur. Erb lays some stress on the early occurrence of dysuria and hyperesthesia of the bladder neck.

As to the objective symptoms, investigation has shown that distinct and important organic changes take place in the bladder before any hint of it is conveyed to the patient or physician. These were noted long ago by Orth, Birch-Hirschfeld, Ehrlich and Brieger, Hirt, and by Nitze in his pioneer work with the cystoscope.

Recent investigators, notably Böhme, Rinaldo, Frohnstein, and Walker, have shown in the cystoscopic examination of the bladder in tabes that these changes, consisting in the formation of the well-known "trabeculæ," may, and do occur before any other manifestation of the disease.

In his recent article Böhme has arranged his findings into four divisions which seem to the writer correct and reasonable.

1. The stage of development of the trabeculæ. There are no objective or subjective symptoms, and the condition is demonstrated only by the cystoscope.

2. The bladder reaches the climax of its compensatory power, and residual urine begins to accumulate. The condition is not yet known to the patient, and cystoscopy alone reveals the condition. A single catheterization may, however, reveal the diagnosis.

3. The stage of residual urine. Now the patient has his first subjective symptoms, weak stream and difficulty of micturition, but no real trouble.

4. This stage is characterized by an increase of all symptoms, real difficulty of micturition occurs, and urination is aided largely by the pressure of the abdominal muscles. Residual urine increases, the bladder is finally overstretched, and

overflow retention occurs. At this stage the patient usually seeks relief from his physician, and it is at this time that trabeculation of the bladder is first observed. As residual urine begins to collect, infection may occur at any time, superimposing the symptoms of cystitis on those already mentioned. As Böhme says, the transition from one stage to another is always gradual, and I might add that the order of events may be somewhat changed.

Since the appearance of the case reported at the begining of this paper, I have made careful examinations of twenty-four cases of tabes dorsalis, all in men; I have also examined one case with a diagnosis of ataxic paraplegia with cerebral syphilis, whose symptoms were essentially those of tabes. Most writers agree that in cord lesions with involvement of the posterior columns, or of the lateral pyramidal tracts, the urinary symptoms may be the same. These cases have occurred in my own practice, and in the neurological clinic at the Massachusetts General Hospital (to whose physicians I am grateful for their courtesy and co-operation). The patients were taken as they came, no selection being made except in the exclusion of cases showing any mechanical obstruction of the urinary tract such as stricture and hypertrophy of the prostate.

In over 90% of my cases there was more or less disturbance of urination. These were as follows, the arrangement being that of their frequency, but not necessarily of their order of appearance.

	Cases.
Difficulty of micturition (including hesitancy and a feeble stream),	15
Incontinence (diurnal),	11
Incontinence (nocturnal),	8
Painful micturition,	6
Urgency,	5
Frequency,	3
Retention,	2
"Does not feel as if he emptied his bladder,"	2
Incontinence with coughing, etc.,	1

In three cases there were no urinary symptoms whatever.

As regards duration, these symptoms had existed in five cases for six months, in six cases for one year, in seven cases for two years, and in five cases for five years or more.

It is significant that in over 50% (12 cases) the urine was cloudy and contained pus. In three of these a culture of the urine showed a pure growth of bacilli of the colon group. As this is by far the commonest organism found in infected urine, I have no reason to doubt that it was the offending germ in all.

The presence of infection in so large a per cent of these bladders is entirely in accord with the observations of others, such as Sachs, Gowers, Böhme, Erb, Squier, Oppenheim and Bramwell. All agree that infection occurs in the last stages of the disease, but that it may appear at a comparatively early date is not given the importance to which it is entitled. Infection of the urinary tract is sure to come sooner or later in any case of obstructed bladder with residual urine. In most of my cases it was clearly autogenous; in a few instrumentation could be held responsible. This infection is of the utmost importance from a prognostic point of view because it eventually leads, without proper treatment, and often even in spite of it, to the more serious condition of pyelitis and pyelonephritis.

In my series the condition of the bladder was noted in 23 cases. Of these, 12 had cystitis, indicated by injection or edema of the mucosa, often only that of the trigone and surface of the prostate. The percentage of cystitis corresponds, therefore, to that of urinary infection. In the other 11 the bladder is recorded as normal.

In 17 cases where the condition of the ureteral orifices was noted, no definite evidence of their involvement was found.

As it was considered unnecessary and even unwise in these cases to catheterize the ureters, no definite data is at hand as to the occurrence of pyelitis and pyelonephritis. In one or two cases it was thought that cloudy urine could be seen issuing from the ureters, but such an observation by inspection only is apt to be faulty. If renal infection existed in any of these cases it was not sufficiently advanced to cause symptoms. This does not eliminate it, however, for, in the first place, it is well known that pyelitis may go on for a long time without symptoms referable to the kidney, and, secondly, these cases were all in fairly good condition and well able to visit the hospital as often as was necessary. But that a fatal ending in many tabetics is caused wholly or partly by urinary infection is the experience of most observers. I shall bring this out more fully in my third paper.

In this connection it is of great importance to find that the urine was clear and sparkling in the three cases having no urinary disturbances.

A matter of equal importance is the presence of residual urine, noted especially by the recent observers already mentioned. This was found in 19 of my cases, absent in 5. The amount varied from 1 oz. to 3 pints, and was found to vary considerably on different occasions in the same individual. It was also greatly reduced after the beginning of treatment, as I shall point out later. Residual urine was not found in those cases with no urinary disturbance, and further, in the absence of residual urine, there was no infection. Hence the sequence of residual urine, bladder symptoms and infection, as was pointed out by Böhme and other writers, and as is shown in my own cases. I believe this combination to be invariable.

A cystoscopic examination was done in all cases. As a preliminary measure, and to exclude any case with mechanical obstruction, the urethra was explored with bougies or sounds, and the prostate was examined through the rectum. No case whose urethra did not admit a No. 26 French sound (meatotomy was done in some cases) or whose prostate could fairly be said to be enlarged was considered. Furthermore, all cases were eliminated where intravesical enlargement of the prostate was shown by the cystoscope. Each

bladder, with one exception, was viewed with the standard amount of fluid (150 ccm.) in order that, so far as possible, the results might be uniform. When possible each case was given urotropin, gr. v, t.i.d., for forty-eight hours previous to the cystoscopy, and all have been instructed to take it continuously. In the majority of the cases the passage of the cystoscope was absolutely painless, no cocainization being required. This is of considerable diagnostic value, as I shall show later. In a few cases the neck of the bladder was hypersensitive.

Twenty-two of the twenty-five bladders (over 80%) were trabeculated. This was the condition found by Böhme in all of his 8 cases, by Frohnstein in all of his 20 cases, by Rinaldo in 1 case. Thus in a total of 54 cases, 51, or over 90% of the bladders, showed trabeculæ. In addition to this we have the word of Walker that, in 31 tabetics cystoscoped by him, "some degree of trabeculation was usually present."

As regards the distribution of the trabeculæ, I am entirely in accord with the writers mentioned above. In the large majority of cases, especially the earlier ones, the trabeculæ are seen to involve particularly the fundus and side walls, while the whole trigone is normal. This is in distinct contrast to the appearance of a bladder obstructed by a stricture, or enlarged prostate. In these the trigone is always involved, often so much so as to make the finding of the ureters a matter of great difficulty in well-marked cases. The ureteric ridges are indistinguishable from the heavy trabecular branches, and the ureteral orifice lies buried between them, its location being determined only by the jet of urine. In such cases the fundus and sides may also be involved, but the picture is very different. In tabetic bladders with well-developed trabeculation, the cystoscopic picture may resemble closely that of mechanical obstruction, making diagnosis by inspection a matter of greater uncertainty. It will be seen from this that the topographical arrangement of the trabeculæ is of great importance, and the earlier the case is seen the greater is its value.

In my cases the distribution of the trabeculæ was as follows:

	Cases.
Fundus and side walls alone,	9
Generally distributed,	9
Trigone and side walls alone,	2
Trigone alone,	2

In 3 cases no trabeculation was present.

In the latter the absence of urinary symptoms, residual urine, and infection did not obtain as might be supposed. Each was noted in 2 cases.

To return for a moment to the three cases presenting no urinary symptoms, it was found that trabeculation was present in two of these. It was also observed in all of the five cases without residual urine. In other words, organic bladder changes had occurred before the loss of vesical compensation, of which residual urine may be considered an important indicator.

The character of the trabeculæ is of nearly as great diagnostic value as their distribution. In the early cases especially, but, generally speaking, in all, the trabeculæ are seen to be delicate and regularly branched. Except in cases of long standing, the interspaces are shallow, "saucer-shaped" (Walker), without the tendency to develop deep, narrow-mouthed pockets.

In contrast to these we see the trabeculæ of mechanical obstruction as coarse rounded cords, interlacing in every direction, their interspaces deep and pouching, in some instances forming true diverticulæ by evagination of the bladder wall.

The accompanying photographs show this difference in the character of the trabeculæ fairly well. Fig. 1 is from a case of post-diphtheritic paralysis of the bladder of twenty years' duration, where, for our purposes, the symptoms were the same as those in tabes. Fig. 2 shows the trabeculæ in a bladder with prostatic obstruction. It will be seen that the difference in the appearance of the two is quite marked.



Fig. 1. Post-diphtheritic paralysis of the bladder of twenty years' duration. Trabeculæ quite similar to those of tabes, delicate, regular, without tendency to diverticulation. Photograph by L. S. Brown.

How, now, shall we explain the trabeculation of the bladder in tabes? Let me say at the outset that no theory is at hand, so far as I know, to solve the riddle of the difference in distribution of trabeculæ in the two types of vesical obstruction. All we know is that this difference exists, that it is of great diagnostic value, and that in a few cases of tabes the topographical arrangement is identical with that of mechanical obstruction. On the other hand, I have never seen a mechanically obstructed bladder with trabeculation distributed as it in tabes.

Secondly, what are these trabeculæ, and what difference, if any, exists in the two types mentioned? Are they evidences of true hypertrophy of the detrusor muscle, or are they signs of an atrophy of interstitial tissue or of the bladder musculature itself? If atrophy is going on in either tissue, is it due to pressure, to a trophic disturbance, or to infection?

In the first place, there is a difference in the two kinds of trabeculæ. This has already been

described. It is fair to say, however, that it is not invariable. In a number of my cases the appearances were such that no one could say whether he was looking at a tabetic bladder or at one obstructed by a prostate, for example. This similarity occurred quite as often in patients with little or no disturbance of urination as in those with marked symptoms.

The same remark about the appearances of the trabeculæ applies to their distribution. Those of tabes may occasionally resemble those of obstruction, but the opposite does not obtain so far as my experience goes.

Whether trabeculæ are the result of atrophy or hypertrophy is a question of many sides. If they are due to atrophy of muscle, connective tissue, or both, from trophic disturbances, why do they occur in obstruction of mechanical origin where no nerve lesion exists? An answer to this question would eliminate much of our difficulty.



FIG. 2. Bladder mechanically obstructed by hypertrophy of prostate. Trabeculæ coarse, interspaces deep, forming little diverticulæ. This and the preceding photograph do not illustrate satisfactorily the different types of trabeculæ as seen with the cystoscope. However, in the absence of good cystoscopic photographs, I venture to offer these to illustrate my point. Photograph by L. S. Brown.

If the atrophy is due to pressure, why is it seen in cases where the intravesical pressure is so little above the normal that there are no urinary symptoms whatever and no residual urine? The latter and the symptom of difficult micturition are generally accepted as the indicators of increased pressure within the bladder brought on by an obstruction to urination. None the less, trabeculæ are seen before either of these. I think the consideration of this point in my second article will clear up this question.

Finally, is the trabeculation a result of detrusor hypertrophy? I think it is, at least in the early stages. My own observations, as well as those of Hirt, Böhme, Birch-Hirschfeld, Kaufmann, Ehrlich and Brieger, Hallé and Motz, Cealic and Strominger, and Posner substantiate this view. The very fact that it occurs before any sign or other symptom of bladder disturbance shows that the detrusor has been doing extra work. This extra effort is such that sooner or later the patient has to call on the pressure of his abdominal muscles to aid him in the emptying of his bladder. An explanation of this extra effort will be forthcoming.

Hirt has suggested that the question might be of thickening of the bladder wall as a result of overgrowth of connective tissue, seen in cases of chronic cystitis. This was discussed in the cases reported by Cealic and Strominger. If trabeculæ are due to this, how can they be accounted for in bladders where no inflammation exists? My observations agree with those of Nitze and the more recent cystoscopists, that trabeculation is very often seen without cystitis.

But the question is not answered. It is really a matter of primary detrusor hypertrophy due to the extra work it is called on to perform. This has been admirably worked out by Hallé and Motz in their memoir on the pathological anatomy of the bladder in chronic cystitis. These authors regard the detrusor changes as occurring in three stages. First, a pure hypertrophy, often tremendous, of the bladder muscle, and recognized as trabeculation. Secondly, an infiltration of connective tissue involving not only the interstices of the muscle layers, but also those of the muscle bundles themselves. Finally, the atrophic stage sets in and here the muscle bundles are infiltrated and replaced by connective tissue until they are seen at last only as little islands of muscle. These observations were later verified by those of Cealic and Strominger.

It seems to me, therefore, that we have here the explanation of the findings in tabetic bladders. At first hypertrophy, pure and simple, of the detrusor. Next, the occurrence of residual urine which invites infection, making it a matter of cystitis plus obstruction. The remaining steps are like those already described.

As a concluding remark, I may say that further investigation of bladders, with and without mechanical obstruction, especially if taken in their earliest stages, may show us that the trabeculæ are not so different, after all, in either character or distribution.

A summary of the results of this investigation shows that,

1. Trabeculation of the bladder in tabes is found in more than 80% of cases, and may occur before any symptom or other sign of vesical disturbance.

2. In tabetic bladders it is found in the fundus and side walls only, in typical cases. It is more delicate and regular than that seen with mechanical obstruction.

3. It is probable that it is due to a primary detrusor hypertrophy.

4. Residual urine is found in more than 70% of cases, often before any symptoms begin.

5. In over 50% of all cases the urine is infected.

6. Cystoscopy is generally a painless procedure, a fact which is of some diagnostic value.

7. Urinary disturbances, variable in character, are observed in over 90% of all patients with tabes.

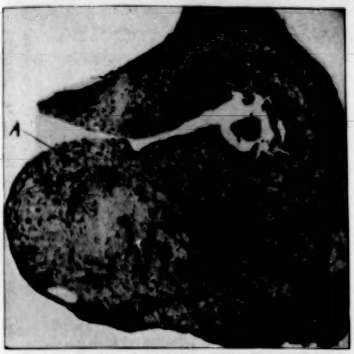


FIG. 1. Section of appendix. x3½. The small black areas, especially at the left, *A*, are clusters of ova.



FIG. 2. Section of appendix showing masses of ova surrounded by connective tissue. x125.



FIG. 3. Low power of urinary sediment, showing blood, pus, crystals and ova. In upper right-hand corner is miracidium that has just hatched out, leaving the empty shell behind it (to left). x200.

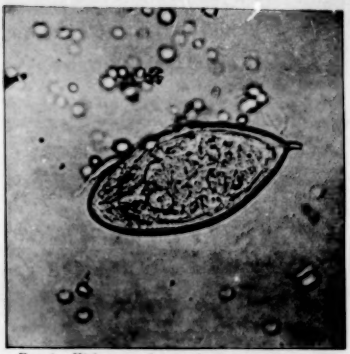


FIG. 4. High power of ovum showing structure. x375.

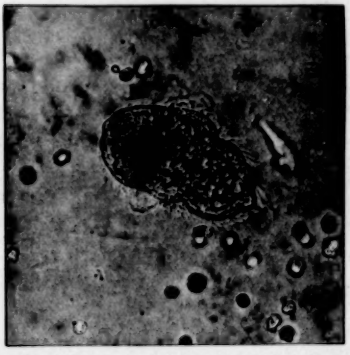


FIG. 5. Represents miracidium swimming about showing the different forms assumed. x375.

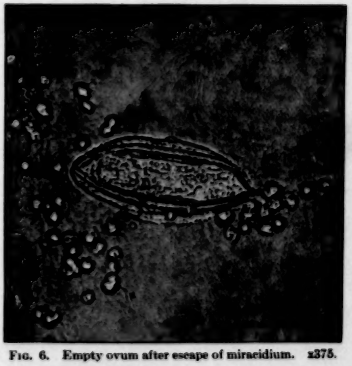


FIG. 6. Empty ovum after escape of miracidium. x375.

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BILHARZIASIS; REPORT OF A CASE WITH APPENDICITIS; LITERATURE SINCE 1904.

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Cases of bilharzia hematobia are sufficiently rare as yet in the United States to warrant being recorded, especially if they present features not found in those cases thus far reported. The following case is interesting in that it shows infection of both the genito-urinary and intestinal tracts, and also in the fact that microscopical sections from the greatly thickened acute appendix, which was obtained at operation, show terminal spined ova of the parasite scattered about in the wall of the appendix, these eggs being probably the predisposing factor in the attack of acute appendicitis. Appendices similarly affected have been reported in England and in Africa, but none in this country so far as I have been able to find out.

The case is as follows:

T. P., twenty-two years old, single, born in Ireland, a laborer, was admitted to the Worcester City Hospital on the night of Sept. 4–5, 1908, with the history of a sudden sharp pain in the right lower abdomen three days before. He had vomited frequently, had had "chills and fever," headache, and complained of tenderness over the painful area. His bowels had not moved for two days. His symptoms had increased in severity, and he was seen by his physician and sent to the hospital at 11 P.M. on the 4th. Examination showed a well-developed and nourished young man, with good color, and evidently in some pain. The heart and lungs were negative. His pulse was regular, rapid and rather high tension. The abdomen showed considerable tenderness and spasm about McBurney's point and below toward the median line. There was no distention. No masses were felt. The liver dullness was normal. The spleen was not felt. The patient was lying in bed with his knees drawn up. The knee-jerks were present and equal. There was no ankle clonus or Babinski. Temperature, 101. Pulse, 112. White count, 23,300. The diagnosis of acute appendicitis was made and the patient prepared for immediate operation.

Operation. — Dr. G. H. Hill. Gas-ether.

A three-inch incision was made at the outer border of the right rectus. The appendix was easily located, but very adherent and extending down deep into the pelvis. It was removed with difficulty by first ligating the proximal end and dissecting downwards and tieing off the mesentery and bleeding points. The appendix was very large, about 5 inches long and fully 1½ inches thick, red, indurated and covered with exudate. A small adhesion shaped like a small appendix and about 2 inches long, extending from middle of appendix backward to gut, was tied off and cut. There was some oozing of serum but no pus was found. A cigarette drain and one piece of iodoform were left in. The peritoneum was approximated with catgut. The abdominal wall was closed in layers with catgut, and the skin with silkworm gut. There was a good recovery from the ether.

The next morning, in the course of the routine examination of the urine, which was high colored, alkaline in reaction, 1.022 specific gravity, with a slight trace of albumen and a sediment containing many leucocytes and normal red blood cells but no casts, I saw numerous large, oval, brownish bodies, with a sharp spine at one end, and a distinct smooth outer covering or shell, inside of which in many cases there seemed to be something moving about. (See Fig. 3.) I thought that these were ova of some parasite, and, referring to books in the library, I found that they corresponded to pictures and descriptions of the ova of bilharzia hematobia. The appearance of the parasite in this part of the world aroused my interest, and, on questioning the patient later, I obtained the following history, somewhat indefinite, as the events had occurred seven years before:

He had never been sick before going to South Africa with the English army in May, 1901. In August, 1901, he had "enteric fever," i. e., he was sick for about two months, but up and about, had diarrhea, sometimes bloody, with fever, no particular pain, and no vomiting. Two months or more later he began to have slight pain in his bladder and urethra at the beginning of micturition, and passed a little blood nearly every time he urinated. In the middle of 1902 he had another attack of "enteric fever," similar to the first, which lasted two or three months. He was in Africa four years and four months, and was sent home with several other soldiers with the same disease to the Army Hospital, Natali, Kent, England. He was treated there three months. The diagnosis was bilharziasis (?). He was discharged from the army as unfit for service, but was told that his prognosis would be good if he remained away from the tropics. Since then he has never been entirely free from painful micturition and slight hematuria. Occasionally there has been no blood at all, but there is usually just a little at the end of micturition. His general health has been good until his present illness.

After the operation the patient was in poor condition for forty-eight hours, and it was thought that he had general peritonitis. Stimulation, irrigation of lower bowel, enemas and poultices relieved the distention and pain. The cigarette drain and wick were removed on the 8th, three days after operation, and considerable pus came from the wound. This discharge continued and the wick was replaced every day up to Oct. 8. Examination of the pus showed B. coli communis. The patient vomited more or less up to the 15th, with occasional pains in abdomen. The stitches were taken out on the 14th, and the wound was still discharging considerable pus. The patient meanwhile was having some pain on micturition and passing only a small amount of smoky urine at a time. He had urotropin and potassium citrate with practically no relief. He was out of bed on Oct. 4 and was discharged on the 20th to the Out-Patient Department. He returned there

at intervals for three weeks, when the wound was entirely healed. He had considerable tenderness about the scar, especially on the upper and inner side, where there was considerable induration. He also complained of occasional shooting pains through the abdomen. The hematuria and painful micturition had persisted in about the same degree.

On Dec. 11 he was sent into the hospital with the diagnosis of intestinal obstruction (?). He had been at work from Nov. 30 until Dec. 9. On the 8th he had had "gas on stomach" and some slight pain, and on the 9th had vomited twice, with increase in pain and tenderness, especially in the epigastrium. His bowels were constipated. (He did not know when the last dejection occurred.) Examination showed that there was considerable muscular spasm and tenderness in the right epigastrium, but no distention, and no masses were felt. He was given salts and kept quiet in bed, with morphia for pain. His symptoms disappeared and he was discharged on the 14th.

I have seen him at intervals since he was discharged from the hospital, the last time on Sept. 18, 1910. He has been steadily at work in the loom works, and later in a tannery, with only an occasional pain in the abdomen. The frequent micturition has persisted and is usually painful and urgent. The urine usually has a little blood, especially in the last portion, and numerous ova can be found in the sediment. He looks to be in first-rate condition.

While he was in the hospital every specimen of urine examined contained the ova with pus, blood and albumen, and the stools also showed the ova and miracidia. In the stool the miracidia were first observed swimming about, and after a search the empty shells and ova were found. The vomitus on the 14th was dark green and thick, almost fecal in character, but no ova or blood were found in it. The white count on the 10th was 12,400 and the differential was as follows: Polynuclears, 78%; lymphocytes, 15%, and eosinophiles, 7%. On the 15th, when he was feeling a little worse and his temperature was elevated slightly, the white count was 21,700 and the differential count showed, polynuclears, 92%; lymphocytes, 5%, and eosinophiles, 3%.

The specimen removed at operation was a large, dark-red appendix, covered with a fibrinous exudate, with a marked thickening and induration of the wall, especially on one side, where it was nearly an inch thick. The lumen was filled with a thin, foul, dirty brown detritus, and no concretions were found. The thickening of the wall was due to a marked increase in the connective tissue, which in many places was arranged in whorls, in the center of which were numerous ova. These ova were scattered all through the tissue singly and in groups, and all the spines which were visible were terminal. Many polynuclear leucocytes were seen scattered about in the tissue as seen in an ordinary acute appendicitis; there was considerable congestion, especially of the mucosa. (See Figs. 1 and 2.)

The ova never hatched out in normal urine as far as I could observe, but in a liquid stool I saw the miracidia swimming about (see Fig. 5), and in the urine on the addition of water and warmth they broke out even as late as forty-eight hours after the urine was voided. They did not live long at room temperature or in the incubator or in bouillon, nor has any attempt to follow their life history further been successful. All the eggs observed showed terminal spines, even those seen in the stool.

It was suggested that guinea pigs be used in order to develop the miracidia if possible. Into one the unhatched ova were injected intraperitoneally and also into the abdominal subcutaneous tissue. Into a second pig the miracidia hatched from the eggs were injected in the same way, while the third pig was put into a separate cage and fed with carrots, on which both the ova and the miracidia were placed. The first pig died three days later, apparently from a localized peritonitis. At the autopsy, no trace was found of the subcutaneous injection, but in a small piece of tissue, apparently a lymph node, from the under surface of the liver, were several ova in which the miracidia could be seen to be moving about. No other evidences of ova were found. The other two pigs were killed two months later, and autopsies, including examination of the urine found in the bladder, showed no signs of the ova.

REVIEW OF CASES.

In connection with this case it has seemed well to mention the other cases reported in this country and to look over the literature since Dr. O'Neil's very complete paper in 1904.

The first case was reported in 1882 by Dr. Booth, of Sparta, Ill., who found eggs with spines in the urine along with ciliated embryos and mature worms. The presence of the mature worms would throw some doubt on the diagnosis, as it is not known that they appear in the urine. The description of the ova is rather meager and there are no pictures or drawings as confirmatory evidence, so that there seems to exist a reasonable doubt as to the diagnosis in this case.

In the second case, reported by Dr. Curtis, of New York, in 1896, all the evidence lies in the fact that in the report of the case, the diagnosis of bilharzia was made on the microscopical examination of a bladder tumor that was removed at operation. There was no mention of any ova in the urine.

The third case was reported by Dr. Brooks, of New York, in 1897. It was a patient sent to him by Dr. Edebohls, and in the urine he found the eggs and watched them hatch out. The case was demonstrated at a clinic by Dr. Porter as the first one in this country. It was later studied and reported by Sondern working under A. Jacobi. This seems to be the first bona-fide case in which the diagnosis can be made from the description or pictures in the report of the case.

In 1900 Dr. Walker, of Evansville, Ind., reported a case, a woman who had a tumor connected with her bladder, and from this was taken a fluid in which ova, embryos and worms were found. The case was reported by the Raffertys later, in 1904, but the presence of the worms, and the pictures, tend to class this case among the doubtful ones.

Dr. Pool, of New York, in 1903, reported another case, in which the ova were found and photographed, and the process of hatching out studied. This case is probably the one referred to by Rankin in the *Brooklyn Medical Journal* in 1904.

Later in 1904 O'Neil, of Boston, reported a case with some excellent drawings and a review of the literature of bilharziasis. Since that time I have found reports of five other cases, aside from those reported among the Boers at the World's Fair at St. Louis in 1904. In regard to these latter cases, the urines of 45 of the 300

Boer soldiers and South African negroes were examined by Dr. Smith, of Atlanta, and in 7 were found the ova of bilharzia. None had any symptoms, but all gave a history of earlier symptoms. He also observed only terminal spines on the ova.

In 1905 Anders and Callahan, of Philadelphia, exhibited a man who was in Africa for two years ten months about nine or ten years previous. He complained of persistent hematuria, and the ova were found in his urine, the ova showing the terminal spines.

One year later Gunn, in San Francisco, reported 2 cases of the intestinal variety, apparently arising in Porto Rico. Eosinophilia was present, but this might have been accounted for by the other parasites found in the stools. The ova in these cases had lateral spines, and no motility was observed, even upon rupturing the shells. Gunn also mentions another case not reported, under the care of Dr. Lando, U. S. N., at the Mare Island Navy Yard Hospital. The patient had been in Africa and was suffering from the urinary form of the disease.

Robbins, of Detroit, in 1907, reported a case seen in 1904, a man who had served in the British Army in South Africa. He appeared with hematuria, frequent micturition and pain over the bladder, and his urine showed "regular ovoid bodies, yellowish in color, with a marked projecting point at one end." He made notes on the case but did not know what ova they were, until eight or nine months later, when he saw the drawings and the records of the cases reported by Dr. Smith, of Atlanta, and then realized that his own case was similar, and reported it.

Summing up this list of cases, it is seen that those reported by Brooks, Pool, O'Neil, Anders and Callahan, and Robbins, aside from those found by Smith, of Atlanta, are undoubtedly bilharzia hematobia. In those reported by Booth and Walker, the facts do not coincide with what is now known about this parasite. The case as recorded by Dr. Curtis, in the Proceedings of the New York Pathological Society, produces no evidence to confirm the diagnosis. The same might be said about the case at the Mare Island Navy Yard, as mentioned by Gunn, while Gunn's two cases may be classed as another variety of the bilharzia, especially in view of the reports from recent investigations in Porto Rico.

REVIEW OF LITERATURE.

In the literature since 1904 the method of infection or the mode of entrance into the body has been studied more than any other phase of bilharziasis with a view to better prevention of the disease if possible. But the question has not been definitely settled, although Looss thinks that the theory of infection through the skin gives the best explanation of the facts known. This includes also the discussion of the probability of an intermediate host. If there is one, it is not a rare creature, as the disease is so widely spread in South Africa, and is appearing in other parts of the world, the more so since the soldiers returning from the Boer War with it have scattered about so much. It was thought that the molluscs might be the host as they are in the case of other trematodes, but all the common molluscs have been searched without a trace of the bilharzia, and endeavors to provide a temporary shelter for the ova have not been successful. (Sandwith.) Any theory in regard to the method of infection must account for the passage of the ova from man to moisture, for water seems necessary for the hatching of the ova and the passage of the miracidia from water to man, and also must consider the habits of the host and the biological characteristics of the parasite. That is, the infected stool or urine must come in contact with water within forty-eight hours, and after that, the miracidia must find the host within thirty to forty hours, at least.

The theory of infection by mouth seems impossible as the miracidia cannot live in 1-1000 HCl more than one minute, or three minutes in 1-2000 HCl (Sandwith). And miracidia introduced into the stomachs of monkeys and other animals die at once. Then, too, the Greeks and Europeans in infected towns eating the same fruits and vegetables and drinking the same water are less often infected than the natives (Looss). So that the stomach does not seem to be the only mode of entrance. Elgood, however, from the investigation of the girls of the middle class schools in Cairo and the female patients in the hospital, and a study of the water supply, does think that infection is possibly due to faulty storage of drinking water or eating raw vegetables and fruit washed in dirty canals or water, and probably not due to bathing. Looss, in his article, takes up in detail Elgood's paper, and claims that her facts favor the skin infection theory, and brings out additional evidence in its favor.

Infection by the urethra is not believed in by Looss for general parasitological reasons. Sandwith gives as argument the fact that among married couples the infected person has not been known to have infected the other party. Allen found a man among the Indian attendants at the hospital where he was, who was willing to undergo a test. On three occasions he injected into his bladder many eggs of the parasite containing vigorous embryos and satisfied himself that he retained these eggs for several hours, but the result was absolutely negative. He was at the hospital for several years afterward and left free from the parasite. But Allen does think that excellent protection for the embryo, which gets in while bathing, is afforded by a long foreskin, which guides it to the urethra, and to the membranous part, from which he thinks that it extends upward, judging from the extension of the symptoms, and as a preventive he recommends circumcision.

Looss also rules out infection by the rectum as utterly improbable on general grounds, without explaining what these grounds are, and thinks that infection through the skin explains all the facts, especially since it is known that uncinariasis

gains an entrance to the body by this means. The distribution of the disease seems to bear it out, for children in towns and the adult male laborers in the country are the chief sufferers (Looss). The latter class work bare-legged for hours in moist or muddy ground and thus are infected and reinfected. The children are playing together on moist ground or in muddy pools or ponds, and if one child is discharging ova there is a chance for many others to get the disease (Looss and Sandwith). Also the disease is rare in females, except little girls and peasant women who work barelegged on flooded plowed land. If the skin is the means of infection, it is easily seen that persons bathing with or near infected persons, or in recently contaminated water, are subject to infection.

Burfield mentioned another method of infection in a man from South Africa with an appendiceal abcess which had pointed posteriorly through the sciatic notch and was opened there. Later in England the appendix was removed and found to contain many bilharzia ova in its wall. The man had frequently bathed in the river after the sinus had formed, and Burfield thought that the bilharzia had entered there rather than that the appendicitis was caused by the bilharzia.

Various opinions have been expressed in regard to the significance of the lateral and terminal spines on the ova. Sandwith says that eggs passed in the urine generally have terminal spines and those in the feces often lateral spines partly because of the pressure of the feces. There are not two varieties of worms, and it is not necessarily true that terminal spined ova come from the bladder, or that lateral spined ova are peculiar to the rectum. He believes that all normal eggs have terminal spines and that eggs with lateral spines are abnormal or abortive. The same immaturity is found in other trematodes, according to Looss. Since 1906 many cases have been reported from Porto Rico and the Canal Zone and cases that have been in Porto Rico, in which lateral spined ova have been found, and it has been suggested by Manson, in 1905, that these lateral spined ova belong to a different member of the bilharzia family, and evidence accumulated by Holcomb, Higgins, Gonzalez-Martinez and other workers, in Porto Rico, tends to favor this view. The cases reported by Gunn seem to belong to this class.

These are the principal points brought out in the last five years, but additional data are necessary to settle definitely the questions in regard to the life history of the parasite, and thus the rational means of prophylaxis and treatment.

SUMMARY.

1. This is a case of both intestinal and genito-urinary bilharziasis with terminal spines on all the ova seen;

2. Complicated with an acute appendicitis, with operation and recovery, sections of the appendix showing many bilharzia ova in the wall.

3. A review of the reported cases brings out the fact that there are only five undoubted cases of the South African bilharzia hematobia among them.

4. In the last five years, more evidence has been advanced for the skin infection theory.

5. Investigation shows that the lateral spined ova may belong to one species of bilharzia and the terminal spined to another.

I am indebted to Dr. C. D. Wheeler and Dr. G. H. Hill, of the Worcester City Hospital, on whose service the case was admitted, for the privilege of reporting this case, and to Dr. C. L. Overlander, of Boston, for help and suggestions and also for the pictures. The photographs were taken by Mr. L. S. Brown, in the Pathological Laboratory of the Massachusetts General Hospital.

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TUBERCULOSIS AMONGST THE PHILIPPINE SCOUTS (NATIVE TROOPS) OF THE UNITED STATES ARMY.

BY ISAAC W. BREWER, M.D.,
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TUBERCULOSIS, although causing the largest mortality, has probably received less attention than any other disease that afflicts the inhabitants of the Philippine Islands. In the city of Manila it causes about 14% of the deaths, and the death-rate is 538 per hundred thousand. Just how much sickness it causes amongst the native population is difficult to ascertain from the data available. However, some information upon the subject may be had from a study of the records of the United States Army, from which it is possible to obtain the admissions to "Sick Report" because of tuberculosis amongst the native troops for the years from 1902 to 1908.

As a military force, the Philippine Scouts were organized in the summer and fall of 1901, and the number has been increased from time to time until there are now about 5,700 on the rolls. They are organized into companies of one hundred and ten men each, and in most instances four companies are assembled into a battalion.

When first organized, these troops were in the field much of the time, and were for the most part quartered in native towns, occupying the houses vacated by the inhabitants. Later it became the policy to construct barracks of native material outside of the towns for their use. However, from the very first, great attention has been paid to the sanitation of their quarters and the surrounding grounds.

Before enlistment each man is required to pass a rigid physical examination, and only men in the best physical condition are taken into the Scouts.

The clothing issued to them is about the same as that used by the white soldiers, and is generally considered as satisfactory.

Since July 1, 1910, they have been allowed thirteen cents per day for subsistence. Previous to that time they were issued a daily ration as follows:

	Ounces.
Fresh beef,	12
Flour,	8
Rice,	20
Potatoes,	8
Coffee,	1
Sugar,	2

If available, the company commander could substitute bacon, canned beef or fresh or canned fish for the beef allowance, and at times onions and canned tomatoes were issued in lieu of part of the vegetable allowance. At all times the diet was varied and enlarged by articles purchased from funds obtained from the post exchange and other sources.

Beri-beri prevailed extensively amongst the native troops for some years, and early in the present year, mongos peas were substituted for a portion of the rice ration. This substitute is now largely used, and beri-beri has disappeared from amongst the Scouts.

As regards the nutritive value of the native soldiers' ration, Dr. Hans Aron, of the Philippine Medical School, who has made a study of the diet of the Filipino, informs me that the above diet represents about 3,000 calories, which is about the same as the well-to-do natives of the town of Taytay provided for themselves. The Scout ration, however, is richer in proteids, and from its greater variety is probably more readily assimilated.

These troops spend a large portion of their day in the open air, either drilling or working, and the physique of the men improves greatly during their term of service.

In general, it may be said that the native troops are well housed, clothed and fed, and are better able to resist disease, than is the civilian population of the Islands.

Amongst picked men, living an outdoor life in a mild climate like the Philippine Islands, we should expect to find but little tuberculosis; but, on the contrary, the disease is very prevalent amongst them. During the seven years ending with 1908, 211 Scouts were admitted to Sick Report because of tuberculosis, which gives an average admission rate of 6.3 per thousand. This is about one per thousand greater than the rate for the white troops serving in the Philippines, and is nearly twice as great as the rate for the native troops in India.

	Admission rate.
Native troops, Philippines,	6.3
Native troops, India,	3.6

These differences are certainly worthy of careful consideration by those who are responsible for the health of the Scouts.

It is believed that most of the cases of tuberculosis amongst the Scouts are contracted in the "soldiers' barrio," which is located on the outskirts of most of the posts. Nearly every Scout is either married or lives with a native woman. It is the custom to allow the men, when not on duty or "restrictions," to sleep out of barracks. In most instances, the company commander assures himself that the houses occupied by the families of his men are reasonably clean before he will allow them to sleep out, but these buildings are nearly always deficient in ventilation, especially during the night; and as most of the houses in the Philippine Islands harbor a consumptive, it is safe to assume that nearly all of the homes of the Scouts are infected with tubercle bacilli.

A great step towards the prevention of tuberculosis amongst our native troops would be to move "soldiers' barrio" on to the reservation so that it may be under military control. It would then be possible to see that the houses are properly ventilated, and to guard against the introduction of cholera and similar diseases. If this cannot be done, much good can be accomplished by making frequent inspections and restricting those men whose families do not comply with the sanitary regulations. Under no circumstances should the barrio be abolished, or any restrictions placed upon the marrying of the Scouts, because it keeps them free from venereal diseases which prevail most extensively amongst the white troops.

At present, persons who contract tuberculosis in the Philippine Islands have but little chance of being cured. Modern treatment of the disease is practically unknown, excepting in Manila, where there are a few clinics, and where a sanitarium has just been started. Hospital facilities for advanced cases can rarely be secured even in Manila.

Americans who contract the disease are, for the most part, returned to the United States. The native soldiers are collected at the division hospital and discharged within a few months after the diagnosis of tuberculosis is made. A large portion of the native population receive no treatment, excepting patent medicines, of which there is an unlimited supply in the Islands.

It will be a long time before the Philippine government can do much towards the prevention of this disease. In the meantime, any Americans who are interested in the Philippine Islands can make no better investment than to establish a clinic or hospital for the treatment of tubercu-

losis in some of the provincial towns. The statistics here presented show that a minimum of not less than six beds per thousand will be required. This can hardly be hoped for, but any endowment will be gladly received by those who are working to eradicate tuberculosis from the Philippines. The Philippine Islands Anti-Tuberculosis Society has recently been organized and is making a start towards the suppression of tuberculosis, but it needs all the encouragement and financial assistance that can be had from the people of the United States.

Clinical Department.

NEW ENGLAND BRANCH OF THE AMERICAN UROLOGICAL ASSOCIATION.

SPRING MEETING HELD AT THE BOSTON MEDICAL LIBRARY, MAY 24, 1910.

President, DR. F. S. WATSON, Boston.
Secretary, DR. R. F. O'NEIL, Boston.

DEMONSTRATION OF PATIENTS.

DR. F. S. WATSON, of Boston, showed a patient who has had

A PERMANENT LUMBAR RENAL FISTULA ON THE LEFT SIDE FOR NEARLY SIXTEEN YEARS. BILATERAL RENAL FISTULA FOR THE LAST SEVEN YEARS, AND WHO HAS BEEN ALL THE WHILE, WELL, COMFORTABLE AND ACTIVELY EMPLOYED.

I have already, some years ago, reported this case. My reasons for doing so again are as follows: (1) In 1905 I proposed a new method of attacking certain cases of vesical tumor, and the essential feature of that proposition was the establishment of bilateral permanent lumbar renal fistulæ. (2) A distinguished member of the American Association of Genito-Urinary Surgeons made the statement at its recent meeting in Washington that death would be preferable to enduring the miseries entailed by the existence of permanent lumbar renal fistula. (3) The fact that this statement is far from being true provided the attending surgeon knows how to arrange the renal drainage properly. (4) The further fact that I have a patient to show to you here to-night who has had to endure the "miseries" of renal fistula in one loin for fifteen years and in both loins for the last seven of them, and whose case offers the most positive contradiction to the statement made by my distinguished colleague which I have quoted above.

This patient, who will presently tell you what his experience has been, I have had under observation for nearly sixteen years. He has been leading an active business life all the while, he has been well, free from pain and even discomfort, and no one has been aware of his infirmity.

The whole question of misery or the reverse in the case of a patient with permanent lumbar renal fistula depends upon the attending surgeon's ability or inability to arrange the drainage of the urine in such a way that the patient and his clothing shall be kept dry and absolutely free from all contamination with the urine, which, in many instances, runs around the outside of the drainage tube as well as through it (and this is the most essential point in the matter); furthermore, that he shall be able to take part in life actively and that he shall be free from all pain and discomfort of consequence. Now these conditions cannot be secured in the case of a day laborer, but they can be secured in that of any one in ordinarily good circumstances and who can be properly cared for. In some cases it is not a question of choice with regard to the establishment of a permanent renal fistula, and in such instances it is most important to know how to care for the patients.

The bare statement of the steps that were taken successively in this case is all that is necessary for the purpose of this communication.

Fifteen and a half years ago, pyonephrosis of the left kidney and an obstructed ureter. *Nephrostomy* and the establishment of a *permanent lumbar renal fistula* with a large rubber drainage tube continuously worn in it.

Nine years later, acute *infection of the right kidney*. The *same operation upon it* as was done on the left side, and permanent drainage established in that loin.

Four years later, calculi formed in both kidneys. Calculi removed through the fistulæ after they had been incised and enlarged. An interval of about one month between the operations. Drainage resumed. *Just before the second of these two operations*, a *severe hemorrhage*, which was arrested by ligature of a vessel at the inner end of the fistula leading into the left kidney. Calculus removed at same time.

Three years later, chill, fever, *due to pus formation* in the right kidney, spontaneous evacuation of the pus through the bladder. Recovery.

These points sum up this patient's experience in the matter of operations, of which there were in all five. The whole length of time demanded for convalescence from these five operations during the fifteen and a half years has been about seven months. Throughout the rest of these years the patient has been actively employed, well and free from all discomfort other than that entailed by the fact of being obliged to wear his receptacles for the urine on his back, and the time required in order to wash out the kidneys daily.

This is the point to which I wish to direct your attention, and it was for the sake of giving you all here to-night the actual visual proof of this patient's condition, and of hearing from his own lips just how much or how little distress he has had from his infirmity, that I have again reported this case. I will now ask him his own view of the conditions under which he has lived all these years. "Wont you tell us, Mr. ——, just what your experience with this condition has been?"

Mr. —— replied that there was really no actual discomfort in the condition. That apart from its taking the time required for the daily washing out of the kidneys morning and night, and the adjusting of the tubes, it entailed not much more trouble than shaving oneself daily. He had been wholly free from pain and even discomfort of any consequence. Perhaps the greatest inconvenience attaching to the condition was the fact that he was prevented from making visits in the homes of friends, but otherwise he had not been handicapped by it in any way, nor was any one aware

of his infirmity except a few medical men and the members of his family.

He had been in active business with the exception of the short periods when he was kept away on account of the different operations, which was, as Dr. Watson had said, about seven months in the course of the fifteen odd years that had passed since the first operation. He had always been able to take all the exercise he needed, and had recently been for a short time in the country, where he had been taking daily walks of eight or ten miles. On the whole, he would say that he thought he had had as little discomfort, so far as the constant drainage from the kidneys is concerned, as the average man has from the various minor ailments which he is likely to have to endure.

In conclusion, gentlemen, I think I may say that you will agree with me, after what you have seen and heard here to-night, that the statement I quoted at the beginning of this communication, to the effect that death would be preferable to enduring the miseries imposed by permanent lumbar renal fistula, is very far from being justified, and I believe that you will join me in contradicting it positively if you should hear it made in the future. I should add that the apparatus which I have some years ago devised for the purpose of keeping the patient and his clothing dry and for receiving the urine that flows either through or around the tube has not been required in this instance because of the fact that there is no leakage around the tubes at all owing to the close adaptation of the tract of the fistula upon the outside of the drains. This fortunate feature makes it perfectly simple to prevent all contamination of the skin or clothing by the urine. In many cases, however, a special device is demanded in order to avoid this, the one really distressing feature of such renal drainage, and the apparatus which I devised for this purpose is entirely satisfactory for such patients. I have already published descriptions of it so I will not take more time now to demonstrate it to you. The descriptions will be found in Watson and Cunningham's "Diseases and Surgery of the Genito-Urinary System," 1908, Vol. 2, chapter on Operations on the Kidneys. It is described but badly illustrated in the *Annals of Surgery*, September, 1907. The apparatus is made by Messrs Codman & Shurtleff, instrument makers, Boston.

Question. What arrangements are made at night?

Answer. He takes off the can, removes the tubes, putting in long ones which go to bottles outside the bed.

Demonstration of Specimens.

Dr. J. W. Keefe, of Providence, showed a specimen of

SARCOMA OF THE KIDNEY.

I have here a specimen supposed to be the right kidney which I removed a short time ago from a woman forty-four years of age. Upon incising the kidney I found several calculi which may be seen imbedded in the specimen. The patient stated that some twelve years ago she had a severe cystitis and was treated at the time, in a hospital, by bladder irrigation.

She remained fairly well until three years ago, when she commenced to have pain in the back and right loin and at present a mass can be felt in the right side just below the costal border. She complains of frequent micturition, more particularly at night. She has been



Fig. 1. Median section. Sarcoma of kidney.

unwell but twice during the past year and has lost about twenty pounds in weight.



Fig. 2. (x150.) Sarcoma of kidney.

I made a cystoscopic examination on the day of operation and saw practically normal urine issuing



Fig. 3. (x300.) Sarcoma of kidney.

from the left ureter. No fluid issued from the right ureter.

The specimen here presented, which appeared to be the right kidney, was removed by the transperitoneal operation. I encountered very little hemorrhage. The renal artery and vein could not be demonstrated. Upon incising the specimen I could see no evidence of renal tissue, but found several calculi imbedded in the mass.

The pathologist at the hospital reported that the specimen was a small round-celled sarcoma. Subsequently I asked Dr. Harold G. Palmer, of Providence, to examine the specimen and his report is as follows:

PATH. No. 2021.

SPECIMEN FROM Kidney. RECEIVED June 4, 1910.
CLINICAL DIAGNOSIS ?
PATHOLOGICAL DIAGNOSIS. Tumor—embryonal in type.

The specimen received is a tumor that includes the right kidney and its perirenal fat. The specimen has been bisected and preserved in formalin solution. The fresh specimen is reported to have had the appearance, on section, of a uterine fibroid. The outside measurements are: Circumference, perpendicular, 35 cm.; transverse, 31 cm.; a somewhat flattened ovoidal mass. The outer surface consists of irregularly lobulated shining yellow fat. No capsule can be demonstrated. The cut surface presents an irregular stellate mass of bluish to yellowish-white dense tissue imbedded in an envelope of pale yellow fat that varies in thickness from 1 to 4 cm. The entire cut surface measures 11 by 14 cm., the stellate mass 5 by 8 cm., and approaches nearest to the surface at the anatomic level of the hilum, where it appears prolonged as fibrous bands into the fat. A calculus, the visible portion of which measures 12 by 25 mm., projecting 14 mm. from the cut surface, is situated in a position that corresponds with the renal pelvis and is closely surrounded by a dense envelope of cartilaginous consistency. This calculus terminates in a rounded point that fits into a facet on a small calculus that is imbedded in the substance of the opposite cut surface of the specimen (Plate "A"). There are two more imbedded calculi ("B" and "C"), the points of which are barely visible. A few millimeters below these calculi there is an area ("D") which is of the consistence of cartilage and is infiltrated with calcareous matter. A cavity near the margin of the specimen measures 3.5 by 2 by 1.5 cm. Its wall is thick and firm the lining thrown into longitudinal folds. The tissue inside the fatty envelope is firm, the cut surface smooth. All normal markings are obliterated and there is nothing whatever macroscopically to suggest the presence of renal tissue. The specimen weighs 565 gm. Sections taken from various planes and regions of the specimen.

Microscopic examination. — Sections present a tissue that is exceedingly variable in component elements and complex in structure. There are at least three distinct types of cells present, viz., (1) epithelial, (2) lymphoid, (3) connective tissue, the last being present in several morphologic forms. The first two types go to make up the essential feature of the neoplasm, namely, tube-like clusters of epithelial cells indefinitely and irregularly situated in a very cellular connective tissue stroma, and more or less isolated, larger and smaller islands of lymphoid cells (Plate II). The epithelial cells are somewhat variable in size. All have fairly uniform sized round or oval nuclei that have a delicate chromatin network which stains readily. The cytoplasm is generally clear, but at times finely granular and occasionally shows minute vacuoles. The arrangement of the cells is, as already stated, in tube-like clusters. Sometimes these occur as solid masses of cells with a sharply defined, rounded outline (Plate III, A); at other times the cells are so grouped that a central or eccentric space or lumen is formed (Plate III, B). The more highly developed tubes show two or more layers of surrounding cells. Individually these epithelial clusters vary widely in size. In some instances they are sharply defined from the surrounding connective tissue, but often the definition is less distinct, the cells blending gradually into the cells of the stroma. The tissue that is considered as stroma consists of connective tissue cells that are, at times, small, compact, with small, deeply staining nuclei; at others, large, diffuse, with large, oval, vesicular nuclei and indefinite cytoplasm (Plate III). In addition to this type of connective tissue, there are numerous areas that present unstriped muscle, the amount varying from a few scattered cells to considerable bundles of crossed and interlacing fibers. The islands of lymphoid cells (Plate II) as such present nothing especially remarkable. They are never sharply defined but blend off rather gradually into the loose connective tissue. In some instances they are in fairly close association with the epithelial elements.

The specimen contains microscopic areas composed of cells that are consistent in morphology with the cells of the adrenal cortex. Scattered indefinitely through the general mass of connective tissue, there are many cells that have a bilobed, deeply staining nucleus and a moderate amount of cytoplasm rich in fine eosinophilic granules. These cells are somewhat smaller than a neutrophilic leucocyte.

This description comprises a composite picture of sections of the specimen as a whole. Individual sections show wide differences in composition, some showing chiefly lymphoid elements, others chiefly epithelial, connective tissue elements being present in both instances. The epithelium in tube-like clusters is not looked upon as degenerating tissue; it is considered a constructive process. Likewise, the islands of lymphoid cells are not considered in the light of a round-cell infiltration, but present here as aberrant lymphoid tissue.

It is difficult if not impossible to name, in a single word, the process here present. The tumor throughout is embryonal in type. Until a comparatively recent date, a large majority of tumors associated with the kidney were classified broadly as sarcomata. Recognition of hypernephroma as a distinct neoplasm caused a revision of the nomenclature. Recent studies of numerous observers have established the fact that there are new growths, malignant or benignant, that fail to come under any established classification. At present the genesis of tumors associated with the kidney is sufficiently obscure to warrant naming the morbid process present in this specimen simply as a tumor, embryonal in type.

The calculus. — Chemical analysis of one of the calculi shows the composition practically pure calcium carbonate.

HAROLD G. PALMER.

DISCUSSION (Dr. J. F. Keefe's case).

Question. Was there any fat tissues present? It looks like a lipoma.

Dr. Keefe. The pathologists reported that it is sarcoma.

Question. I would like to ask if any one has seen primary carcinoma of the kidney.

Dr. Watson. I have. It is very rare. I had one in which the growth was pure carcinoma. Secondary metastases in the kidney are very common.

Question. One point suggested by Dr. Keefe's case: In the case of malignant growths, what might be the

percentage of calculi present in these tumors? It has often occurred to me that a calculus or calculi might act in the kidney as gallstones do in the gall bladder, as the causative factor in the development of malignant disease.

Dr. Watson. In regard to the presence of calculi in malignant disease, I think they are rather conspicuous by their absence.

DR. G. O. CLARK showed a specimen of

RENAL CALCULUS.

I had hoped to present to-night a very rare specimen — what the pathologist in his preliminary report stated was *a calculus embedded in the renal substance.*

As you are well aware, the sites occupied by renal calculi are nearly always the pelvis or the calyces. Sometimes a calculus engages in the ureter and is arrested at variable points along that canal. In a certain number of cases the kidney is transformed into a series of pockets, some of which contain calculi; these pockets represent dilated calyces, and they connect with the pelvis by orifices of varying dimensions. Sometimes, secondary inflammatory adhesions obstruct the orifice previously existing between the pelvis and the calyx and the pocket is then left independent of the principal cavity of the pelvis. This possibility makes it necessary for the operator not to be satisfied with merely exploring digitally the opened pelvis and the dilated calyces leading off it, but to explore also the parenchyma of the kidney.

The kidney here presented by me when more carefully examined presents a calculus of smooth surface but irregular in outline, roughly the size of two peanuts fused end to end. It lies apparently in the kidney parenchyma, but in reality not so. Its sac is seen to be formed by a dilated calyx whose communication with the renal pelvis has been obliterated by inflammatory changes.

This right kidney was removed at autopsy from a woman forty years of age dying of pulmonary embolism eighty hours after perineorrhaphy done for complete tear of the perineum into the rectum resulting from high forceps delivery three weeks previous to operation.

The *accouchement forcé* was necessitated by a fibroid tumor of the anterior uterine wall. During life the kidney stone had given rise to no symptoms. The uterine tumor had been recognized. The labor had been successfully and aseptically completed.

A cystitis of B. coli origin developed post partum, ascended to the left kidney and produced a pyelonephritis.

The liver showed focal necroses and there was a septic spleen. The above autopsy findings, indicative of a colon bacteriemia, were undoubtedly predisposing causes of the pulmonary embolism which induced death. The specimens illustrating the above findings are for your inspection.

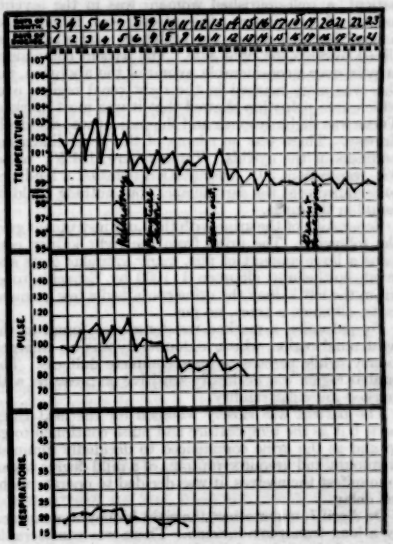
Autopsy done by S. R. Haythorn, M.D., of Harvard Medical School, Department of Pathology. Patient, Mrs. A. H., of Dr. L. F. Cusick, of Nahant, to whom I am indebted for the privilege of reporting the case.

REPORT OF CASES.

DR. C. G. CUMSTON, of Boston, reported

A CASE OF PREGNANCY COMPLICATED WITH PYELONEPHRITIS.

In the *New York Medical Journal*, 1900, I recorded my first case of pyonephrosis complicating pregnancy, since which I have published two papers, one on pyelonephritis of pregnancy and one on pyelonephritis complicating the puerperium in the *American Journal of the Medical Sciences*, respectively in January, 1906, and July, 1908. In the second paper I reported a second personal case in which nephrotomy was done with a fatal result, while in the second paper I reported three cases during the puerperium, all of which recovered. The case which I wish to report to-night has recently been under my care and is now well on the road to recovery.



Pyelonephritis of pregnancy.

Mrs. P. F., thirty-one years of age, a physician's wife, married six years. She has had two normal confinements, the first one in June, 1905, the second in October, 1907. According to her history, she has always enjoyed good health, but since her last confinement she has been troubled with varicose veins of the right leg.

Shortly after she became pregnant for the third time she began to feel tired and occasionally quite weak and dizzy, and this increased towards the fifth month to such an extent that she occasionally was obliged to remain on the lounge the greater part of the day. Ten days before coming under observation, while dressing in the morning, the patient experienced a sensation as if something had given away in the back and this was followed by quite severe pain, which, however, was less

marked towards night. The pain did not entirely disappear, but she had a fairly good night. On the next day the pain was very severe and located in the right renal region. She felt weak and complained of some headache. In the evening she had a severe chill, which was repeated twice in the night and on the next day the husband consulted with another physician. In the recumbent position the very violent pain disappeared. But there persisted a dull, dragging sensation on the right side. It was noted that the urine, which had been passed frequently during the two previous months, had been cloudy, and micturition was painful and had increased in intensity as the pregnancy advanced.

She was kept under observation for the next week, during which she ran a temperature between 101° and 102° F., more or less constantly suffering from headache as well as the persistent pain in the renal region. As the symptoms continued in spite of a milk diet and the exhibition of urinary antiseptics, she was finally sent to Boston and we were asked to see the patient in consultation.

We saw her on the morning of April 3, 1910. The patient, a well-nourished woman, was in the seventh month of pregnancy; the uterus was found three fingers' breadth above the umbilicus and slightly inclined towards the right side. The patient complained of pain over a considerable extent of the abdomen, but this was more marked in the right renal region, over which area palpation showed that it was most marked. There was slight dyspnea and the patient was decidedly drowsy. There was no edema of the lower limbs nor puffiness of the eyelids. Temperature, 101.5°; pulse, 98; respiration, 20. Auscultation revealed a loud systolic murmur at the cardiac apex, but nothing could be found in the lungs.

Separation of the urine with the Luys instrument gave the following: The urine from the right kidney contains a large amount of pus, many granular casts and much epithelium, albumen 1: 1000 by Esbach's tube. From the left kidney the urine contained a few granular casts, albumen a trace, no pus.

By palpation a marked resistence was found in the right renal region, which undoubtedly was an enlarged kidney, while percussion gave complete dullness. The lumbar region was decidedly sensitive on pressure, with marked muscular rigidity.

The patient was closely watched for the next three days, but as the temperature and pulse continued to go up and as the urine commenced to decidedly diminish in amount and uremic symptoms of a mild degree began to manifest themselves, it was decided to operate without delay.

On April 7, under ether, the right kidney was exposed by a long transverse incision. There was considerable edema of the perirenal fat, but the kidney was reached without any particular difficulty. Upon exposing the organ it was found very greatly enlarged and in its middle and at the lower pole were found two abscesses in the cortex, each about the size of a large walnut. After the kidney had been completely freed it was split along its convex border in its entire length. The two abscesses in question were the only pus foci present, but the parenchyma was very hyperemic and presented the macroscopical appearance of an acute parenchymatous nephritis. The renal pelvis was somewhat distended and contained about 30 ccm. of cloudy urine. On account of the evidences of a mild involvement of the left kidney, and given the two distinctly limited pus foci, it was decided to drain the kidney, as I felt that nephrectomy was not justifiable under the circumstances. The renal pelvis and kidney were drained by two good-sized rubber drainage tubes and the perirenal area was lightly packed with iodoform gauze. The renal incision was closed at the upper half of the kidney, the remaining lower half being left open to give exit to the drainage tubes. The fascia and skin were closed excepting for a couple of inches where the gauze and drainage tubes came out.

On the evening following operation the temperature made a decided drop and on the next day it had reached 100° F. The general condition was likewise greatly improved and a free discharge of urine and pus came away through the tubes. Forty-eight hours after the operation labor pains set in and the patient was delivered of a seven months' child after a labor of five hours. The child survived for a few hours only.

From this time on the general condition improved and the amount of urine voided by the bladder varied from 1,500 to 2,000 gm. in twenty-four hours. She began to sleep well and the drowsiness had entirely disappeared. On the sixth day one tube was removed and on the twelfth day following operation the gauze and the remaining tube were taken out. At this time the urine from the diseased kidney contained much less pus and some was collected which, on examination, showed that it contained a fair amount of urea, showing that it had not been functionally destroyed. The skin sutures were removed on the fourteenth day, the wound having closed perfectly.

Seven weeks after the operation there remains only a small fistula which is discharging so little that the dressings are changed only once a day. The urine now contains only a few granular casts, a trace of albumen and very few pus cells. The specific gravity is 1,012 and the amount of urea excreted in twenty-four hours is normal. I have no doubt that this patient will completely regain her health and that the fistula will have completely closed within a short time.

My three cases of pyelonephritis complicating pregnancy have all been pus cases and as yet I have not been fortunate enough to meet with the mild types, so many examples of which have been recorded in literature. From my limited personal experience it would seem to me that these cases are far from being as inoffensive as is generally supposed, but the reverse I believe is true, as far as the prognosis is concerned, in cases of this renal complication developing during the post-partum.

Attention is called to the inestimable value of Luys' separator in this case, because, on account of the advanced pregnancy, ureteral catheterism would have been difficult, if not impossible.

DR. A. L. CHUTE, Boston, reported a case of

SMALL FIBROUS OBSTRUCTING PROSTATE.

I wish to report a case belonging to a type that has interested me much of late.

The patient was a man sixty years old who had had bladder symptoms for about ten years; these symptoms began rather mildly, but two years ago they became pretty intense. His bladder was opened at that time and a large stone removed; a slight diaphragm-like bar at the bladder outlet was also found and divided. This man had relief for a time, but a year after operation he began to have his symptoms recur, and in order to be comfortable he was compelled to wear a catheter most of the time. He was practically unable to pass urine voluntarily. He had an infection, presumably with the micrococcus ureæ, that caused a splitting up of the urea and the precipitation of immense amounts of phosphatic material.

I was asked to cystoscope him as it was thought that

he might have a bladder growth. I found nothing, however, to suggest malignancy, but could see a little projection of the prostate into the bladder, as well as a slight raising of the bladder outlet above the level of the floor. With this patient lying on his back, I was unable to make out any prostate by rectum.

On the 25th of April I removed by the perineal route this man's prostate, getting but 2 dr. of prostatic tissue, and I think I got it out pretty thoroughly. After I had removed all the prostatic tissue I examined the bladder outlet, which was as tight and fibrous as could be. I cut the outlet down to the level of the bladder floor and also made a lateral incision on the left, leaving the bladder outlet as patulous as one commonly sees it after the removal of an hypertrophic prostate. This man passed his urine naturally in fifteen days. He left the hospital ten days ago. The point I want to bring out is that in some cases cutting the bar at the bladder outlet alone does not bring relief. The bar is produced by the prostatic changes and is not the whole obstacle. Likewise, taking out the prostate in a case of this type does not allow the bladder to empty itself. I have had one case recently when I took out all of the prostate and yet the patient could not pass urine. I had to cut the bladder outlet as well. In this last patient the obstructive prostate was also of the small fibrous variety.

Another point that was of interest to me in this case was that this patient had never had any urethral infection. I think many persons believe that the small fibrous prostate *always* follows a gonorrheal infection. I have found that in half of my cases of fibrous prostate that there has been no history of a gonorrhea or an acute prostatitis.

DISCUSSION. (Dr. A. L. Chute's case.)

Dr. Cumston. I would like to ask Dr. Chute if he expects necessarily to get a history of a former prostatitis or gonorrhea even when there has been one?

Dr. Chute. I must say that if a man tells me that he has never had a gonorrhea I am inclined to believe him. This depends somewhat on the general impression that I draw of the patient's intelligence and truthfulness. I see no reason why we should assume that every man who denies having had gonorrhea is either ignorant or untruthful. I see no reason why we should not accept the patient's story as regards this matter just as we accept it in regard to the occurrence of other diseases.

Question. I should like to ask Dr. Chute what he took away in the operation?

Dr. Chute. I first exposed the prostate by the usual transverse perineal dissections. I then made an incision through the substance of the prostate into the prostatic urethra. Then after introducing a tractor and pulling the prostate down I removed the presenting surface of the gland and also dug out with scissors and rongeurs all the deeper prostatic tissue that I could get, having the capsule practically an empty shell. I then split the fibrous ring at the bladder outlet, but removed no tissues. I open the urethra through the substance of the prostate because I believe in cases of this sort you are going to destroy the function of the internal sphincter, which I look upon as a sort of secondary line of defense in the way of preventing incontinence; one that is capable of developing a fair degree of control of the bladder, when the function of the cut-off muscle in the membranous urethra, the real sphincter, has been destroyed or injured. It is, therefore, especially important in these cases, when you are going to destroy the internal sphincter, to leave the membranous urethra absolutely alone in order that one may run no risk of injury to the cut-off muscle and its resulting incontinence.

Question. I would like to ask if this is the type of case that Dr. Chetwood recommends his operation for?

Answer. Yes, the same type that Dr. Chetwood has described and for which he advises the use of his incisor.

Dr. Hugh Cabot. I believe it is safer to cut through the bladder outlet with a cautery than with a knife. Dr. Keyes told me he had lost one of these cases from hemorrhage and now always uses a cautery. It seems to me that Dr. Chetwood's instrument is excellent for this purpose.

Dr. Chute. In only one of my cases has the cutting of the bladder outlet been attended with any real bleeding. In this instance it was simply annoying. When the operation is carried out as I suggest the field is very accessible and I believe any hemorrhage that might arise could be controlled with ease.

Dr. Watson. It happened in my early experience in prostatic work that I invented a cautery but I did not know this particular class of cases at that time. They are most interesting and important and hard to handle. Dr. Abner Post had a case that he reported that I think was one of them. He found almost no prostate. He started in to do a prostatectomy, being beguiled by bad example. He used a median incision and found the vesical orifice so hard that he could not force his finger through it. He took a Bigelow dilator and split it and the fellow got well. Mercier reported similar cases. He chiselled out the middle bar with his punch and also cut through with a cold instrument just as Gouley did later. All these things were things I studied when doing my early prostatic work. I want to ask, Are not a lot of these the cases that are sometimes spoken of as cases of "retention without mechanical obstacle"? I have a case that I believe is of this sort that I am going to operate upon shortly. His prostate is a small, nasty thing; judging from rectal examination, there is little or nothing to remove, but I may find that there is some projection into the bladder when I cystoscope him.

The internal sphincter, at the vesical orifice, does not amount to anything, as far as control of the bladder goes. You do a prostatectomy and you smash everything and yet the patient has control. The internal sphincter controls not a drop of urine, there is no question about it.

DR. R. F. O'NEIL, of Boston, reported a case of

CONTRACTION OF THE BLADDER NECK FOLLOWING AN ACUTE INFLAMMATORY CONDITION, CAUSING BEGINNING URINARY OBSTRUCTION IN A YOUNG MAN.

The patient was a man of twenty-six. First seen in consultation on Oct. 26, 1909, in regard to a swelling in the right side of the perineum corresponding to the position of Cowper's gland. There was moderate tenderness and deep fluctuation. There was a slight urethral discharge. The next day under ether a deep abscess was opened, the cavity admitting the finger tip. Gauze drainage and later on treatment of the urethra by sounds and irrigations was advised. Next seen Jan. 14, 1910, about two and one-half months later, for the reason that the sinus had remained open and had leaked on micturition since a few days after opening the abscess. He has been having sounds and irrigations. For the last month and a half he has been having chills which came on two days after instrumentation, lasted a short time and was all right again in twelve hours. He gets up once at night. There is no day frequency.

There is some difficulty of micturition. This has been more marked following instrumentation.

Examination. — External genitals negative, except for small fistulous opening at site of operation wound. Rectal examination: Prostate small, hard and non-tender. Slight urethral discharge, showing pus, epithelial cells and a few intracellular diplococci. Urine turbid, pale, alkaline, 1,020, albumen trace, urea 1.77, sediment, pus, epithelial cells and bacteria. Examination for tubercle bacilli negative.

Soft catheter passed easily to bladder, — size 16 French, — residual half an ounce. I was unable to pass a sound into the bladder. It felt as if the point were lifting the deep urethra. After considerable difficulty a cystoscope was passed by depressing the ocular end and using a good deal of pressure as the vesical neck was very tight. There was no cystitis. The ureter mouths appeared normal. There was marked beginning trabeculation of the bladder wall, the muscle bundles standing out very distinctly. The examination was short as it caused pain and the patient was quite nervous. He emptied his bladder of the examining fluid with greater ease and a better stream than he had had for months. Five days after the cystoscopy there was some soreness, but the stream was better and the urine clearer than for a long time. Heretofore the urinary difficulty had been increased after instrumentation. There was no chill and very little leaking through the fistula.

On going into his history it was found that about eight months before I had seen him first he had a severe attack of prostatitis with retention of urine requiring bed treatment and catheterization. There was a history of urethral disease for some time previous to this. This attack was followed by a second attack of prostatitis when he was quite sick, and from the history I judge he had had a prostatic abscess which ruptured into the urethra.

I regard this case as one of small contracted prostate following an acute inflammation and causing symptoms of beginning urinary obstruction in a young man as shown by the bladder changes, etc.

I do not know how common this condition is, but believe it is not generally recognized.

I believe in this case there is some pyelitis from the appearance of the urine and the fact that chills had followed unsuccessful attempts to pass sounds, the tissues being injured, causing edema, a consequent increased difficulty of micturition, with some retention of the infected urine.

I think the prognosis is unfavorable without some form of operative treatment. The difficulty of instrumentation is probably due to a change in the direction of the urethra as well as to a contracted bladder neck.

DR. BENJAMIN TENNEY, Boston, reported a case of

CHRONIC PROSTATITIS WITH OPERATION.

My patient was a man of twenty-four who had his first urethral infection in 1905. From that time on he had constant discharge. He reached me after the usual travels of these urethral cases, in 1907. He had pus at the meatus, pus in all urines, discomfort in perineum and rectum, two or three night urinations and a history of attacks of acute pain followed by chill and high temperature which were considered to be malarial. He had an attack of right epididymitis about three months after his infection. He was also impotent.

Examination showed no characteristic Gram-decolorizing diplococci in smears from the urethra, no special enlargement of the para-urethral glands, a prostate moderately large and tender, neither enlargement nor tenderness of either vesicle, good urethral delivery, bladder capacity of 4 oz. and some prostatic obstruction to the catheter, requiring a Coudé. He had a severe chill two days after my examination and again in seven days, evidently not directly due to my examination, and his temperature is said to have run up to 105° with enlarged spleen. Examination of his blood failed to show any plasmodia, but he certainly was a sick-looking young man. After three weeks' observation and my advice to have a perineal section for thorough drainage of his prostate, he disappeared for five months to consult various authorities and take a trip to Europe. During this time his pus was twice tested for tubercle with negative results, he was kept in bed for a time, cystoscoped, and washed and irrigated variously and plentifully. In the fall he returned, consenting to the operation, which was done at the Boothby Hospital Oct. 15.

Perineal section found a rather rotten prostate which was freely drained for nine days and less freely for some weeks after. To say that he has gained 30 lb., has married and has a healthy wife, and that he has had no further chill since the perineal section is both true and satisfactory. This final result passes over the tear into the rectum when clearing the prostate and the resulting Y-shaped fistula which connected the urethra with the rectum and with the perineum and made him uncertain whether gas, feces and urine would escape by their usual exits or by one of the other two.

A second operation under ether and a third with cocaine restored the integrity of the urethra and of the rectum and allowed the external fistula to close. At the second operation the prostate was found to be shrunken into a small fibrous mass which will probably cause retention before long. His urine is not absolutely clear even yet and he has had an epididymitis on the left side within the past month, but there is no visible urethral discharge, his wife is well and he considers himself so.

I have no doubt that there are many men walking about with urethral discharges due to infected prostates of the type of this one which I take to be the same as the type studied by Dr. Alexander. The important point to be reached is, When shall we stop our palliative and expectant or what I call "hopeful" treatment and really get at the infected area with efficient drainage?

I am coming to believe that a urethra running more than six months calls for something more than having its face washed. Continual pus from any other locality is considered a good and sufficient reason for real treatment and I think the probable sterility and urinary obstruction are sufficiently real, even if remote dangers, and call for definite surgical drainage of these infected prostates. Perhaps our neglect of real treatment is one reason why these patients deserve the reputation of being drifters, and perhaps the fault is more ours than theirs.

DR. H. M. CHASE, Boston, reported a case of

PYONEPHROSIS; CONGENITAL CYST — SINGLE KIDNEY.

Boy, age fourteen years, whom I saw in December, 1908. In 1903 he had two attacks of chills and fever with pain on urination; one similar attack in 1907.

Otherwise in apparently good health until Nov. 12, 1908, when he had two weeks of not feeling well and on Nov. 26, 1908, had chills followed by fever to 105°, severe headache and vomiting.

Urine high colored, very thick, with muddy sediment, sharp pain in the right side after running, considerable pain on urination. Urinates twice at night.

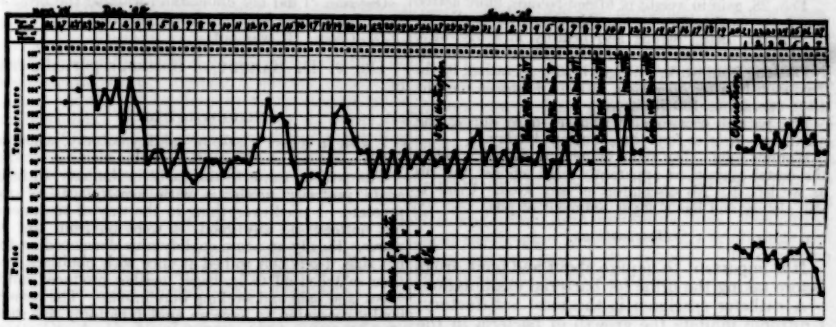
Nov. 27 and 28, continued fever, a great deal of pain in the right side most of the time and sore to the touch. The temperature was recorded by the mother, as seen on the accompanying chart, from Nov. 26, 1908, until Jan. 12, 1909. On Dec. 24, 1908, the history of pus in the urine, temperature, chills and tumor in the region of the right kidney was given me by the family physician, who sent me a catheter specimen of urine.

There was a history of night sweats. No vomiting during the last four weeks. The urine, averaging 4½ pints in twenty-four hours, was voided twice at night and five or six times during the day.

The urine was turbid, odor not foul, light straw, 1,015, acid, albumen present in large quantity. Sugar absent. Large quantity of pus. Urea .88% = 18 gm. Total solids, 68 gm. No tubercle bacilli nor gonococci found, few small caudate and few epithelial cells. No blood seen. Hemoglobin, 95%.

Family unwilling to consider operation. Request to stop urotropin for five days until Jan. 1, 1909, to get urine free from antiseptics.

Jan. 1, specimen of urine sent by mail, no preservative, taken to Dr. Leary's laboratory, growth of colon



Pyonephrosis of single kidney.

The patient's family was strongly opposed to the consideration of any operation.

The specimen was taken to Dr. Leary's laboratory. Dr. Strong reported a turbid fluid with heavy sediment. Growths were started on culture media and a centrifuged specimen was injected into guinea pigs, which resulted in the report of absence of tubercle bacilli. By the microscope nothing could be identified but pus. The growth on milk agar showed staphylococcus albus, one frequently found in urine but not usually or necessarily associated with pus production. It was said to differ from the skin albus of the same name. No streptococci nor colon bacilli found. A vaccine of this culture was used for a few days when inquiry showed that the patient had been given urotropin, gr. x, three times a day. Vaccine and urotropin were stopped.

I saw the patient for the first time on Dec. 27, 1908. A dark-complexioned boy, age fourteen, reticent, fairly well-nourished; appetite fair, tongue slightly coated, bowels regular daily. Heart and lung examination negative. Abdomen soft, no distention nor tenderness. No spleen felt, liver above costal margin.

Left kidney can be felt on deep inspiration (this observation was inaccurate as there was no left kidney). A mass on the right side in the region of the kidney moved with respiration; it was not tender to pressure, the size of my fist, quite freely movable up and down but not laterally, mainly above the crest of the ileum. The mass is in the region where pain has existed.

The tumor was high for appendix, there was no history of pain along the ureter nor into the bladder or penis. The penis, very large for boy of his age, suggested masturbation. Testicles and scrotum negative, rectal examination negative, examination of the spine negative.

bacilli. Dr. Leary said the first culture was inhibited by the urotropin which does not kill the bacteria.

The growth of staphylococci undoubtedly due to contamination, though it is very rarely a cause of bacteriuria and cystitis. Vaccine made of colon bacilli, ½ ccm. = 50 million.

Dose, minims iv, every two days, increasing up to minims viii.

Jan. 12, 1909, reported by letter, normal morning temperature, high fever at night. Patient has seemed to gain in weight and in general conditions. Mass in right side increased.

Urine examination showed approximately the same amount of pus, several washed-out blood cells and a few questionable crystals.

Jan. 13, 1909. Patient has been up about the house every day. Looks better. Chills the last three days. Left kidney palpated (again mistaken).

Mass in right side as before.

Mother says urine clears considerably at times, then when chills, fever and pain come on the urine is much more turbid, with increased sediment. Operation again advised and considered by family.

Jan. 20, 1909. Operation, Dr. Tenney assisting. Transperitoneal nephrectomy contemplated. Incision through right rectus; examination of left side by Dr. Tenney and myself revealed no kidney on that side. Nephrectomy not possible. Incision was closed by layers with catgut.

Right loin incision from twelfth rib toward groin; mass exposed; lower half of kidney a large cyst (dilated pelvis and thin renal wall). Kidney tissue about seven inches long. Sac opened and thin gray fluid evacuated. No stone found; nothing to suggest tuberculosis. Upper half of kidney feels like solid renal tissue.

The sac wall was removed close to the solid renal tissue, the edges were inverted and sutured with catgut.

Was unable to locate the ureter opening.

Upper pole of the kidney very high under the diaphragm. The lower pole was rotated outward and upward and sutured to the twelfth rib, which straightened the ureter. Two gauze drains inserted into the wound, muscle and skin sutures of catgut.

The chart shows the post-operative temperature.

Feb. 4, 1909, colon vaccine given every two days for two weeks.

On Feb. 7 the urine had cleared greatly but still contained pus. Abdominal wall solid, loin wound solid except for wicks which were gradually removed.

Feb. 21, less pus than before the operation.

Feb. 28, gain in weight of fifteen pounds, more active and better health than for months. Urine much clearer.

May 22, 1910. Strong and healthy in every way, good appetite. Can run and play without discomfort. No fatigue from work. Weight before operation, 90 lb. Two months after operation, 105 lb. Eighteen months after operation, 130 lb.

The patient occasionally urinates once during the night, and three or four times during the day.

Wounds solid. The right kidney not palpable below the costal margin, is apparently high against the rib as we left it. No discomfort of any kind. Urine is still cloudy and has a slight sediment of pus.

Observations.

It is important to inquire about and omit drugs before taking the urine for bacterial examination.

A catheter specimen is the most satisfactory. Urotropin inhibits the growth of bacteria in the urine, but does not kill them.

When confident, after careful palpation of the abdomen, of the existence of two kidneys, it is important to verify it by some more definite method before doing any radical operation on either kidney: either by ureteral catherization when practicable, which, by the way, cannot be relied upon as cases of two ureters from a single kidney have been reported, or by exploratory laparotomy.

No vaccine in the presence of mechanical obstruction can be expected to be efficient. If conditions permit, be sure of an anchored kidney with a straight draining ureter.

DISCUSSION. (Dr. H. M. Chase's Case.)

Dr. Cumston. This case is rare and remarkable from the pathologist's standpoint. Cases of pyonephrosis would occur where a congenital cyst of the kidney became infected. These cases are occasionally met with, and those that have been reported are autopsy findings. The condition has been found on one side only, I believe, in the large majority of cases. The kidney has been entirely consumed by the process and has been represented by a single sac.

There is another point which I was glad to hear brought out, because opinions differ largely on the question. That is the mobility of the kidney on respiration, some writers stating that it cannot occur. I have been hesitant in putting forward my belief in public, but I am positive that in many cases where the kidney is enlarged, where the organ is not adherent, that the renal gland can be felt easily to follow the movements of respiration. Therefore, when a tumor on one or the other side of the abdomen moves with respiration, it should not be concluded that it is not renal in origin.

Dr. H. Cabot. Ureter catheterization does not necessarily show the presence of two kidneys. Within a year I have had ureters catheterized and urine drawn from two ureters, but only one kidney was present at operation.

Dr. Watson. In regard to the normal mobility of the kidney. I am surprised, for I thought the fact was generally accepted. I have measured a great many of these kidneys. The amount of movement of the ordinary kidney in respiration is one-half to one and a half inches, in the living.

In regard to the accuracy of ureter catheterization, there are several instances on record of multiple ureters from one or both kidneys which have led to serious errors in diagnosis.

Question. I did not understand whether the urine in Dr. Chase's case was free from bacteria.

Dr. Chase. It was not.

DR. J. D. BARNEY, of Boston, reported a case of

EPIDIDYMOTOMY.

I wish to report a case of epididymotomy, which as yet is not a common operation in this vicinity.

The patient came to me early in January with an acute posterior urethritis with involvement of the prostate. I tried everything in the way of treatment, but nothing did any good. It went on from bad to worse. Finally an acute epididymitis developed on the left side. I put him to bed at once with poultices, and then switched off to ice-bags; neither produced much effect, and pain and swelling were intense. The patient finally consented to have an epididymotomy five days after the onset of the disease.

The day after operation the temperature was normal; it had been up to 101. The pain was absolutely relieved and the epididymis was only slightly tender. The urethral discharge stopped almost at once. This was not wholly due to the operation, however, for, as you know, it often subsides at once after the onset of an epididymitis.

Twenty-four hours later the right epididymis became involved and after a wait of thirty-six hours this was also opened in the same way. Again the temperature, which had flared up, went down to normal and remained so. In the same way all pain and tenderness left the epididymis.

Owing to the tremendous edema of the scrotum its layers were very difficult to distinguish. In the first operation I did not recognize the tunica vaginalis for some time. On opening the tunica it was found much engorged and contained about 3 dr. of serous fluid. A "chicken-fat" clot, about as large as my thumb, was adherent to the epididymis and testicle, and dense adhesions had formed between the latter structures. The clot was scooped away, leaving a red, bleeding surface on the epididymis. The globus major particularly was involved on each side. Multiple punctures were made with the knife throughout the epididymis. Nothing was found except in the body of the left epididymis, where there were several minute abscesses which exuded a drop of creamy pus containing gonococci. Elsewhere the punctures elicited only free hemorrhage from the congested organ. On the right side no pus could be found, but the fluid in the tunica, the clotted lymph and enormous congestion were the same as on the left.

The operation made a startling difference in this case. About ten days after operation the two epididymes were essentially normal subjectively and objectively. It would require imagination to say that

there was anything unusual beyond a moderate thickening and induration. The urethral discharge has never reappeared, the frequency has subsided and the prostate is no longer tender and congested.

Now as to the question of sterility, which intervenes in nearly 50% of these cases. I have examined the prostatic secretion several times since operation, but no spermatozoa are to be found. They may appear later. It is quite possible that there is still enough edema and induration of the epididymal tubules to prevent the passage of spermatozoa. Several tests by culture and microscopic examination show no gonococci.

I mention this case because it is a rather rare operation as yet, and although I lay a great deal of stress on the value of ambulatory treatment by means of compression with rubber dam, I think this operation is of the utmost value in cases of exceedingly painful and acute epididymitis. Indeed, I am not at all sure that it should not be done in every case of acute epididymitis. It has a tendency to cut short the course of the urethritis and prostatitis by affording efficient drainage of the seminal ducts. It is claimed to lessen the chances of sterility, but this has not been the case in my patient as yet.

DISCUSSION. (Dr. Barney's Case.)

Dr. Benj. Tenney, Boston. Relief of pain from incision into the swollen tissues of the epididymis is both prompt and permanent. The last patient on whom I have tried it was seen with Dr. A. D. MacLennan. For some time we were uncertain whether we were dealing with a severe right-sided epididymitis and a vesicular abscess or whether there was an appendicitis mixed up with the venereal condition. As always, there was great tenderness over the right vesicle on rectal examination, which may also be found when the inflamed appendix lies in the vesico-rectal fossa. As often happens, there was tenderness above the inguinal canal up to the anterior superior spine. The absence of any smooth swelling about the vesicle and the slight rigidity of the right abdominal muscles led us in the right direction. Removal of the appendix with incision into the epididymis quickly stopped the pain and vomiting. The scrotal incision was still granulating when he left the hospital at the end of ten days. The tenderness was all gone and the induration was less than I have ever seen it in so short a time. I am sure incision is the treatment for all patients who will permit it.

Dr. Hugh Cabot read a paper on

A CASE OF MYXO-FIBRO-SARCOMA ORIGINATING IN THE GREAT OMENTUM WITH INVOLVEMENT OF THE BLADDER AND SMALL INTESTINE.*

In Memory of Dr. Baumgarten. — The Alumni Association of the Medical Department of Washington University has appointed a committee to raise funds for the erection of a memorial tablet of the late Dr. Gustav Baumgarten, to be placed in the Medical Library Building beside those in memory of Drs. Gregory and Boisliniere. — *Jour. Am. Med. Asso.*

*See Journal, Dec. 1, 1910, p. 841.

Medical Progress.

RECENT PROGRESS IN GENITO-URINARY SURGERY.

BY FRANCIS S. WATSON, M.D., AND PAUL THORNDIKE, M.D.

EXPERIMENTAL RESEARCH.

Barney [1] has investigated the effect of intraperitoneal division of one ureter experimentally from the pathological and the bacteriological standpoints from operations on 40 animals and clinically from 6 cases in the literature and 29 cases collected in answers to personal letters to surgeons. It appears that "the abdomen may bear without damage and even, in some cases, without severe reaction, the effusion of a certain amount of sterile urine"; that efficient adhesions may be promptly formed; that the divided ureter may become quickly occluded by adhesions or blood clot; that general peritonitis probably occurs in those cases where such occlusion does not take place or where the urine is septic. Dogs and cats always recovered and showed nearly always at autopsy adhesions between omentum or gut and the wound, and in one half the cases free abdominal fluid containing urea. The peritoneal cavity gave positive cultures in all dogs and cats and one half of the rabbits. The organism was practically always a coccus.

TUBERCULOSIS.

From an extensive experimental investigation of the routes of extension of urogenital tuberculosis in rabbits, Sawamura [2] reaches the following conclusions:

(*a*) Extension of vesical and genital tuberculosis to the kidney seldom occurs.

(*b*) Direct ascending infection of the kidneys with tuberculosis from bladder, without obstruction of the urinary stream, is possible only when a relatively high pressure prevails in the contractile bladder and an antiperistaltic movement of the ureter sets in.

(*c*) Ascending renal tuberculosis may be produced by tuberculous involvement of the lower part of the ureter, with consequent stricture, stagnation and dilatation.

(*d*) Lymphogenic ascending renal tuberculosis theoretically cannot be denied, but was not surely determined.

(*e*) Tuberculosis of the testicle and epididymis as a rule extends urethrally.

(*f*) It may also extend by the lymphatics, though more rarely.

(*g*) Tuberculosis of the epididymis often extends downward to the testicle.

(*h*) Tuberculosis of the testicle and epididymis often remains for a long time local, without spreading to the rest of the genital apparatus.

(*i*) In primary tuberculosis of the testicle, the spermatic cord is often also affected.

(*j*) The lymphatics of the testicle mostly lead to the lymph nodes along the inferior vena cava at the level of the termination of the internal spermatic vein, and those of the epididymis to the nodes along the hypogastric vessels.

(*k*) The proximal part of the vas may be infected by tubercle bacilli from the urine.

(*l*) Tuberculosis of the epididymis may arise from descending tuberculosis of the urinary passages when the orifice or lumen of the vas is plugged with granulation tissue, and tubercle bacilli are transported to the testicle from stagnation of the secretion and exudate.

(*m*) Ascending tuberculosis of the epididymis without involvement of the vas is rare, though possible.

KIDNEY TRANSPLANTATION.

Carrel [3] reports at length the technic of his autoplastic transplantation of the kidney and the experimental investigations which led up to its successful performance, and summarizes as follows the facts attained by this important piece of research:

(1) A dog's kidney, which has been extirpated, washed and reimplanted, is capable of functionating in an entirely normal fashion and for a long time after operation. In case of simultaneous removal of the other kidney it may successfully carry on the entire renal excretory function.

(2) The technical procedure of kidney transplantation is at present sufficiently good to avoid every immediate or later complication proceeding from the blood vessels.

(3) The tolerance of the operative interference of the temporary interruption of the circulation, of the perfusion and of the severing of nerves is shown by the excellent function of the organ more than eight months after operation.

SCLEROTIC PARANEPHRITIS.

In this form of renal inflammation the kidney becomes embedded in a mass of fibrous tissue. Operation is indicated because, by the time the process has reached this stage, the organ has practically ceased to functionate and its removal is indicated. Zuckerkandl [4] shells out the organ, making no effort to remove its capsule with it. He calls the procedure intracapsular nephrectomy.

VACCINES.

Hartwell and Streeter [5] and Hartwell,[6] conclude that bacterial vaccines

(1) Are efficient in relieving symptoms in mild forms of cystitis, but have a less marked effect on pyuria.

(2) Are without value in severe forms of cystitis.

(3) Probably hasten the recovery of pyelitis.

(4) Have no influence on bacteriuria.

Hartwell thinks that vaccines "will probably furnish us a means of attacking post-operative foci, such as an infected ureter stump, which are difficult otherwise to clear up.

Eyre and Stewart [7] found that in acute gonorrhea the gonococcus vaccine is markedly toxic and exerts a profound influence. A stock vaccine comprising a dozen different stains gives results only slightly inferior to an autogenous vaccine.

In a carefully carried out research with many cases, Schmidt [8] concludes among other things that serum therapy in gonorrheal cases seems to be used to the greatest advantage in acute or subacute gonorrheal toxemic cases — those cases which are too often referred to as "gonorrheal rheumatism"; that serum is of no practical value in the inveterate long-standing cases; the serum-therapy has not been of as great value in metastatic or gonococcemic conditions. The vaccine mode of therapy, he says, has shown satisfactory results in true gonorrheal arthritic conditions — when undoubted metastatic conditions are present and where a gonococcemia is probably present. In the very acute attacks especially good results were noted.

TUBERCULIN.

The belief that tuberculin has a real place in the therapy of surgical tuberculosis seems to be steadily gaining ground as a result of the work which is being done in the clinics of this country and of Europe.

Sanborn [9] summarizes the indications for its use as follows:

(1) In case of organs involved which cannot be extirpated, such as the bladder;

(2) In case of any organ in which tuberculosis is very early and in which disintegration has not taken place to any considerable extent;

(3) In case of tuberculosis of both kidneys where it is deemed unwise to operate either;

(4) Post-operatively in case that it is apparent that all tuberculous tissue was not removed or where organs that were involved could not well be extirpated;

(5) In any case where bladder involvement is present;

(6) In any case where there is a suspicion that tuberculous tissue has been left behind;

While Hugh Cabot,[10] in describing the practice at the Massachusetts General Hospital, discriminates between cases in which the disease has been apparently removed, as in unilateral kidney infections without bladder involvement, and those cases in which some disease remains although its principal focus has been removed.

In the former class tuberculin is used after the method advised by Tondeau, while in the latter the injections are continued at a maximum dose until the patient is free from symptoms or until six months have elapsed.

ETIOLOGIES.

In a discussion of the etiology and pathology of the *undescended testis* the writer [11] insists that the imperfections in an undescended testis are the cause of and not the result of its failure to reach the scrotum.

In a good paper on kidney and ureteral stone, Bevan [12] insists that *renal colic* is due to a greatly increased intrarenal tension and that the passage of a stone does not necessarily cause any pain. He cites a case in which the progress of a stone through the ureter was watched by successive x-rays and no pain was experienced.

The writer [13] throws aside the commonly mentioned causes for *varicocele* and stanchly

upholds the belief that there is a congenital diathesis which serves as the etiological factor.

Paul [14] considers that *prostatic hypertrophy* is not due to a chronic inflammation of septic or specific type, nor to a neoplasm, but that it is an involution change similar in character to that which occurs in the mammary gland. He presents his evidence at length in support of this theory.

CANCER OF PROSTATE.

A careful study of 111 cases by Young [15] and a comparison with cases of benign enlargement of the prostate have added much to our knowledge of this disease. He finds that it is a far commoner disease than was ever believed possible; that often a diagnosis can be made before the disease has passed the confines of the prostatic capsule; that there is no evidence to show that these cases are degenerative from benign hypertrophies.

FUNCTION OF KIDNEYS.

The writer [16] had the unusual opportunity of repeated and long-continued study of the urine secretion in a case of ectopia vesicæ when naturally it was not necessary or possible to use a cystoscope. He reached the following interesting conclusions. The "diuretic quotient," or average amount secreted per minute, varied usually between 1 and 2. Almost half an hour after taking a considerable amount of fluid there was rapid rise in the diuresis, which fell in another half hour to its former level; with beer it lasted two hours. These observations show how rapidly the body gets rid of surplus fluid. In case, however, little fluid had been taken the day before, the ingested liquid was stored up and no increase in diuresis took place. The secretion of urine was smaller and more irregular in the lying than in the upright and Fowler's position. Urine spurted from the ureter about once in ten seconds, and about .3 ccm. at a time.

CHEMISTRY OF URINE.

Cantelli [17] describes the chemical characteristics of a group of substances which he isolated from the urines of certain patients and says that the presence of these substances in the urine may often give evidence of a renal lesion at a time when albumin and other indications of a nephritis are entirely lacking.

NEW TECHNIC.

A new method for the removal of bladder growths must always command attention at a time when the present methods at our disposal are so unsatisfactory in their end results. Beer [18] describes a technic he is beginning to use which consists in using high-frequency currents through a Nitze double-catheter cystoscope. He calls his paper a brief preliminary report, but in it he has distinctly demonstrated the technical possibility of his method of work.

Renal Pelviotomy.

Mayo [19] shows how a flap of fatty fascia may be used in closing the wound in the renal pelvis in such a way as to give this procedure a wider field of usefulness.

Operations upon Upper End of Ureter.

Cabot [20] describes a new technic for reaching stones which lodge high up in the ureter just below the kidney pelvis and again at a point at the pelvic brim as follows:

The ureter in the first situation is, I believe, best reached by an oblique muscle-splitting incision, starting at about the tip of the twelfth rib and running downward and forward to a point about midway between the anterior superior spine of the ilium and the umbilicus. The fibers of the external oblique are separated in line of the incision, those of the internal oblique and transversalis practically at right angles to the incision. If the separation of the muscles is freely made, good access is obtained to the upper half of the ureter. After the muscles have been separated, the peritoneum is pushed back and the ureter readily found lying upon the psoas muscle, though its tendency to be turned up with the peritoneum should not be forgotten.

Stones situated at the brim of the pelvis may be conveniently reached by an incision in the same line as the one above described, but beginning where the other stopped at a point nearly midway between the anterior superior spine of the illum and umbilicus and continued downward to the junction of the inner and middle thirds of Poupart's ligament. Here again the peritoneum may be pushed back and the ureter readily found at the point where it crosses the bifurcation of the common iliac artery.

Operation on the Lower End of the Ureter.

Gibson [21] describes technic of an operation for the purpose of reaching the lower portion of the ureter by an extraperitoneal route. A curved incision is made extending at first horizontally outward from just above the symphysis pubis, bending upward along Poupart's ligament to a vertical direction opposite the anterior superior spine of the ileum. By retraction of muscles and incision of the transversalis fascia the peritoneum is exposed; the peritoneum is then pushed upward exposing the ureter, which can then be drawn up into the external wound. The ureter after incision can be closed by a double row of sutures and the wound closed without drainage. Two cases are reported.

Operation for Cancer of Bladder Fundus.

Hagner [22] describes an operation for these somewhat rare cases in which the removal of the growth is accomplished with no injury to the tumor mass.

The following is a description of the operation as employed in one case: The bladder was irrigated, and, on account of bleeding, adrenalin 1: 10,000 was instilled and allowed to remain five minutes. The bladder was then distended with 350 ccm. of salt solution, and a Nitze cystoscope was introduced. This was held in place by an assistant, while a suprapubic incision down to the bladder wall was made. The prevesical fat was well separated and the tissues well retracted by wide lateral retractors so as to give a good

exposure of the bladder wall. The growth was then inspected through the cystoscope, the right hand holding the cystoscope; with the left, a needle was pressed on the fundus of the bladder and the dimpling caused thereby was readily seen through the cystoscope. The needle was carried first to the left of the growth at a sufficient distance to give a margin of healthy bladder wall; it was then plunged into the bladder, being held in place by an assistant. The same procedure was carried out at the right of the growth and at the lower border. An attempt to place a needle above would have penetrated the parietal peritoneum, as this was involved in the growth. A sharp knife was then carried to the outer side of the three needles placed around the growth, the portion of the bladder wall to be removed being clamped at its cut edge as soon as the incision was started. The bladder wall containing the growth was lifted up by the clamp and held by an assistant. The fluid left in the bladder was removed by a large syringe through the suprapubic wound to prevent its entrance into the peritoneal cavity. The incision in the bladder wall was then carried upward into the peritoneal cavity and a portion of parietal peritoneum covering the growth was removed. The bladder and peritoneal wounds were then closed by two rows of sutures, a suprapubic drain being left in the bladder.

RADIOGRAPHY.

Renal Pelvis.

After considerable investigation the authors [23] found that a 50% solution of cargentos (a colloidal silver oxide) gave x-ray shadows of the greatest density and was absolutely non-irritating as a fluid for diagnostic injection of the renal pelvis. In order to avoid over-distention of the pelvis, and consequent colic, they have used gravity injection, allowing the solution to run into the ureteral catheter from a graduated burette elevated two feet until the flow ceases.

Stones in Lower End of Ureter.

Cabot [24] describes and illustrates with photographs the reasons why stones in this location may fail to show even with good technic. His suggestions if confirmed by further experience should prove of real value.

A Case of Filarial Hematochyluria.

The authors,[25] after quoting one or two similar cases, report a case of their own which was apparently cured by quinine and the x-ray.

NEW INSTRUMENTS AND APPARATUS.

An Improved Method of Measuring the Capacity of the Renal Pelvis.

Baker [26] describes an instrument for the above purpose by means of which one can get an accurate idea of the capacity of the kidney pelvis under known conditions of pressure, thus obviating the tendency to produce renal colic as a result of uneven and unknown amounts of pressure which must necessarily result from the use of a syringe to force the fluid through a catheter.

A Device for the Prevention of Bleeding in Bladder Operatons.

The writers [27] describe their method of operating on prostatic and bladder cases after binding all four limbs of the patient with gauze roller bandages so completely and tightly that the operations are done with all four extremities blue. In this simple way the writers claim practically bloodless operations with no bad after-effects, and they earnestly recommend the procedure to the profession.

A Cysto-Urethroscope.

Stimulated by the success of the Goldschmidt instrument in examinations of the deep urethra, the writer [28] describes another and, to his idea, a better instrument which employs the Nitze type of indirect or right-angled telescope. He claims his instrument does away with the partial field, distorted image and the traumatism caused by the large window of the older instrument.

A New Catheter Container.

Barney [29] describes an ingenious, cheap and apparently efficient container for ureteral catheters, consisting chiefly of a piece of rubber tubing one or two inches longer than the instruments it is to contain.

RARE AND INTERESTING CASES.

Ureterocele.

The writer [30] details two cases of this very rare occurrence and reviews twenty-two others. He says the conditions should be suspected when a cord is found in a hernial sac at operation.

Family Hematuria.

Aitken [31] reports a family of seventeen persons, ten of whom have suffered from hematuria. In spite of an apparently prevalent opinion to the contrary, he insists that a very guarded prognosis should be given in such cases.

TOTAL EXTIRPATION OF THE BLADDER COMBINED WITH HYSTERECTOMY AND IMPLANTATION OF THE URETERS IN THE LOIN.

Martin [32] reports having performed the above operation upon a negress of forty-three years of age, in a case of cancer of the lower part of the uterus involving the floor of the bladder and the orifice of the right ureter. The operation was performed as follows:

Tamponade of the vagina, Trendelenburg position, medium laparotomy. Ligature of the cervix, of the round ligament and of the uterine vessels. Ureters exposed and divided 8 cm. from the bladder; divided ends of the ureters carried to the lumbar surface and drawn out a short distance through the incision made in either loin to allow of their being passed through the skin. A small catheter was passed into each of the ureters thus placed and secured there. The uterus, bladder and neighboring portion of the vagina were then removed and the peritoneal cavity shut off by a lock stitch.

Two days later the catheters were removed because of the insufficient drainage afforded by them, the ends of the ureters were split longitudinally and attached to the skin. The patient was able to keep the loins clean and could resume an active occupation. The ultimate result is not mentioned.

REPORT OF A CASE OF PRIMARY TUBERCULOSIS OF THE BLADDER.[33]

The patient was a man of sixty-two years of age. Thirty years before entering the hospital he had a traumatic rupture of the urethra, extravasation of urine and perineal fistulæ which persisted up to the present time. In 1908, external perineal urethrotomy was performed. Convalescence was uneventful up to the fourth week; at this time a sudden rise of temperature and severe dyspnea occurred and the patient very shortly afterward died.

The *autopsy* revealed the following conditions: Fatty degeneration of the heart. Emphysema of the lungs. On the apex of the left lung a small focus of cicatricial hardening which was entirely encapsulated. The spleen and the capsule of the liver and the diaphragm presented large and thick cartilaginous plaques. Carcinoma of the stomach at the pylorus. The *bladder* contained a purulent, cloudy liquid. Muscular columns were very marked upon the surface. Scattered over the entire inner surface were numbers of small projections of a grayish and slightly translucent appearance of the size of a millet seed and surrounded by circles of hyperemia. The center of these projecting masses was whitish and opaque. The epithelium was destroyed at these points. On a level with the entrance of the urethra a number of these individual projections had run together forming an irregular ulcer of about 1 cm. in diameter which was also surrounded by a circle of hyperemia. The prostate was hypertrophied and the size of a small apple.

Microscopic examination of the small bodies described above showed small rounded masses of leucocytes infiltrating the submucosa and surrounding numerous and very characteristic giant cells. These cells were very large and their nuclei were arranged "*en calotte.*" The nodules presented clearly the typical appearance of tubercle. They did not find necrosis in any of the different microscopic sections of the nodules, which fact would seem to indicate that they were of recent origin. The only other tuberculous process that could be found anywhere in the body was the small focus of fibrous tissue of long standing in the apex of the left lung, which showed no softening and which was thoroughly encapsulated. There was no sign of a tuberculous process, recent or ancient, in any organ of the genito-urinary tract or in any other part of the body, and no sign of miliary tubercle elsewhere to offer an explanation that the lesions of the bladder could have originated by hematogenous infection from some other focus of the disease; on the contrary, the disposition of the vesical tubercles, which were more numerous and which had united in one place into a superficial ulcer near the internal orifice of the urethra and, becoming fewer on the sides of the organ and finally being absent at its summit, indicates that the bacillus entered the bladder and infected it from the urethra. Mouchet thinks it probable that the bacillus gained entrance to the bladder from the fistulous tracts in the deep urethra which connected it with the surface of the perineum.

THE PATHOLOGY AND THERAPY OF ANURIA.

In 1903, Kreps[34] published several cases of calculous anuria in which he relieved the condition by ureteral catheterization of both kidneys. The urine drawn from the unobstructed kidney in these cases immediately after the overcoming of the anuria was perfectly normal, which fact Kreps regarded as a proof of the existence of a reflex anuria affecting the unobstructed organ and having its source from an inhibitory influence originating and transmitted from the obstructed kidney. In the publication referred to above Kreps reports some other cases of anuria which still further go to prove the existence of a reflex anuria. In the first of these the same experience with regard to the demonstration of the normal condition of the unobstructed kidney being subjected to a reflex anuria was repeated. A further point of interest was added in this instance by demonstrating the condition on two different occasions with an interval of three years in the same patient, the left or unobstructed organ on both occasions having its function suppressed by reflex inhibition proceeding from the right kidney which was obstructed by a calculus in the ureter.

In the second case the obstruction of one side was produced probably by the blocking of one ureter with blood clot. Here, too, the second or unobstructed kidney was shown to be normal by urinary tests.

In three instances of obstructive anuria, both of the kidneys were more or less pathological. They illustrate the relief of the anuria by means of the use of ureteral catheters and injections through them of glycerine, but are not demonstrations of reflex anuria of an unobstructed and normal kidney.

PHYSIOLOGICAL FUNCTION OF THE PROSTATE.

The statements made by the authors[35] with regard to the physiological functions of the organ relate to three separate questions, the first being the office of the muscular part of the gland, the second its external secretion and the third its internal secretion.

With respect to the first, they conclude that, although a muscular organ, it has but little to do with the closure of the bladder, but that its muscular constituents are concerned in the expulsion of the secretion of the glandular portion of it. This explusion of the secretion takes place at the termination of coitus and is produced through stimulation of the branches of the sacral plexus transmitted to the hypogastric plexus and which reaches the prostate through these intermediate branches.

Lamare is quoted as holding the view that the prostate does not perform any glandular function until puberty; that the glandular activity reaches its culminating point between the ages of twenty-six and thirty, and that somewhere between forty-five and fifty years of age the fibromuscular elements increase at the expense of the glandular ones.

With reference to the relation of the prostate to the genital function, the following facts are recalled: That the development of the prostate in young animals remains arrested at whatever point it may have reached when castration is performed upon them; again, that the glandular portion of the organ atrophies and disappears when the testicles are removed. Casper found that the center of the prostate where it surrounds the urethra in a dog which had not reached puberty had no glandular structure. According to Walker, the injection of testicular extract in male dogs which had been castrated, delayed or prevented atrophy of the prostate, while the atrophy proceeded progressively when no injection was given: the development of the prostatic glands proceeds almost absolutely in correspondence with that of the testicles.

A CASE OF RENAL CALCULUS PRODUCING NO SYMPTOMS FOR FIFTY YEARS.[30]

Patient, a man of sixty years, had had typical attacks of renal colic on the right side as a child. These had then ceased and there had been no evidence pointing to renal calculus for the next fifty years. At the end of that time there was a return of the colic on the same side accompanied by hematuria. The patient was operated upon. The right kidney found to be wholly destroyed by a stone almost as large as the fist, which was composed largely of phosphatic salts. The kidney was removed and the patient made a good recovery.

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Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

THIRTY-SECOND ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 3, 4, 5, 1910.

JAMES E. LOGAN, M.D., *President.*
JAMES E. NEWCOMB, *Secretary.*

(Continued from No. 24, p. 920.)

X. PERSONAL EXPERIENCE IN THE INTRANASAL TREATMENT OF ACCESSORY SINUS DISEASE, WITH REPORTS OF CASES.

DR. GEORGE L. RICHARDS.

Read by title. No discussion.

XI. CASE REPORTS ILLUSTRATING OCULAR AFFECTIONS DUE TO INTRANASAL AND ACCESSORY SINUS DISEASE.

DR. LEWIS A. COFFIN, New York.

DR. FRANK J. PARKER, New York, said that he had had the privilege of working with Dr. Coffin and had taken all these fields with the self-recording perimeter under the best conditions of daylight. The disks used were 10 mm. square. The fields were taken several times, and some were taken by the house surgeon also; few if any errors were found, and these were very slight. A line of work of this sort will be a great help to the ophthalmologist; some cases go from one to another, and no one can fit them with glasses. Two of these were just such cases. They were normal with the ophthalmoscope. There is a class of cases with optic atrophy, and it has been almost a rule that if no reason can be found for the condition, the patient is put upon iodides. It is probable that many of these cases that have been injured by iodide of potassium have been due to sinus disease, especially of the ethmoid and sphenoid.

Some of these cases of Dr. Coffin did not have sinus trouble, but had intranasal swelling of the turbinates, etc., with a normal optic nerve. These cases should be divided into two classes, one due to circulatory disturbances, and the other to peri-neuritis causing swelling, and this, beginning optic atrophy. These cases show first in the peripheral fields where there is less visual acuity. He expressed the hope that others would work along this line. Dr. Coffin and he were anxious to find its value in diagnosis. Up to the present time it would seem to be of great value.

DR. CORNELIUS G. COAKLEY, New York, said that two months since he had had three patients with sinus involvement whose eyes were examined by Dr. Wheeler, and in none was there any contraction of the visual field. In another case of marked unilateral involvement both Dr. Wheeler and Dr. Parker examined the patient's eyes and they were found to be practically normal; so that while the condition presented by Dr. Coffin undoubtedly occurs in some cases, we are just at the beginning of the subject. It is a very valuable symptom, and is evidently caused by some form of interference with the vision.

DR. H. L. SWAIN, New Haven, expressed deep appreciation of the manner in which Dr. Coffin had presented the subject, and of the help afforded by Dr. Parker's admirable illustrations. He himself had recently been studying what Onodi says in relation to the optic nerve to the walls of the sphenoid and the posterior ethmoid sinuses, and feels that we are almost open to censure that we have not appreciated this

before. It is not any wonder that the optic nerve is involved; the wonder is that it ever escapes with this serious pressure inside of this cavity.

Dr. Greenfield Sluder, St. Louis, cited the history of a patient illustrating the involvement of the optic nerve as expressed by Dr. Swain.

Dr. Coffin, closing the discussion, emphasized Dr. Coakley's remark that we are only at the beginning of this line of investigation. So far, he himself has not found a case positively diagnosed as having disease in the ethmoid or sphenoid that has not shown contraction in relation to the apparent involvement. The case reported by Dr. Sluder was probably a case of circulatory stasis, which seems to be the condition in a majority of the cases — pressure due to circulatory disturbances.

Afternoon Session at 2.30 p. m., May 4, 1910.

Joint session with the Climatological and Otological Societies at the New Willard Hotel. General topic for Discussion: "Vaccine Therapy."

The Climatological Society represented by Drs. J. A. Miller and J. M. King.

The Otological Society by Drs. H. C. Reik and B. A. Randall; and

The Laryngological Association by Drs. H. S. Birkett, C. G. Coakley, and F. C. Cobb.

Dr. Randall said that the application of opsonic treatment by vaccines to diseases of the ear has been too limited and carried on by too few investigators to have reached definite results. Hardly a hundred individual cases are recorded, and while these are encouraging, especially to enthusiasts, there are too many loopholes for any estimate of them to carry conviction to clear minds. The permanence or uniformity of success which should distinguish a monumental improvement in therapy cannot yet be considered established, while some of the reports are open to suspicion of being none too well posted or else too pessimistic as to the older measures. Closer scrutiny of the instances of its employment will probably give greater confidence in the possibilities of the method, and it was to be hoped that this joint consideration of the subject will serve to crystallize into more available shape its practical applications, and that growing experience will show more frequent realizations of the hopes and claims of the enthusiasts.

VACCINE THERAPY IN OTOLOGY.

By Henry O. Reik, M.D., Associate in Ophthalmology and Otology in the Johns Hopkins University; Surgeon in the Baltimore Eye, Ear and Throat Hospital, Baltimore, Md.

After a summary of what has been accomplished by the use of vaccines in otology and a careful consideration of the various conditions encountered, the author offers the following conclusions and suggestions in regard to the relation of vaccine therapy to otology:

1. The employment of vaccine therapy in otology, although having had but a limited trial so far, has been attended by such successful results as to warrant us in feeling greatly encouraged.

2. Furunculosis, with its recognized tendency to the formation of boils in crops, seems to have responded more promptly and satisfactorily to this form of treatment than to any other, and, in tuberculosis of the middle ear, a condition heretofore so baffling to the otologists, there would seem to be good reason to believe that at last we have a controlling, curative remedy.

3. Looking into the future, we have held out to us the enticing prospect of being able to cure without operation a larger percentage of our cases of persistent, chronic purulent otitis media, or, failing in that, of insuring success for the operative treatment of this affection.

4. The aural conditions to which this new form of treatment would appear to be reasonably applicable are the treatment of chronic suppurative otitis media; the preparation of patients for operation, raising the opsonic index in order to facilitate rapid healing after obliteration of the gross lesions; and the post-operative treatment of mastoiditis and its complications where healing is delayed and the patient is unable to construct new tissue without aid.

5. While the outlook is hopeful in these several directions, we must not grow too enthusiastic as yet. We are perhaps justified in some degree of optimism, but not in enthusiasm. Let us try the method further, with fairness, and judiciously, not expecting the impossible from it, for it will not entirely displace any other form of treatment; no matter how valuable it ultimately becomes, it will only be an additional therapeutic measure at our command.

THE VALUE OF VACCINE TREATMENT OF CHRONIC INFLAMMATORY DISEASES OF THE ACCESSORY SINUSES OF THE NOSE.

By H. S. Birkett, M.D., Professor of Oto-laryngology, McGill University; Oto-laryngologist, Royal Victoria Hospital, Montreal; and J. C. Meakins, M. D., Demonstrator in Clinical Medicine and Pathology, McGill University; Clinical Assistant in Medicine, Royal Victoria Hospital, Montreal.

The history of the application of the principle that immunity follows an attack of certain infectious diseases was sketched from its first recognition by Jenner and the later work of Pasteur, followed by the development of "the cellular" and "the humoral" views of immunity maintained by Metchnikoff and Ehrlich, the reconciliation of these two views by Denys and Leclef, and the demonstration by Wright that the blood plasma contains a substance which must first act upon the bacteria before the leucocytes can ingest them.

The authors claim that chronic and localized infections are eminently suited for vaccine treatment, and after a careful study of the anatomy and pathology of the accessory sinuses of the nose, the application of treatment by vaccine therapy by others and the personal observation of four detailed cases, they reach the following conclusions:

1. Vaccine treatment will sterilize the accessory sinuses of the nose when the subject of chronic disease.

2. The chronic discharge of mucus from the accessory sinuses of the nose is not so much due to bacterial infection as to habit hypersecretion.

3. The symptoms are not due to infection, but to hypersecretion and retention.

4. Although vaccine therapy is a valuable adjunct to treatment, the establishment of free drainage by the removal of polypoid masses and redundant mucous membrane is more important.

5. The cases of sinusitis showing a tendency to become chronic should be treated early by homologous vaccines.

Dr. Cornelius G. Coakley, New York, took a less hopeful view of vaccine therapy than did Dr. Birkett. His results had led him to the following conclusions:

1. The bacterial flora of the sinuses consist of the following organisms: Streptococcus pyogenes, micrococcus albus and aureus, staphylococcus pyogenes albus and aureus and bacillus mucosus capsulatus.

2. The opsonic index has been unsuitable, either as a means of clinical diagnosis or as a criterion for further treatment.

3. That vaccinations made in varying strength have not been followed by those changes in the opsonic index which would be expected were this method of treatment one on which we could rely in practical work.

4. The amount of time necessary to carry out fully a careful opsonic treatment are not only beyond that which the ordinary practitioner could afford to spend, but are, with the present technic and status of the subject, quite out of proportion to the value of the information which one might derive from such procedure.

The therapeutic results of his own cases were, in his own judgment, absolutely worthless. He could not say, on the other hand, that any harm had been done to his patients. Before the use of vaccines, the chronic patients had frequent periods of improvement of their symptoms and periods of aggravation. In a few instances some improvement was noted after the first or second injection, but later the discharge and other symptoms returned as they had done under other plans of treatment.

DR. FREDERIC C. COBB, Boston, had had good results in clearing up chronic ear discharge, but not such good results in nasal cases, although the anatomical conditions, so far as closed cavities draining through narrow openings were concerned, were apparently alike. In a series of atrophic rhinitis cases, however, the results were better. A bacillus of which he could find no description was found in all cases. From it a vaccine was made and injections varying in amount from 150,000,000 to 500,000,000 were given. A very general improvement in odor and amount of crusts and discharge had resulted, yet in no instance could an absolute cure be claimed. Before commencing vaccine treatment these patients were in the habit of using nasal washes, and this treatment was not changed while carrying out the injections except that before periodical examinations they were not allowed to use the douche for twelve hours. The patients themselves were enthusiastic over the results of treatment. Autogenous vaccines seemed to yield better results than stock vaccines. The same general degree of results had followed in sinus cases, that is, improvement, but no absolute cure.

(*To be continued.*)

Book Review.

Hookworm Disease. Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis and Treatment. By GEORGE DOCK, A.M., M.D., Professor of the Theory and Practice of Medicine, Medical Department, Tulane University of Louisiana, New Orleans; and CHARLES C. BASS, M.D., Instructor of Clinical Microscopy and Clinical Medicine, Medical Department, Tulane University of Louisiana, New Orleans. Illustrated with forty-nine special engravings and colored plate. Pp. 250. St. Louis: C. V. Mosby Company. 1910.

In view of the recent recognition that hook worm disease exists in a large part of the United States, and that it is among the most important of diseases in the South, this description of the disease by Dock and Bass deserves wide attention. The disease is believed to have reached Europe from Egypt; its occurrence in Europe has been chiefly among miners, laborers in tunnels, and brick workers. In America an epidemic probably of this disease was described in Brazil in 1648; the earliest mention of it in the United States was in 1808. The parasite was first described in 1782 in animals, but was not connected with the disease in man until 1853, and its connection with human anemia first received general recognition in 1877. Ashford, in 1899, showed the great prevalence of hookworm infection in Porto Rico, and Stiles, in 1901, showed it to be widespread in the United States. Stiles further demonstrated that the American hookworm was a species distinct from that of the old world, which, however, also occurs in America.

The parasite requires for its growth high temperature and moisture. The disease is, therefore, one of southern regions and of deep mines. It occurs mainly among those who have intimate relations to the soil, particularly those with bare feet. The biology of the parasite is minutely described. Of great interest and importance is the demonstration of the mode of entrance to the human body, not as was formerly supposed by the alimentary tract, but through the skin. This process is accompanied by the symptom familiarly known as "ground itch."

The pathology of the disease is chiefly that of anemia and the resulting abnormalities of oxygen metabolism. It is possible, however, that the lack of development, when the disease occurs in early life, may be due not so much to the anemia as to the local lesions in the intestine.

The symptoms are variable and may be slight or absent. Most common is this very mild form of the disease where symptoms are not noticed; the chief importance of these cases is as carriers of the parasite. Next most common is the type of disease classed as mild, manifested by moderate pallor and anemia, and lowered vitality and energy, and in children somewhat impaired growth. The third type is the severe type where the anemia, weakness, dyspnea, edema and impaired growth are too marked to be overlooked. This type is relatively rare in the United States, but in Porto Rico has caused a large percentage of all deaths in the island.

The diagnosis rests chiefly upon the demonstration of ova in the stools; the process of examination for these is, therefore, minutely described. Eosinophilia of over 8% has been shown to occur in the blood of 94% of cases.

Much stress is very properly laid upon the prophylaxis of the disease under three headings: (1) the extermination of the worms in human carriers, even those without symptoms; (2) the prevention of dissemination of larvæ by the invariable use of proper privies; and (3) education in precautions against infection.

To remove the disease the thymol treatment properly carried out has proved extremely effectual.

THE BOSTON

Medical and Surgical Journal.

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READING FOR PHYSICIANS.

Medicine has long been known as one of the learned professions, and physicians have been looked to as wise men, not only in the care of the sick, but in a broad general knowledge of literature,— and of scientific literature especially. The earlier generations had such literary knowledge, because knowledge of medicine implied knowledge of old authorities. Moreover, a few years ago the total available literature of medicine was small compared with what we now know. Then there was the occasional physician, like Arbuthnot, or Brown, or Holmes, who contributed to general literature, and helped by such contributing to impress the public with a sense of the wide interests of physicians.

We have changed all that. We are no longer a learned profession in the old sense, — rarely as individuals are we widely learned. In the aggregate, however, our knowledge of nature and of her processes is incomparably greater than formerly it was. Special students of special problems have worked out the grand total of present knowledge. In spite of specialism, however, and the fumbling prophecies of a few years back, general practitioners still flourish among us. They are mostly earnest, over-worked men, well educated so far as that is possible in these complicated times; and they struggle to keep abreast of multitudinous progress. They struggle vainly. No man can gather and digest all the new things. The general practitioner, the general medcal reader, is in a state of intellectual dyspnea. The hard routine of his daily round and the collecting of his fees is exhausting enough, but he is asked in addition to keep elaborate bedside notes, to execute numberless laboratory tests, to consult specialists, to subscribe to a half dozen medical journals and compendiums of practice, and to buy the new books. Especially must he take the journals and the books, he is told; otherwise will he be put to shame before his fellows, and soon be classed as a back number. These are grievous obligations. They are impossible. No general practitioner meets them. If he makes the claim, pass him quickly by, for he tries to deceive you. Vast numbers of toiling practitioners, however, endeavor to meet these impossible demands. Go into the office of a busy practitioner; you will find his table loaded with unopened mail — journals months old; and his bookshelves lined with volumes which presumably he will never read.

The remedy is easy and obvious. He needs a few, not many, good journals. Several good, standard, up-to-date journals will give him a speaking acquaintance with progress. These he will read at least in part. He should buy those books only which are favorably *reviewed* in a responsible journal. The art of the honest reviewer fortunately is not yet dead.

Let us then take heart and fresh counsel; and let us believe that opportunities for learning still linger among us, if only our energies be kept unimpaired and our efforts be directed toward a definite end.

PREVENTION OF ABUSE OF MEDICAL CHARITY.

A circular is at hand, issued by the committee of the Chicago Medical Society on the abuse of Medical Charities, relating to the movement in Chicago for the regulation and improvement of institutional medical charity. This movement, which has already excited considerable interest throughout the country, aims at correcting economic abuses in hospital administration, improving the service to the poor in free institutions, and preventing the hospitalization of members of the community who are not deserving objects of medical charity. The widespread abuse of such charity is well known, and medical pauperization is its inevitable result. To check this abuse, the committee proposes the establishment of a headquarters of investigation, where every applicant for free institutional medical charity should undergo thorough inquiry and scrutiny, which will be carefully and permanently recorded. The project, which is to be supported at first by private subscription, deserves enthusiastic encouragement by the profession. Demonstration of its successful application should be followed by its adoption in other similarly situated communities.

ADVANCING STANDARDS OF MEDICAL EDUCATION.

THE effect of raising the standard of medical education is well illustrated by the recent experience of the University of Michigan. Two years ago its medical department established the entrance requirement of at least two years of previous collegiate study. The number of students in the entering medical class immediately fell from 144 in 1908 to 36 in 1909. In 1910, however, the number has risen to 58. This is precisely what was to be expected, nor should the advocates of increased efficiency of medical education be discouraged thereby. In every walk of life the individual must either meet the demands of the advancing civilization which is his environment or else go to the wall. In medicine, therefore, physicians must be continuously more highly trained than heretofore. Such specialization will mean, as it does everywhere else in nature, diminution in number but increase in efficiency of the survivors. The result will be a gain to the community and to the dignity and progress of medical science.

INTERNATIONAL OPIUM CONFERENCE.

INTELLIGENCE from Washington, D. C, states that plans are completed for an international opium conference at the Hague on May 30, 1911. The countries to be represented are the United States, China, Great Britain, France, Germany, Italy, Japan, The Netherlands, Persia, Portugal, Russia and Siam. The conference will deal with the problem of cocaine and morphine, as well as that of opium. The extent of the illicit traffic in these drugs, and their illegitimate use, is hardly realized by the respectable public. In the year 1909, 185,000 oz. of cocaine were imported into the United States, of which only 5,000 were used for legitimate medical purposes, the remainder being consumed by habitués. Of the 75,000 lb. of opium brought into this country annually, probably over three fourths are employed by opium smokers and eaters. The suppression of such vices in civilized countries should be far easier than to check the improper use of alcohol, and positive results towards this end may be hoped from concerted action following the opium conference next spring.

MEDICAL NOTES.

ABATEMENT OF BUBONIC PLAGUE IN MANCHURIA. — It is reported from St. Petersburg that there is a marked abatement of bubonic plague in Manchuria and that no new cases of the disease had occurred in that country during the three days ending Dec. 15.

AWARD OF THE LA GRANGE PRIZE. — It is reported from Brussels that on Dec. 15 the Royal Academy of Belgium awarded the Charles La Grange prize in physics to Dr. L. A. Bauer, director of the department of terrestrial magnetism at the Carnegie Institution, Washington, D. C.

RELATION OF COMPLEXION TO TROPICAL DISEASE. — An investigation is said to be in progress by a board of United States army surgeons as to the relative susceptibility of persons with light and with dark complexions to heat-stroke and various tropical diseases. *A priori* it should seem that brunettes should be more tolerant of insolation than blondes, but immunity to infections would hardly seem likely to be affected by such a factor.

PURE MILK AND INFANT MORTALITY. — The value of a pure milk supply in cutting down infant mortality is well illustrated by the percentage of deaths under one year of age in Berlin. In the decade from 1870 to 1880 this figure was 30%; from 1880 to 1890, it was 27.1%; from 1890 to 1900, 23.2%; from 1900 to 1910, only 19%. This reduction, though doubtless due in part to other factors, has taken place *pari passu* with the extension of the system, begun in 1880 by the philanthropist Bolle, of supplying good milk to the poor at moderate price.

AMENDMENTS TO THE ROCKEFELLER FOUNDATION BILL. — In a recent issue of the JOURNAL we referred to certain objections that had been raised to the federal incorporation of the Rockefeller Foundation. To meet these objections, several amendments have been made to the bill for the chartering of the foundation, now before Congress, giving the government a voice in the selection of the trustees, requiring the annual distribution of the entire income and limiting the total amount of the fund at any time to $100,000,000. It is hoped that with these restrictions there may be no further opposition to the establishment of the foundation.

A PROLIFIC FAMILY. — Report from Richmond, Ind., states that Mrs. Jason Bonner, of New Castle, Ind., has recently given birth to her twenty-eighth child. Of her large family of offspring, twenty-one are at present living.

Mrs. Bonner is now forty-five years of age and her husband forty-nine. It is not stated how long they have been married.

The Typhoid Epidemic at Annapolis. — During the week ending Dec. 17 only one new case of typhoid fever was reported at the United States Naval Academy at Annapolis, Md., making a total of 30 patients now under treatment for the disease. There have as yet been no deaths, though one cadet is stated to be critically ill. A commission of four naval surgeons has been appointed by the Secretary of the Navy to make further investigation and official report as to the probable cause of the epidemic.

Two Centenarians. — Mrs. Elizabeth Shoemaker, who died on Dec. 16 at her home near Dupois, Pa., was locally reputed to have been born in 1806. She is said to have retained her physical and mental vigor until a very short time ago.

Dinah Hicks, a negro nurse, who died last week at New Rochelle, N. Y., was alleged to be one hundred and ten years of age. She was born a slave in Virginia. For the past thirty years she had lived in the family of a justice of the supreme court.

An Apparatus for Inhalation of Alcohol. — Unofficial report from London describes the invention, by Dr. Leonard Erskine Hill, of an apparatus providing for the inhalation of a mixed vapor of oxygen, water and alcohol. This apparatus, which is intended for use in the treatment of pneumonia, is based on the theory that in this way stimulation may be supplied to the heart better than by the route of gastric absorption. The soundness of this theory and the efficacy of the apparatus remain to be tested by experience. It would seem that this method might be open to the objection of the irritant action of alcohol on diseased or susceptible lung tissue.

Progress of the Cholera Epidemics. — During the week ending Dec. 17, 22 new cases and 7 deaths of Asiatic cholera were reported from Italy, as against 29 cases and 11 deaths the preceding week.

Report from Funchal, Madeira, states that the cholera epidemic in that island is still active. At Santa Cruz, on Dec. 15, a number of arrests were made of rioters who resisted the measures taken by the government to check further spread of the infection. This action illustrates the difficulty experienced by preventive medicine in making headway against popular ignorance and superstition, a difficulty not confined solely to countries with a population of primitive or uncivilized inhabitants.

Dr. Osler's Challenge to the Anti-Vaccinationists. — In an article in the *American Magazine*, on the service to the community of the control and abatement of disease and pain by medical science, Dr. William Osler says in consideration of the value of vaccination: "A great deal of literature has been distributed casting discredit upon the value of vaccination in the prevention of smallpox. I do not see how any one who has gone through epidemics as I have, or who is familiar with the history of the subject, and who has any capacity left for clear judgment, can doubt its value. Some months ago I was twitted by the editor of the *Journal of the Anti-Vaccination League* for 'a curious silence' on this subject. I would like to issue a Mount Carmel-like challenge to any ten unvaccinated priests of Baal. I will go into the next severe epidemic with ten selected vaccinated persons and ten selected unvaccinated persons. I should prefer to choose the latter — three members of parliament, three anti-vaccination doctors, if they could be found, and four anti-vaccination propagandists. And I will make this promise — neither to jeer nor to jibe when they catch the disease, but to look after them as brothers, and for the four or five who are certain to die I will try to arrange the funerals with all the pomp and ceremony of an anti-vaccination demonstration."

Boston and New England.

Acute Infectious Diseases in Boston. — For the week ending at noon, Dec. 20, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 35, scarlatina 32, typhoid fever 6, measles 36, smallpox 0, tuberculosis 45.

The death-rate of the reported deaths for the week ending Dec. 20, 1910, was 17.49.

Boston Mortality Statistics. — The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 17, 1910, was 217, against 215 the corresponding week of last year, showing an increase of 2 deaths and making the death-rate for the week 16.79. Of this number 118 were males and 99 were females; 212 were white and 5 colored; 122 were born in the United States, 93 in foreign countries and 2 unknown; 40 were of American parentage, 148 of foreign parentage and 29 unknown. The number of cases and deaths from infectious dis-

cases reported this week is as follows: Diphtheria, 36 cases and 4 deaths; scarlatina, 33 cases and 1 death; typhoid fever, 2 cases and 2 deaths; measles, 26 cases and 1 death; tuberculosis, 62 cases and 24 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 34, whooping cough 2, heart disease 19, bronchitis 3. There were 11 deaths from violent causes. The number of children who died under one year was 29; the number under five years 46. The number of persons who died over sixty years of age was 67. The deaths in public institutions were 85. Cerebrospinal meningitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases. Scarlet fever, 2 cases. Diphtheria, 2 cases and 1 death. Measles, 1 death.

Deducting deaths of non-residents, the total is 202 and the death-rate is then 15.63.

DIPHTHERIA AT BEVERLY. — Two new cases of diphtheria were reported last week among pupils at the Beverly Farms (Mass.) Grade School, as a result of which the school was temporarily closed. This is the second time during the present session that the school has been closed on account of diphtheria. The building will be thoroughly disinfected before being reopened.

SCARLET FEVER IN QUINCY. — A minor epidemic of scarlet fever is in progress at Quincy, Mass. Twelve cases among schoolchildren have been reported, nearly all traceable to infection from a single family. The local board of health has ordered the school in which the cases occurred closed indefinitely, and has also directed the meetings of the various Sunday-school classes to be suspended for at least a fortnight.

MILK COMMISSION, SUFFOLK DISTRICT MEDICAL SOCIETY. — The Suffolk District Medical Milk Commission, starting Jan. 1, 1911, will be as follows:

Dr. James Marsh Jackson, 230 Beacon St., Boston, chairman; Dr. George A. Craigin, 18 Hereford St., Boston; Dr. Robert L. DeNormandie, 357 Marlborough St., Boston; Dr. B. L. Arms, 30 Huntington Ave., City Bacteriological Laboratory; Dr. Fritz B. Talbot, 311 Beacon St., Boston; Dr. Richard M. Smith, 222 Marlborough St., Boston, secretary.

A LIVING CENTENARIAN. — Mrs. Polly Johnson, of East Somerville, Mass., who is said to have been born on Dec. 16, 1810, at Malone, N. Y., celebrated last week the supposed centennial anniversary of her birth. She has four children and four grandchildren surviving. Her health is excellent, and she attributes its persistent vigor to her lifelong habit of rising at six o'clock in the morning.

CHRISTMAS CELEBRATION OF THE INDUSTRIAL SCHOOL. — The annual Christmas celebration of the Industrial School for Crippled and Deformed Children will be held at the institution building on Friday, Dec. 23.

BEQUEST TO QUINCY HOSPITAL. — Among several charitable bequests in the will of the late Peter B. Turner, of Quincy, Mass., filed for probate last week at the Norfolk Probate Court, was one of $100 to the Quincy City Hospital.

NEW ENGLAND ALUMNI OF NEW YORK MEDICAL COLLEGE. — The eighth annual meeting of the New England Alumni Association of the New York Medical College was held last week in Boston. Among the guests and speakers was Dr. William M. Polk, of New York City. Dr. Elgin W. Jones, of Lynn, Mass., was elected president of the association for the ensuing year; Dr. J. Henry Woods, of Brookline, Mass., secretary; and Dr. James H. Stuart, of Boston, treasurer.

PENALTIES FOR VIOLATION OF PURE FOOD LAWS. — Last week a farmer living near Ware, Mass., pleaded guilty before the local district court to the charge of watering the milk sold from his dairy. Another dealer of the vicinity had his license revoked for repeated violation of the milk rules.

Before the municipal court in Boston last week a dealer from Littleton, Mass., was fined $100 for selling to a wholesale firm a carload of adulterated vinegar.

TUBERCULOSIS EXHIBIT AT CHICOPEE. — The local board of health at Chicopee, Mass., has recently accepted from the tuberculosis committee of The Massachusetts Medical Society the loan of a tuberculosis exhibit for use in the Chicopee public schools. The exhibit consists of large wooden frames in which are photographs illustrating conditions conducive to consumption and methods for its prevention. Its showing will be accompanied by an explanatory lecture by a member of the board of health. The value of these loan exhibits in the education of the public as to the nature and avoidability of tuberculosis is believed to be very great.

Expectoration and Concealed Weapons. — The prosecution of the campaign in Boston against promiscuous expectoration continues, though with somewhat abated vigor. Every prisoner arrested for spitting is searched as a routine, and one of the interesting revelations of the process has been the number of concealed weapons discovered. The apprehension of these is much more lucrative to the government than conviction for spitting, since the fine for carrying a loaded revolver is $25; that for expectoration, not more than $5. Under certain circumstances, however, the prevalence of the latter habit is likely to be far more dangerous to the community than the former.

NEW YORK.

Health Conditions. — Notwithstanding the unfavorable conditions incident to its multitude of tenement houses with their congested population, the health of the city of New York is at present better than that of the rural portion of the state. In the month of October the death-rate in New York was 14.0, while in the non-urban population it was 15.8. In the other cities of the state the death-rate was 14.7. In October of last year the urban death-rate was 15.6, and the rural, 16.2.

A Fund for St. Mary's Hospital, Hoboken. — The committee organized to obtain a thanksgiving fund for St. Mary's Hospital, Hoboken, in token of the appreciation of the citizens of New York for the care given by the sisters in charge of the hospital to Mayor Gaynor after the attempt on his life last summer, presented the fund to the sisters on Dec. 18. The total amount was $15,184, and was handed to the sister superior in the form of two checks, one for $5,000 and the other for $10,184. The $5,000 check is to endow a bed in honor of the mayor, while the rest of the money is to be expended at the discretion of the sisters. The presentation was made by John D. Crimmins, chairman of the committee, who was followed by Corporation Counsel Archibald R. Watson, representing Mayor Gaynor, and the gift was accepted by Father Ahne on behalf of the sisters. A letter was also read from the mayor, in which he expressed his regret at not being present, stating that he had to be out of town at the time for the benefit of his health.

Bequests. — Among other charitable bequests in the will of the late Isaac Stern, a prominent New York merchant, are $10,000 to Mount Sinai Hospital and $4,000 to the Montefiore Home and Hospital for Chronic Invalids. During his lifetime also Mr. Stern was a liberal contributor to these and other Jewish charities.

Subscription for American Red Cross Society. — New York City has now completed its subscription of $500,000 for the American Red Cross Society, the amount of the proposed $2,000,000 endowment fund which was apportioned to it on the basis of 10 cents per capita of the population.

Ancient Hebrew Sanitation. — The public lecture at Columbia University on Dec. 5 was by Dr. D. C. Pease, sanitary expert of the Board of Water Supply, on "Insect Carriers of Disease," and in the course of it he made the statement that the many burnt offerings and sacrificial ceremonies of the ancient Hebrews were designed with a practical view to exterminating the fly and other insect pests from the meat of slaughtered cattle.

Laboratory for Examination of Chemicals. — At the opening of the meeting of the American Institute of Chemical Engineers, on Dec. 7, John Purray Mitchell, president of the Board of Aldermen, in an address welcoming the members of the institute to the city, announced that it had been decided by the municipal authorities to establish a fully equipped laboratory for the examination of all chemicals purchased by the city, to be managed by a board of directors of the highest professional standing. This step has been urged for some time, as the present public laboratories are not equipped to do the work satisfactorily, and the city often pays a high price for poor material. With such a laboratory, managed in the manner contemplated, such a thing as graft or favoritism in the granting of contracts would be practically impossible.

Damages for Loss of Life. — After lengthy negotiations the New York Central Railroad and the estate of Spencer Trask have come to an agreement in regard to the damages to be paid for the loss of the financier's life in a railway accident on Dec. 31, 1909. The amount settled upon is $60,000, the largest sum ever known to have been paid by a railroad corporation for the death of a passenger, and the award is based on the value of the deceased's personal relations with his various and extensive business undertakings. The widow's share is $32,000, and it is announced that of this amount, $24,000 is to be given by her to the village of Saratoga Springs as "a fitting dedication of the money to the town to which Mr.

Trask devoted many years of zealous service, and for which in the end he sacrificed his life." The remaining $8,000 she presents to the Bethesda Protestant Episcopal Church, at Saratoga, to complete Mr. Trask's gift of a parish house.

DETECTION OF A MALINGERER. — Mrs. Anna Strula, who had been on trial for two days in the Court of General Sessions, charged with swindling the New York Central Railroad out of $500, pleaded guilty on Dec. 2 before half the prosecution's witnesses had testified. She admitted that in less than four years she had received more than $5,000 damages from seventeen railroad and steamboat companies by claiming to have been injured through the carelessness of their employees. The woman had pleaded guilty to the same charge two weeks previously, but, after being told that the judge would grant her no leniency, she decided to stand trial. A number of physicians who had examined her at the time she made the claim against the New York Central expressed the opinion that the injuries she alleged she had received from a fall at the 125th Street Station were not caused by the fall. In nearly all the claims made by her the cause of her slipping and falling was a banana skin. This won for her the title, "the banana-peel artist," and she actually had a bag filled with the skins when she was arrested.

MEETING, SOCIETY OF MEDICAL JURISPRUDENCE. — At the annual meeting of the Society of Medical Jurisprudence, held on Dec. 12, the following officers were elected: President, Alfred E. Omman; Vice-President, Reynold Webb Wilcox, M.D.; Recording Secretary, Oscar W. Erhorn; Correspondng Secretary, Charles P. Blaney; Treasurer, John C. West. The subject of the evening's discussion was the abuse of the writ of habeas corpus in freeing insane persons dangerous to the community and to themselves, and a resolution was adopted recommending an amendment of the criminal law to the effect that criminals who are now "acquited because insane" should be adjudged "guilty, but insane." A committee was also appointed to confer with a similar committee from the State Bar Association, with a view to securing the proposed change by the action of the legislature. Addresses on the discharge of lunatics by habeas corpus proceedings were made by Frederick A. Fenning, of the Washington bar; Dr. William A. White, superintendent of the Government Hospital for the Insane at Washington; and John Brooks Leavitt, LL.D., chairman of the committee on the commitment and discharge of the criminally insane of the New York City Bar Association. In the course of his remarks the last-named said: "Our struggle in this state is, not to keep insane men from getting out of, so much as to keep sane men from getting into, the asylums, in order to escape the penalty of their crime. . . . Whip these facts into a hypothetical question, pay a heavy medical fee for a specialist to frame it, let him swear the client into insanity and six months later jauntily swear him out, and the criminal escapes scott free, except for the fees! . . . The crime has been done and it makes no difference to society if it has been done by a lunatic or a sane man; and, as a protection to society, the criminal, sane or insane, must be confined. Then let his lawyer, in that little private consultation after the murder, bid his client choose alternatives: 'If you want to be insane, you will be locked up for life. If you want to be sane, you will be hanged. Now choose.' Then there will be no large legal fees and no large medical fees, and no one will be the worse except the lawyers and doctors."

Current Literature.

MEDICAL RECORD.

DEC. 10, 1910.

1. ROBINOVITCH, L. G. *I. Electric Sleep and Analgesia by Means of Frequently Interrupted Direct Currents applied through Closed Wired Circuits. II. Electric Sleep in Paths of Displacement Currents: Unipolar and Wireless Method. Animal Myogram Experiments.*
2. BARRINGER, T. B. *The Normal and Pathological Liver Pulses.*
3. KILIANI, O. *A Further Report on the Treatment of Facial Neuralgia by Alcohol Injections.*
4. *SCHULTZE, E. C. *A Preliminary Report on the Importance in Scarlatina of an Early Bacterial Examination of the Secretion from the Postnasal Region.*
5. POND, A. M. *Fractures of the Skull.*
6. SCHIEMANN, H. *Carbolic Acid Injections in Piles and Goiter.*
7. SALLOM, A. K. *Preliminary Report of a Statistical Analysis of over Thirty-two Thousand Cases of Scarlet Fever.*

4. From investigations extending over three years, Schultze is convinced that the danger of infection in scarlet fever lies more in the throat and nasal passages than in the scales of desquamation. He has examined thousands of cultures taken from the pharynx in patients clinically ill with this disease, and in about 80% of them he has demonstrated a large coccus, which stains very deeply with Löffler's alkaline methylene blue. He has recovered micro-organisms morphologically identical with this coccus from blood, skin and aural pus of scarlet fever patients. He, therefore, urges the importance of early bacteriologic examination of the nasopharyngeal secretion in all non-diphtheritic sore throats. [L. D. C.]

NEW YORK MEDICAL JOURNAL.

DEC. 10, 1910.

1. BALLENGER, E. G. *"606," or Dioxydiamido-arsenobenzol.*
2. BURR, C. W. *Hospital Day Address.*
3. MARKLEY, P. H. *Some Remarks on the Differential Diagnosis of Typhoid Fever.*

4. Mayer, E. E. *The Present Status of the Psychoneuroses and of Psychotherapy.*
5. *Clowe, C. F. *Acute Primary Polymyositis, with Report of a Case.*
6. Martin, E. *Our Experience with Vaccine Therapy in Acute Infections.*
7. Ward, R. F. *Some Surgical Considerations of Non-Malignant Ovaries.*
8. Whitall, J. D. *Report of a Case of Pelvic Peritonitis Complicated by Post-operative Hysteria.*
9. Goldsmith, M. *A Case of Hepatic Syphilis.*

5. Clowe believes that acute primary polymyositis is a clinical entity. The early symptoms are malaise, weakness and indefinite pains in various parts of the body. Later the limbs become edematous and cyanosed, the subcutaneous tissues swollen and the skin cold. When the edema subsides the muscles are tender and have a hard, doughy feel. Soon after this contractures appear and finally the muscles atrophy. The extremities are affected first, then the chest, abdomen, neck and throat. There is no involvement of nerves.

This disease is probably infectious. It is most likely to be confounded with multiple neuritis and trichinosis, and may simulate rheumatism, typhoid fever and osteomyelitis. The prognosis is not good. Attacks are often fatal, the greatest danger being involvement of the myocardium or of the muscles of deglutition. Permanent disability is to be expected in most cases. [L. D. C.]

The Journal of the American Medical Association.

Dec. 10, 1910.

1. *Anders, J. M. *Use of Typhoid Vaccines in Typhoid Fever.*
2. Tennant, C. E. *Fundamental Principle underlying the Treatment of Wounds on the Body Surface.*
3. Parsons, J. H. *Some Effects of Bright Light on the Eyes.*
4. *Miller, J. L. *Physiologic Action, Uses and Abuses of Alcohol in the Circulatory Disturbances of the Acute Infections.*
5. *Boos, W. F. *Magnesium Poisoning. The Study of Ten Cases.*
6. Frick, G. *Different Forms of Mediastinal Pleurisy, with Report of Three Cases.*
7. Gant, O. J. *Traumatic Rupture of Fixed Portion of the Male Urethra.*
8. *Elsner, H. L. *The New Treatment of Syphilis: Ehrlich-Hata. Observations and Results.*
9. Burrows, M. T. *The Cultivation of the Tissues of the Chick Embryo outside the Body.*
10. Goldsborough, F. C., and Ainley, F. C. *The Renal Activity in Pregnant and Puerperal Women as Revealed by the Phenosulphonaphthalein Tests.*
11. Brown, R. *Obstruction of Bowel. Dietl's Crisis.*
12. Moorehead, E. L. *Extracerebellar Tumor.*

1. Anders considers that vaccine therapy in the very acute stages of typhoid may be dangerous. It is, however, valuable, as a means of prophylaxis, to prevent relapses in the convalescing stages, to combat local infections with the typhoid bacillus, as in bone suppurations, and for the removal of typhoid bacilli from typhoid carriers.

4. Miller summarizes his observations on the use of alcohol in acute infections as follows: The impairment of the vascular regulating mechanism is more apparent than active disturbance of the heart. Alcohol in small amounts acts as a cardiovascular stimulant, but larger amounts in individuals not addicted to its use invariably act as cardiovascular depressant by paralyzing the vasomotor center. It is not possible to determine the amount in each case which will act as a stimulant rather than as depressant, and hence the drug is unsafe to use in most cases.

5. Boos summarizes his observations on magnesium poisoning as follows: Magnesium sulphate in bulk or in concentrated solution is absorbed, in part at least, from the gastro-intestinal tract into the blood. If a sufficient amount is absorbed in a given time, poisoning will result; of ten cases reported, six resulted fatally. The symptoms and autopsy findings agree very well with those obtained in animals after the intravenous use of this drug. On account of the slowness of excretion from the system, magnesium sulphate may produce poisoning from its cumulative effect if given repeatedly in concentrated solution; this is particularly true in obstructive cases. Large doses of normal saline solution given intravenously are the antidote. The subcutaneous use of this drug to produce catharsis as proposed by Wade is not only absolutely irrational, but dangerous.

8. Elsner speaks as follows of Ehrlich's new remedy for syphilis, "606": The spirochete pallida is positively destroyed and the living contagion of syphilis is promptly removed by this drug. It promptly affects visible and palpable syphilitic lesions and removes deep-seated gummata; it stays the destructive ulcerations and causes their healing in a surprisingly short time; it is more rapid in its effect on specific disease than any other known remedy. It cannot replace cicatricial tissue, nor can it affect chronic degenerative conditions of the nervous system. In all cases it causes a leucocytosis and the formation of antibodies. It materially modifies and in most cases ultimately negatives the Wassermann reaction. It unquestionably floods the circulation with endotoxins resulting from the death of millions of spirochete, and in all probability an antitoxin is developed in the blood serum. It ought not to be given to ambulatory patients. Patients receiving "606" should be kept in bed seven days under close observation. Second injections should not be given less than eight weeks after the first. Patients with any other infection besides the present syphilis should not be injected. [E. H. R.]

The American Journal of the Medical Sciences.

November, 1910.

1. *Magnus-Levy, A. *Uric Acid in Gout.*
2. *James, W. B., and Williams, H. B. *The Electrocardiogram in Clinical Medicine. II. The Electrocardiogram in Some Familiar Diseases of the Heart.*
3. *Brem, W. V., and Zeiler, A. H. *Ipecac in the Treatment of Intestinal Amebiasis.*
4. *Skinner, C. E. *The Treatment of Arthritis Deformans.*
5. *Pool, E. H. *The Leg and Arm Phenomena in Tetany.*
6. *Landis, H. R. M., and Mumford, S. A. *The Significance of Cardiorespiratory and Subclavian Artery Murmurs.*
7. *Allyn, H. B. *The Prognosis in Chronic Valvular Disease of the Heart.*
8. *Hall, J. N. *Intestinal Obstruction.*
9. *Weisenburg, T. H., and Müller, G. P. *Idiopathic Circumscribed Spinal Serous Meningitis.*
10. Sutton, R. L. *Dermatitis Herpetiformis in Early Childhood.*
11. *Ross, G. C. *Retention Cysts of the Kidney.*

1. Magnus-Levy's article is an exhaustive discussion of the theories of the pathological physiology of gout, concluding that in the present state of our knowledge we are forced to the belief in a retention of uric acid due to damaged function of the kidneys as the only solution of the problem. The many objections to this theory are, however, fully pointed out, and our lack of positive evidence is made plain. In treatment it is shown that colchicum and salicylate have an opposite action, the latter materially increasing the excretion of uric acid while the former does not increase it and may diminish it. It is suggested that while colchicum has seemed more effectual in affording immediate relief, the use of salicylate may in the long run prove more desirable. The use of alkalies is regarded as theoretically undesirable. Falkenstein's hydrochloric acid treatment is recommended for further trial.

2. James and Williams publish the second division of their report on the use of the electrocardiogram, containing a description of findings in cases where the muscular action of the heart is abnormal. Their records show the curves obtained in hypertrophy, in sinus irregularity, in extrasystoles, both auricular and ventricular, in absolute arrhythmia and in digitalis heart block. The tracings in absolute arrhythmia are of chief interest since they show waves believed to be due to fibrillation of the auricle, but give no evidence of the late contraction of the auricle which Mackenzie has described in such cases, and, therefore, throw doubt upon Mackenzie's theory of the nature of this

irregularity. It is to be regretted that the electrocardiogram is so complicated and expensive that it cannot be more generally employed, since work such as has been carried out by James and Williams gives promise of important advances.

3. Brem and Zeiler, of the Colon Hospital, Canal Zone, report that, after discouraging experience in the treatment of amebic dysentery by other methods, the ipecac treatment gave complete success in all of eight cases followed from six weeks to five and one-half months, and in three other cases followed for a shorter period. The use of salol-coated pills seems to have been essential to success, since it was impossible to give sufficient doses of ipecac except in these without causing violent vomiting. A salol coat one-sixteenth inch thick seemed best to insure both against solution in the stomach and against failure to dissolve before expulsion from the colon. The best method of administration seems to be to give 60 or 80 gr. at bedtime on the first night and to diminish the dose by 5 gr. each night until a dose of 10 gr. is reached, after which it is discontinued and a permanent cure may be expected. The patient should be at rest in bed and on liquid diet. No milk or solid food should be given for at least six hours previous to the ipecac, and no liquids for three hours before it.

4. Skinner's article is a careful description of the measures which he employs in the treatment of arthritis deformans, or atrophic arthritis. Recognizing as possible etiological factors (1) trophoneurosis, (2) infection, (3) autotoxemia, and (4) depressed cerebrospinal function as result of systemic toxemia from any cause, or possibly abnormal function of ductless glands, he considers as chief therapeutic indications (1) to close possible avenues of infection; (2) to improve general and local nutrition; (3) to accentuate elimination of katabolic products; and (4) to limit the formation of autotoxins. The measures by which he aims to improve general metabolism and body function, the general hot-air bath, electricity in various forms, hydrotherapy, are described in detail. The routine application of the treatment to the individual case is as follows. Rest in bed for at least ten hours out of twenty-four. Diet, generous, but with avoidance of excess of meat or fish. Strychnine and iron before meals, cod-liver oil after meals. Mineral water before breakfast, if needed for constipation. Hot-air bath, central galvanization, vibration and hot and cold douche, each one to three times a week. Static electricity to affected joints at least once daily; high-freqeuency currents may replace some static applications. For relief of pain, baking or ice-cap or cold compresses covered with oiled silk may be tried. Bier's hyperemia is not recommended. Salicyl compounds may give relief. In nocturnal pain induced by muscular spasm, strontium bromide is useful. In the acute stages rest is to be enforced; later, gradually increased passive and active motion are to be instituted, but forcible manipulations with the idea of breaking up adhesions have been shown by clinical experience to be harmful in these cases. Emphasis is laid upon the importance of instituting treatment in the earlier stages of the disease.

5. Pool calls attention to the occurrence in tetany of contractions in muscles of the leg or arm induced by positions which stretch the sciatic nerve or the brachial plexus, appearing in about one and one-half minutes after the beginning of the test. Since the author first described these phenomena in 1907, others have independently observed them. It is urged that their occurrence be further studied as of possible value as a clinical sign.

6. Landis and Mumford have collected 70 cases in which cardiorespiratory murmurs were heard, not as a result of severe exercise; 45 of these cases were tuberculous. Of 31 cases where a subclavian murmur was heard, 20 were tuberculous.

7. Allyn, from a study of 63 cases of valvular heart disease, observed over long periods up to twenty years, concludes that the prognosis in valvular disease in private practice is much better than is generally realized. The mere existence of a lesion in one who leads a temperate life with well-regulated activities may never cause symptoms. It is only when enlargement and subjective symptoms appear that the prognosis is to be considered grave.

8. Hall's article is an analysis of fifty-two cases of intestinal obstruction, with a brief discussion of findings. It is of value as a review of the subject, but reveals no notable novelties.

9. Weisenburg and Müller call attention to the disease of circumscribed spinal serous meningitis and emphasize the importance of its early recognition, since operation may give complete relief, whereas if the condition is not recognized, an inoperable tumor of the spinal cord is usually supposed to exist. The symptoms closely resemble those of tumor, but differ in their slower development and wider range of involvement, not so definitely localized to nerve root distribution, and, perhaps most important, in a variability in sensory and motor findings at different examinations. A case is reported in detail with successful operation.

11. Ross's article would more properly be entitled "Hydronephrosis," a term more commonly applied to the condition which he describes and which he himself applies to it in the text. The various causes are discussed and three cases are reported. Contrary to common teaching, and without discussion, he mentions complete as well as partial obstruction of the ureter as a cause. [F. W. P.]

THE JOURNAL OF MEDICAL RESEARCH.

NOVEMBER, 1910.

1. WALKER, E. L. *Trypanoplasma Rance N. Sp. and Its Life Cycle in Cultures.*
2. SMITH, T. A. *Protective Reaction of the Host in Intestinal Coccidiosis of the Rabbit.*
3. SMITH, T. *Note on the Influence of Infectious Diseases upon a Pre-existing Parasitism.*
4. SMITH, T. *Intestinal Amebiasis in the Domestic Pig.*
5. SMITH, T., AND BROWN, H. R. *Further Studies on the Immunizing Effect of Mixtures of Diphtheria Toxin and Antitoxin.*
6. *RHEIN, J. H. W. *Meningitis and Disease of the Radicular Nerves in Tabes Dorsalis.*
7. KENDALL, A. I., AND WALKER, A. W. *The Isolation of Bacillus Dysenteriæ from Stools.*
8. TYZZER, E. E. *An Extracellular Coccidium, Cryptosporidium Muris, of the Gastric Glands of the Common Mouse.*
9. STIMSON, A. M. *Local Reaction in Antirabic Inoculations.*

6. Rhein reports his observations on the pathology of the spinal meninges of 17 cases of tabes dorsalis, the cortical meninges of 16 of these, and the radicular nerves of 8 cases of tabes and 1 of syphilis of the nervous system. He believes that syphilis, either of the organs, skin, bones or central nervous system and tabes may occur as independent processes at the same time and in the same individual. His chief conclusions are: (1) The radicular nerve lesion is not constant in tabes dorsalis; (2) meningitis is not constant in all stages of tabes dorsalis; (3) lesions of the posterior columns in cases of tabes dorsalis complicated by syphilis do not differ from those found in cases in which there is no evidence of syphilitic lesion; (4) syphilitic meningitis implicating the radicular nerves in cerebrospinal syphilis may exist without causing the characteristic tabetic spinal-cord lesion; (5) the meningitis in some cases of tabes is typically specific in its appearance, but differs in degree in some and is not present in all cases; (6) the cerebral meninges were infiltrated with round cells in all the cases studied; (7) "Rand," or border degeneration, is present in a certain proportion of the cases. [G. G. S.]

THE LANCET.

NOV. 12, 1910.

1. ALLBUTT, T. C. *FitzPatrick Lectures on Greek Medicine in Rome. Lecture II.*
2. *WILLIAMS, O. T., EVANS, E. R., AND GLYNN, E. *A Case of Multiple Myeloma, with Some Observations on the Nature of the "Bence-Jones" Protein Found in the Urine. With a Pathological Report of This and Another Case.*
3. HOWARD, R. *A Radical Operation for Malignant Disease of the Testis.*
4. *MCELROY, J. *The Treatment of Pulmonary Tuberculosis by Intravenous Injections of Chinosol with Formaldehyde.*
5. WALKER, J. W. T. *Notes on Operative Treatment of Papilloma of the Bladder.*

6. West, S. *On Chronic Bronchitis and Emphysema as the Result of Acute Pneumonia.*
7. Broadbent, W. *Aortic Regurgitation.*
8. Hirsch, C. T. W. *The Motor Exhibition at Olympia, London.*

2. Williams, Evans and Glynn report in detail a case of multiple myeloma with the so-called "Bence-Jones" protein in the urine. The autopsy report is given in full. As cases of this nature are rare, a complete and careful case report is of value.

4. McElroy reports three cases of pulmonary tuberculosis, in one of which an apparent cure and in two remarkable progress resulted from daily intravenous injections of formaldehyde and chinosol for over a month; 50 ccm. of a 1:2,000 solution of formaldehyde plus 1:4,000 solution of chinosol were injected into the median basilic vein. The strength of the solution was gradually increased up to 1:500 in the case of formaldehyde and 1:1,000 in the case of the chinosol. Chinosol is a quinine potash preparation and a powerful germicide. [J. B. H.]

British Medical Journal.

Nov. 12, 1910.

1. Allbutt, T. C. *The FitzPatrick Lectures on Greek Medicine in Rome.*
2. Sleigh, H. P. *Four Cases of Pneumonic Plague.*
3. Brown, H. H. *The Recent Plague Cases in Suffolk.*
4. *Lawson, A., and Davidson, J. M. *Radium Therapy in Eye Disease.*
5. Sloan, A. B. *Serum Anaphylaxis: A Case Illustrating Its Possible Gravity.*

THE BRITISH MEDICAL ASSOCIATION.

Section of Bacteriology.

6. *Houston, A. C., *et al.* *Discussion on Recently Acquired Knowledge Concerning the Bionomics of Pathogenic Organisms and Its Bearing on the Spread of Disease.*
7. *Macalister, G. H. K. *Dysentery Carriers.*
8. *Arkwright, J. A. *Diphtheria Carriers.*
9. Walsh, D. A., and Chapman, H. G. *On the Interpretation of the Precipitin Reaction.*
10. Penfold, W. J. *Studies in the Anerobic Culture of the Intestinal Micro-organisms.*
11. Bainbridge, F. A. *An Outbreak of Gastro-enteritis due to B. Paratyphoid (B.).*
12. Dean, H. R. *Recognition of B. Typhosus by Complement Fixation.*
13. *Ruffer, M. A., and Willmore, J. G. *The Serum Treatment of Dysentery, with Notes on the Bacteriological Diagnosis of Dysentery.*

4. The writers believe that radium is likely to prove of great service, both in the treatment of external diseases of the eye and in those of the eyelids. The method of application is simple. The eye is first cocainised and the radium contained in sealed glass tubes, allowing only beta and gamma rays to escape, was applied directly to the affected part. They have experienced absolutely no ill-effects, nor has there been any increase of inflammation or symptoms with the exception of pain which was not severe. The frequency of exposure depended entirely on the progress of the individual case. Their cases were divided as follows: Ulceration of the cornea; non-ulcerative acute inflammations of the cornea and sclerotic; affections of the lids and corneal scars. They give their results in the form of an elaborate table.

6. In the first of the papers here presented, Houston discusses soil, air, defective drains, sewer gas, and water as factors in the spread of disease, with special reference to typhoid; Lents describes the organization and results of the typhoid campaign in southwest Germany, and Bainbridge and O'Brien discuss the distribution of certain bacilli of the food-poisoning group.

7. Macalister, speaking on the subject of dysentery carriers, concludes (1) that healthy carriers are very rare and of no importance and that (2) actual carriers are to be found among the incomplete convalescents, which form a high proportion of the cases.

8. Arkwright describes a series of cases of diphtheria carriers. He places them in three classes: (1) convalescents; (2) "contacts," those who have never had the disease, but who have been in contact with a case of diphtheria or another contact. The large majority of healthy carriers soon lose the bacilli. He mentions another class of carriers, those who have the disease in chronic form without constitutional symptoms. These are particularly dangerous in spreading disease, as they retain virulent bacilli for a long time. As regards treatment, antitoxin is of no value when given subcutaneously. Operative treatment on the tonsils, usually the seat of infection, is the best method of treatment. Gargles are of little value. He speaks of a certain number of strains of bacilli which culturally and morphologically are diphtheria organisms, but are non-virulent to man and to guinea pigs.

13. Ruffer and Willmore discuss the preparation of polyvalent antidysenteric serum and monovalent serum, the biochemical properties of these serums, the differential diagnosis of dysentery by laboratory methods and a summary of the results of the treatment of one hundred and thirty-eight cases of dysentery during the present year, with a comparison of the mortality rate of cases before and after the introduction of the serum treatment. [J. B. H.]

Deutsche Medizinische Wochenschrift. No. 46.

Nov. 17, 1910.

1. *Bardenheuer and Graessner, R. *Treatment of Fractures with Extension Bandages.*
2. Codivilla, A. *Attacks of Cramps after Orthopedic Operations.*
3. Casper, L. *The Importance of Investigation of the Functional Kidney Power.*
4. *Jochmann, G., and Möllers, B. *Treatment of Tuberculosis with Albumen-Free Tuberculin Preparations.*
5. Bittorf, A. *Cause of Heart Hypertrophy and Increased Blood Pressure with Arteriosclerosis.*
6. Hecker. *Value of the Effect of Ehrlich-Hata "606."*
7. Gerber. *Effect of Ehrlich-Hataschen "606" on Mouth Spirochete.*
8. Graul, G. *Remarks on the Nourishment Treatment of Diabetes Mellitus.*
9. Heiligtag, F. *Case of Traumatic Alexia.*
10. Wesenberg, G. *Resorption of Jothion, especially with Rectal Application.*
11. Sommer, A. *Technic of Venae Puncture.*
12. Heermann, A. *Soft Flat Foot Soles.*
13. Schall, M. *New Technical Improvements in the Field of Medicine.*

1. These authors present a long article on the question of the treatment of fracture by means of extension bandage apparatus. They describe in considerable detail, accompanied by clear drawings, their method of setting fractures of bones of all extremities and the manner in which the extension is applied. They conclude with the following rules in regard to plaster bandages: Only use them in cases for transportation, in certain complicated cases where a firm bandage is expecially indicated, and in delirious patients. They are to be used in certain cases to be treated in an ambulatory manner and after operation on simple fracture, but in both these cases they must be applied so that they can be readily removed.

4. These authors wish to report on the use of albumen-free tuberculin preparations and to correct an error which appeared in a former number (No. 38) of this journal, which resulted in the mixing up of an endotoxin preparation with Koch's albumen-free tuberculin. They consider the endotoxin recommended by Gordon in this paper as an inferior tuberculin preparation and lacking in specific effect. Koch's albumen-free tuberculin is an entirely different and more effective substance. [C. F., Jr.]

Münchener Medizinische Wochenschrift. No. 45.

Nov. 8, 1910.

1. *Nauwerck, C., and Weichert, M. *The Wassermann Reaction on the Corpse.*
2. *Spiegel. *The Syphilis Reaction by the v. Dungern Method.*
3. *Thiemich. *Value of Legal Supervision of Infants and Children for the Prevention of Epilepsy, Idiocy and Psychopathy.*

4. HOPPE, J. *Value of Legal Supervision of Infants and Children for the Prevention of Epilepsy, Idiocy and Psychopathy.*
5. KÖHLER. *Meltzer's Intratracheal Insufflation and Kuhn's Peroral Intubation.*
6. FISCHER, C. *Phthisis and the Musculature of the Chest.*
7. SCHANZ, F. *Ehrlich's "606" in Diseases of the Eye.*
8. EITNER, E. *Disturbances of the Bladder and Other Severe Symptoms following Use of Ehrlich's "606."*
9. SACHS, H. *Pyorrhea Alveolaris and Its Successful Treatment.*
10. SEIDEL, H. *Extraction of Foreign Bodies from the Lungs.*
11. RUETE. *Hyperkeratosis from Intoxication.*
12. GRAUPNER, R. *Multiple Neuromata in Childhood.*
13. ROETHLISBERGER, P. *A Clinical Method of Quantitative Estimation of Uric Acid in Blood Serum.*
14. SCHNÉE. *High-Frequency and Thermopenetration in Four-Cell Baths.*
15. DE LEVIE, D. J. *A Plexímeter Usable as a Stethoscope.*
16. WIERZEJEWSKI, I. *An Adjustable Support for the Pelvis.*
17. KELLING, G. *Cystoscopy for the Examination of Serous Cavities.*

1. The writers report with tables a large number of Wassermann tests. They reach the conclusion that the Wassermann reaction on the corpse behaves as it does in the living, and that it is of some diagnostic value, but that when the pathological examination of lesions leaves doubt as to their origin, a positive Wassermann test does not justify the inference that such lesions are syphilitic.

2. Spiegel tried the v. Dungern modification of the Wassermann reaction on a large number of cases, syphilitic and non-syphilitic, and believes that it is of practical value for the diagnosis of syphilis. His results compare favorably with those usually obtained with the ordinary Wassermann test.

3. Believing that digestive disturbances are important etiologically for imbecility and neuropathic states, the writer draws the conclusion that supervision and care of infants during the first year of life is an important prophylactic measure. He does not think that epilepsy can be prevented in this way. [G. C. S.]

ANNALES DE L'INSTITUT PASTEUR.

OCT. 25, 1910.

1. *Madame Pasteur.*
2. *METCHNIKOFF, ELIE. *Studies upon Intestinal Flora, Intestinal Poisons and Sclerosis.*
3. CALMETTE, A. *Tubercular Hereditary Predisposition and Tubercular Earth.*
4. BORREL, A. *Parasites and Tumors. Report Presented at the Second International Conference for the Study of Cancer.*
5. WOLFF, J. *Relations between Natural and Artificial Oxydizing Phenomena.*
6. REMLINGER, P. *Contribution to the Study of the Latency of Rabic Virus in the Central Nervous System.*
7. *WOLLMAN, E. *Action of the Small Intestine on Bacteria.*
8. BRETON, M. *Experimental Researches on Vesical Tuberculosis.*
9. YAKIMOFF, W. L., AND YAKIMOFF, N. K. *Contribution to the Chemical Treatment of Tick Fever with "606" and the Dye of Benzidine.*

2. Metchnikoff elaborates upon his former work, which claims that there is some relation between the alimentary poisons produced by bacteria and arteriosclerosis. The principal poisons are indol and phenol, and these are produced by the action of the bacteria which normally frequent the alimentary tract. This article reviews the results of experimental work with salts of indol and phenol on guinea pigs and rabbits. The guinea pigs did not show any lesions, but the rabbits did. He also cites human cases which in one way or another have been poisoned with carbolic acid and which show considerable signs of arterial degeneration. He takes up the question of diet and animals that live exclusively on one kind of food, and shows that animals representing each variety have sclerosis.

7. Wollman describes a rather clever device for testing loops of the intestine in regard to their bactericidal power. The small intestine juice and cells have, in his opinion, no bactericidal power in themselves. The absence of bacteria high up in the small intestine is due to the acidity of the gastric juice. [C. F., JR.]

Obituaries.

FREDERICK WILCOX CHAPIN, M.D.

DR. FREDERICK WILCOX CHAPIN, who died of angina pectoris at Springfield, Mass., on Dec. 15, 1910, was born on Nov. 7, 1849, in Middletown, Conn. He fitted for college at Phillips Academy, Exeter, N. H., and graduated from Harvard in 1870 with the degree of A.B. He studied medicine in New York at the College of Physicians and Surgeons, from which he received the degree of M.D. in 1873. After serving for two years as house physician at the Bellevue Hospital, in New York City, he settled in Springfield, where he continued the practice of medicine till the day of his death. He is survived by two daughters, by one son, also a physician, and by an infant grandson.

For more than thirty years Dr. Chapin was a member of the staff of the Springfield Hospital. He was an able surgeon as well as a skilled internist, but after a serious attack of pericarditis in 1898 felt himself obliged, to his keen regret, to relinquish surgery. He remained, however, a consulting physician to the hospital and became vice-president of its board of trustees. He was also a trustee of the Northampton Insane Hospital and a member of the Springfield Association for the Prevention of Tuberculosis, of the Springfield Academy of Medicine, and of the Springfield Medical Club. He was a fellow of The Massachusetts Medical Society, of which he was for many years councillor, and a member of the Hampden District Medical Society. He early became a medical examiner of the Massachusetts Mutual Life Insurance Company and in 1902 was appointed its medical director. Since 1898 he had also been a member of the board of United States examining surgeons for pensions.

Dr. Chapin was at all times an alert and progressive student of medicine and was prompt to adopt and make use of the many scientific discoveries and advances in method which revolutionized medical practise during his professional life. He won particular reputation for his early introduction into his community of tetanus antitoxin not only in the treatment of tetanus, but in its prophylaxis after blank-cartridge wounds. His rare professional ability, his integrity and his singular charm and beauty of character made him, for years, the most honored, trusted and beloved physician throughout the wide locality in which he was known. Though he was quiet and reserved in manner, his personality in the sick-room or the office brought comfort and confidence to all with whom he came in contact. To those whose privilege it was to enjoy his more intimate personal acquaintance he revealed himself as a man of delicate humor, of exquisite taste, sympathy and insight, and of loyal affection.

His friends hardly knew whether to admire and respect him more for the beauty of his domestic life or for the devotion and heroism that he gave to the practise of his profession, even under physical disability and personal sorrow and suffering. The manner of his death was what he or any true physician would wish for himself, for he discharged his daily duties to the end, and visited patients the evening before he died. His life exemplified the highest ideals of our profession, for it was one of unselfish and unremitting service. His memory will be cherished by all who knew him as an assurance of the enduring nobility of Christian virtue and a pattern of what is best and greatest in the character of the good physician.

JOHN C. DA COSTA, M.D.

Dr. John C. Da Costa,[1] who died of pneumonia in Philadelphia on Dec. 6, was born in 1834. He at first became a civil engineer and worked in that capacity nearly twenty years for the St. Paul & Duluth Railroad. Later in life he began the study of medicine and graduated from the Jefferson Medical College in 1878. He became instructor and afterwards demonstrator of obstetrics in that institution, and subsequently for over twenty years served as visiting gynecologist to the Jefferson Medical College Hospital. He was visiting physician to the Lying-in Charity Hospital, and visiting gynecologist to St. Agnes Hospital. He was a member of the American Medical Association, president of the Philadelphia Obstetrical Society, and a fellow of the College of Physicians of Philadelphia.

Miscellany.

MIDWINTER MEETING OF THE ÆSCULAPIAN CLUB.

The ninth annual midwinter meeting of the Æsculapian Club of Boston was held at Hotel Brunswick on Thursday evening, Dec. 15.

In addition to the members of the club, about forty invited guests, physicians of Boston, were present.

The speakers of the evening were introduced by the president, Dr. Robert M. Green.

Dr. John G. Blake, senior physician to the Boston City Hospital and a newly elected honorary member of the Æsculapian Club, spoke on "Medical Teaching Fifty Years Ago." He recalled many interesting and amusing features of the methods of teaching which prevailed at that time. Especially appreciated by the younger members present was his pleasant and vivid characterization of the personality of many distinguished teachers of an older generation with whom students of to-day have not had the opportunity and privilege of coming into contact.

The subject of the second speaker, Dr. George B. Shattuck, president of The Massachusetts Medical Society and also a newly elected honorary member of the Æsculapian Club, was "The Fugacious Years."

Reverting to the address made before the club two years ago by President Eliot, Dr. Shattuck commented on the unparalleled advances made in recent years by scientific medicine — progress which gives justification to the hope that the medical profession might, in time, attain its ideal goal, making itself unnecessary. He suggested, however, that though medical progress has been rapid, human progress, in the readiness of mankind at large to accept and follow completely the paths pointed out by science, has been distinctly slower and less satisfactory. The establishment of perfect correlation between human and scientific progress seems, therefore, likely to require years of patient and persistent effort. And in the lapse of future time there will be as great need as in the past for the daily human ministrations of the good physician.

The third speaker of the evening was the Rev. Samuel M. Crothers, of Cambridge, who took for his topic, "Literature and Medicine."

He remarked that the idea that when preventive medicine should be perfected the physician would become extinct reminded him of the similar problem which confronts the clergyman, that when all sinners are converted the church would no longer be needed.

Another point of similarity between the positions of the physician and the clergyman is the unique opportunity of each for discriminating reflection upon human life and human character. On the part of the physician, this discrimination, this diagnostic attitude, is the essence of his professional habit of mind and, therefore, fits him particularly for that criticism of life which finds its expression in literature. The best in literature is a by-product of other activities. That the press of these activities often prevents the doctor from making the most of the opportunities that might lead him into literature does not discredit the value of these opportunities.

Distinguished examples, like those of Sir Thomas Browne, of Rabelais, both a physician and a priest, and of Oliver Wendell Holmes, show that literary and medical pursuits are not incompatible, but mutually stimulating.

Whatever his aim in either field, the truest genius of the physician will manifest itself through that peculiar discriminating temper of mind which makes him, in creed, not a gnostic or an agnostic, but a diagnostic.

THE PREVENTION OF PLAGUE IN INDIA.

The report of the Punjab Plague Committee for the year 1910 contains twenty-six definite recommendations and conclusions. Some of the more important of these are as follows: (1) An active antiplague policy on the part of the government is necessary and should be continued. (2) The destruction of rats by means of poisoning and

[1] We regret exceedingly that, owing to an unfortunate misunderstanding, there appeared in last week's issue of the Journal an obituary notice under the name of Dr. John Chalmers Da Costa, who is, happily, still living. We apologize to him sincerely for this error, by which his name was confused with that of another member of the same distinguished medical family.

trapping on the present lines does not yield results commensurate with the expenditure incurred and should be discontinued; the greatest prospect of success in preventing the spread of plague by means of rat destruction consists in attacking the comparatively few localities where plague persists during the quiescent period. (3) Antiplague inoculation is essentially a personal prophylactic measure, and in recommending its adoption everything savoring of compulsion or pressure should be carefully avoided. (4) For dealing with plague epidemics in villages, evacuation is a most important antiplague measure. (5) The disinfection of infected houses during the course of an epidemic, or after its cessation, is not ordinarily necessary, but disinfection, as applied to the clothing and baggage of persons coming from infected areas, is a valuable means of preventing the spread of plague into uninfected areas and should be carried out wherever possible. (6) The only measures of a compulsory nature which are permissible are those demanded by public opinion and capable of being put into operation by the people themselves. Other recommendations deal with measures facilitating quarantine and isolation, and the extension of legal powers to the inhabitants of towns, as well as villages, to prevent the access of persons coming from infected areas, is advocated. — *British Medical Journal*.

Correspondence.

LETTER FROM PARIS.

A STRANGE SOURCE OF INFECTION. CONCERNING THE SURGEON ROUX. AN ABORTIVE TREATMENT OF SYPHILIS.

[*From Our Special Correspondent.*]

PARIS, Nov. 30, 1910.

Mr. Editor: The number of processes whereby the human body can get into serious trouble, or even be destroyed altogether, is so great that a feeling of astonishment frequently arises in the mind that any of us should be able to survive at all! There are certainly stranger methods than the one I recently heard of; but still, this one is so curious, and I imagine so little known, that the incident seems quite worth relating.

A few weeks ago a lady while walking in the forest of Saint-Germain, near Paris, scratched her hand in trying to get through some underwood. Nothing is commoner in the country than an accident of this nature, and as a usual thing of course these little wounds heal up without treatment or dressings. In this instance, however, the sequelæ of the accident were most alarming, to such an extent that the patient's life was for a while considered to be in danger; lymphangitis of the arm set in, with chills and pyrexia, the axilla became involved and had to be opened, and only after four weeks of incessant care and treatment was the patient's condition such that her medical advisers considered that they could report her to be on the way to recovery.

Now it appears that in the country cases similar to this are by no means pathological phenomena; such accidents occur every now and then among the peasantry, with sufficient frequency for the notion of the danger arising from wounds inflicted by *black* thorns to be a matter of current knowledge among them.

The curious side of the story lies in the genesis of these accidents, and nothing but a little knowledge of natural history can explain them, for the two reasons that immediately occur to the average mind,— that the wound became infected *subsequently*, or that the disorder may be of a nature similar to poison-ivy, — are neither of them founded on fact.

One of the common shrubs in this part of the world is the *berberis vulgaris*, or, as we would call it, the barberry, a plant that is provided with long and strong thorns. There is also a well-known bird of the lanius species in our woods known as the shrike in English. Now this bird, though scarcely larger than a thrush, is in reality a bird of prey, carnivorous, living off of insects, small birds and small quadripeds; it also has a habit of killing more than it wants or can eat for the time being, and in order that this excess of provender may not be wasted, but be available for emergencies, it creates for itself a larder by impaling its victims on the thorns of the *berberis*, where they hang somewhat like the carcasses of animals in a butcher's shop, and for this reason the shrike has also been called the butcher-bird.

The filiation of the accidents referred to above then becomes evident at a glance. The decomposing animal matter turns these particular thorns black, whence the peasant's dread of wounds inflicted by thorns of that color; and the nature and gravity of the lymphangitis occurring after such wounds is only too explicable, they being very similar, of course, to accidents occurring in the dissecting room. But at the same time these incidents would seem very mysterious without the help of a little natural history!

A man just returned from Lausanne brings some interesting details concerning Roux, the well-known surgeon of that locality, one of the very foremost if not *the* foremost surgeon of Europe. When I had listened to his account of the life that Roux leads, I felt that I must absolutely write to you about it, on the chance that it might come to the ears of our friend T. R., and possibly cheer him up in his present adversity, for this is a tale of a strenuous life if ever there was one; so far as I know there is only one other surgical center where anything similar goes on, — Rochester, Minn., — but there there are several operators, whereas Roux is alone.

Let us take first as a term of comparison the life of a professor of clinical surgery at the Faculty here, for Roux is professor of clinical surgery at Lausanne: About twice a week this professor turns up at an hour between 9 and 10 A.M., makes a rapid visit in the wards, adjourns to the theater, lectures on a case, operates on it, and disappears; on the other days of the week he may visit his wards, just as he may leave that to his *chef-de-clinique*. The official course of surgery will probably not begin until well into November; every chance is taken to get days off by profiting by the manifold holidays which the people has inherited from its Catholic days; and the course will end in June, after a duration of certainly not more than six months if honestly estimated. In a word, if the truth is said in this matter, the conduct of such a clinic approaches perilously near to organized shirking. Now let us see what Roux does.

Roux is a man between fifty and fifty-five, consequently by no means the young professor just appointed and anxious to show his zeal. He has the surgical service at the large cantonal hospital, and then his private clinic, where he can take upwards of sixty patients. At the hospital he holds a clinic for the students *every* morning of the week except Sunday from 8 to 9.30. He then operates, and this was the program on the morning my friend was there: Inguinal hernia; hysterectomy for myoma; two cases of appendicitis; tubercular synovitis of back of hand; excision knee-joint (tubercular); chronic osteomyelitis femur with removal of sequestra; amputation leg; resection two ribs, pleural fistula, gangrene lungs; two straightenings of flat foot under chloroform; cystostomy; dilatation esophagus,—thirteen interventions, ending at 1 P.M. On this particular day Roux was back at the clinic at 4.30, and stayed there until 9 in the evening.

The program of another day was as follows: Clinic to students, 8 to 9.30; seven operations at the hospital; twelve operations at his clinic; consultation at Neuchatel (a good hour away by train); two consultations at Lausanne.

Another day he was anxious to clear up what work there

was at the cantonal hospital in order to get away for a rest; so he began at 6.30 A.M. and operated on *twenty-five* patients!

Roux has two office consultations per week to which admission is only obtainable by application beforehand, and sees thirty patients at each of them, the cases being furnished with numbered tickets. He is now well on in his *fourth* thousand of interval operations for appendicitis.

Not the least remarkable side of this question is that Roux has come through all this success absolutely unspoiled, and that in particular his fees are so modest as to have become proverbial all over Europe.

Returning now once more to the "606"question, — the reports are certainly confusing, and it is difficult to know what to believe; even in Germany adverse criticism is not lacking, and quite recently a learned professor came out with a statement advising physicians not to use it outside of hospital work. All authorities seem agreed as to its marvelous efficacy in certain cases, but where they differ is in regard to its sequelæ, some saying that when properly used it is harmless, and others quite the opposite. The latest contribution to the question in France is the report just presented to the Academy of Medicine by Professor Gaucher, the successor of Fournier, in which "606" is handled rather roughly. In fact, although there seems to be no reason for anticipating that Ehrlich is in for such a disaster as happened to Koch with his tuberculin, there appears to be every prospect of our having to give up most of the hopes which the early reports concerning "606" had led us to conceive. We are already very far from the remedy that was going to sterilize the organism with a single injection.

However, at the same séance in which Gaucher's paper was read Hallopeau came forward with further details about what he calls his abortive treatment of syphilis; and since the cases dealt with in this manner have now reached a certain figure, and at the same time a respectable period has elapsed since they were so treated, it may be well to say a few words in regard to this method, as Hallopeau is a man of position here, elderly now, and was for many years one of the specialists attached to St. Louis Hospital for venereal and skin disorders. He has during the past year brought the matter before various learned societies, and in particular before the Academy of Medicine on four different occasions. It is, therefore, not possible to ignore what he says, and he states in so many words that he is now in a position to claim that syphilis can be aborted, and in a comparatively simple manner.

The point of departure of Hallopeau's method is that the disease remains almost entirely localized during its primary stage, and that it is possible to destroy the treponema in its initial localisations; he consequently attacks the disease *in situ* and administers parasiticidal injections every day for a month either beneath the skin of the penis or about the vulva, to speak only of the commonest seats of the disease, the needle being inserted either into the chancre itself, into the surrounding tissues or along the course of the lymphatics leading to the satellite lymph-nodes. Together with these injections he administers a general intensive treatment consisting in injections of 2 cgm. of hydrarg. benzoate, and from 1 to 2 gm. of KI. are given as well by the mouth.

The local specific used at first was atoxyl, helped out at times by arsacetine as a dressing for the chancre; but this was soon abandoned in favor of hectine, a synthetic product prepared by Mouneyrat and rejoicing in the chemical denomination of benzo-sulfono-paramino-phenyl-arsenate of soda. This was the only product that was tolerated by the delicate cellular tissue beneath the skin of the penis. The injections were at first painful, but this has now been remedied by neutralising this substance. Hectine is in reality atoxyl modified by the introduction of a radical sulfone. Arsacetine is likewise a derivative of atoxyl. Yet these products seem to have no deleterious effect on the patient's sight. It is true that the doses so far used have been moderate, 0.10 to 0.20, and that if this amount had not been freely exceeded with atoxyl we should probably not have heard of its action on sight. There is a farther preparation, hectargyrum, a combination of hectine 0.10 and of hydrarg. oxycyanide 0.002, that seems very promising and that Hallopeau proposes to experiment with at the earliest occasion.

His present technic is, then, to administer an injection of 0.20 of hectine each day for thirty consecutive days beneath the skin of the penis, dissolved in 2 gm. of sterilized water; he claims — and, in fact, when the question is considered the claim seems rational — that in this way the amount of active remedy that is likely to come into direct contact with the spirochetæ in or proceeding from the chancre is infinitely greater than when such a remedy is given in the hip, and *a fortiori* when given by the mouth. He thinks that it must be several thousand times greater, and that consequently the therapeutic result must be proportionately more favorable. Now since, according to his view, the disease in its first stage is confined almost entirely to the chancre, with the lymphatics leading to the nearest lymph-node barrier, the introduction of the active remedy directly into this tract seems as rational as that of the local treatment of a surgical wound with lymphangitis and lymph-nodes. Any spirochetæ that may have escaped the barrier and have got into the general circulation are dealt with by the general treatment mentioned above.

But now for results, for that is the test of the method. Hallopeau personally has treated by this method seventeen cases, his oldest case dating two years back and his most recent one seventy-five days, without a single instance of failure! The method has also been used once or twice preventively, but such negative cases of course prove nothing. With the seventeen cases several were substantiated by the ultramicroscope and by the Wassermann test. Now such a series as this in the hands of a man with Hallopeau's experience is one that commands attention. In one instance in which the abortive treatment was applied by another physician the patient was so much encouraged by the result that he managed to contract a second indurated chancre four months later, which looks as though either the treatment had been successful or else the diagnosis erroneous.

Hallopeau's experience, however, is as nothing compared with that of a specialist in Rio de Janeiro, who, having read Hallopeau's first publication on the subject, August, 1909, managed to treat 127 cases of indurated chancre therewith in the space of about six months, Rio being a town of 400,000. This practitioner claims that up to the date of his report not a single one of this enormous series of hard chancres had shown any sign of secondaries! If this should turn out to be true, and there is no reason at present for doubting the report, then there can be no question but that we are here in possession of (at the very least) an important modification of our ordinary treatment of the primary stage, and that, instead of our usual hip or back injections of biniodide we will be well advised to use the silver salts in small doses in injections *in situ*.

"S."

REPORT OF THE MASSACHUSETTS TUBERCULOSIS COMMISSION.

BOSTON, MASS., Dec. 13, 1910.

Mr. Editor: In the editorial upon the "Report of the Massachusetts Tuberculosis Commission" in your issue of Dec. 8, 1910, commenting on the recommendations of the commission "that the state pay a subsidy of five dollars per week for each non-paying patient in a local hospital which meets with the approval of the trustees of hospitals for consumptives provided tubercle bacilli are demonstrated," and that cities and towns with over ten thousand inhabitants be required to establish dispensaries for tuberculosis by agency of the local boards of health, you say: "Before they [these recommendations] become the basis of action, however, they should be subjected to rigid criticism, for in undertaking subsidy, the state is employing a dangerous agent. The taxpayer is already overburdened, and once the principle of subsidization becomes established and familiar, it is difficult to foresee to what extent it might be carried by those whose charitable enthusiasm is greater than their judgment or their own financial assets."

It may help your readers to conduct their "rigid criticism" to a sound conclusion and to understand the

economic advantages of the plan proposed if they study the plan of subsidy as it has already been applied in Denmark and Sweden.

Denmark is a poor country as compared with this and they have adopted this plan as an economic measure, as the cheapest way they can devise for bringing about an effective control of tuberculosis and stopping the enormous loss of lives and money which this disease occasions. The plan has the advantage of an equitable division of the burden of expense between the state and the various localities. It is a system under which the provision of beds is not likely to outrun the demand, each locality best knowing its own needs.

Your writer shrinks from the moderate cost of such a subsidy to the state and makes no allusion to the enormous loss to the state which tuberculosis causes. I would urge upon your readers a study of the careful article presented at the sixth International Congress by Prof. Irving Fisher, of Yale University, upon the cost of tuberculosis and its reduction. This is not the place to discuss this article at length, which should be read in its entirety to give an idea of the careful and fair way in which the figures are computed. Professor Fisher reaches the opinion that $8,000 is the minimum monetary cost of each death from tuberculosis, and subtracting from this $8,000 all that part of the loss which the consumptive himself may be regarded as having suffered, it leaves $3,200 as representing the economic loss to the community by the death of each consumptive. The deaths from pulmonary tuberculosis in the year 1909 were over 4,000 in the state. Accepting 4,000 as a round figure considerably below the truth, the economic loss was $13,000,000. The number of deaths from all forms of tuberculosis in that year were 5,998, showing an economic loss of $19,193,600.

This annual loss should be borne in mind when considering the payment of a subsidy of something over $300,000.

I would refer your readers to the report of the commission for a full consideration of the reasons which led them to think that segregation of advanced cases would reduce the death-rate and so would reduce this enormous money loss that the state is suffering each year.

In 1880, the death-rate in Massachusetts from tuberculosis was double what it is now. This means that the state is now saving $13,000,000 each year as a result of the improved conditions of living brought about by a better understanding of the laws of health, greatly aided by the work of the sanatoria and other health agencies.

Surely such a saving justifies the expenses of our health departments and sanatoria, without taking into account the relief of suffering and misery which has been an incidental advantage.

In conclusion, your writer says "that human progress is necessarily slow, that something must be left to natural processes, which can be aided, but not hastened."

This is an astonishing view to hold in reference to progress in medicine. He must indeed be an impatient person if the rate at which medical discovery and practice have proceeded in the past thirty years seems to him slow.

The fact appears to be that progress has been so rapid that the practical application of our knowledge is lagging somewhat. The suggestions contained in the report of the Commission on Tuberculosis point the ways by which an intelligent community may reap the benefits of the great advance in scientific medicine.

Respectfully yours,

ARTHUR T. CABOT, M.D.

APPOINTMENTS.

THE following appointments have been made at the Harvard Medical School: Dr. John Bapst Blake, Assistant Professor of Surgery. Dr. Robert Battey Greenough, Assistant Professor of Surgery. Dr. Edward R. Nichols, Assistant Professor of Surgical Pathology and of Surgery. Dr. Paul Thorndike, Assistant Professor of Genito-Urinary Surgery. Dr. Hugh Cabot, Instructor in Genito-Urinary Surgery.

SOCIETY NOTICES.

THE NORFOLK DISTRICT MEDICAL SOCIETY.—A regular meeting of the Society will be held at Masonic Temple, 171 Warren St., Roxbury, Tuesday, Dec. 27, at 8 o'clock. Business. Communications: "Some Common Diseases of the Lower Rectum and Anus." F. W. Sleeper, M.D.; "Rectal Fistulæ," T. Chittenden Hill, M.D. Discussion by E. W. Cushing, M.D., F. Percival Williams, M.D., Joseph C. Stedman, M.D. Refreshments after the meeting.

BRADFORD KENT, M.D., *Secretary*,
798 Blue Hill Ave., Dorchester.

BOSTON MEDICAL LIBRARY IN CONJUNCTION WITH THE SUFFOLK DISTRICT MEDICAL SOCIETY.—Medical Section Meeting, John Ware Hall, Wednesday, Jan. 4, 1911, at 8.15 P.M. 1. "Infectious Diarrhea, Its Clinical Treatment from the Bacterial Standpoint," Henry I. Bowditch, M.D.; 2. "Infectious Diarrhea, Its Bacteriology and Bio-Chemistry," Arthur I. Kendall, Ph.D.; 3. "Analysis of 175 Cases of Infectious Diarrhea in Infancy," Jas. Herbert Young, M.D.—all from the wards of the Boston Floating Hospital. Discussion by Drs. T. M. Rotch, J. L. Morse and F. B. Talbot.

EDWIN A. LOCKE, M.D., 311 Beacon St.
HENRY JACKSON, M.D., *Chairman*, 380 Marlborough St.

RECENT DEATHS.

HARPER, ALFRED ALPHONSO, M.D., M.M.S.S., died in North Adams, Nov. 14, 1910, aged thirty-four years.

CHAPIN, FREDERICK WILSON, M.D., M.M.S.S., died in Springfield, Dec. 17, 1910, aged sixty-one years.

DR. ROBERT HALL, who died of apoplexy last week at Providence, R. I., was born in 1829. He graduated from the College of Physicians and Surgeons, New York, in 1856, and subsequently studied medicine in Vienna. He was a homeopathic practitioner, but made a specialty of gynecology.

DR. CARL H. KROEBER, a well-known physician of Yonkers, N. Y., died on Dec. 12, at the age of forty-one years. He was a native of Germany, and was graduated from the College of Physicians and Surgeons, New York, in 1896. He had served as vice-president of the J. Foster Jenkins Medical Society of Westchester County, and at the time of his death was visiting physician to St. Joseph's Hospital, Yonkers.

BOOKS AND PAMPHLETS RECEIVED.

Proceedings of the Pathological Society of Philadelphia.

The Purins. By Henry Reed Hopkins, M.D., Buffalo, N. Y. Reprint.

Medico-Pharmaceutical Ethics. By A. S. Musante, Ph.G., M.D. San Francisco, Cal. Reprint.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 10, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,343	235	Pittsfield	16	2
Chicago	604	189	Brookline	6	—
Philadelphia	—	—	Gloucester	6	—
St. Louis	—	—	North Adams	6	2
Baltimore	—	—	Northampton	12	2
Cleveland	—	—	Chicopee	8	2
Buffalo	—	—	Medford	4	—
Pittsburg	—	—	Beverly	6	1
Cincinnati	—	—	Leominster	5	1
Milwaukee	—	—	Hyde Park	3	—
Washington	—	—	Melrose	—	—
Providence	—	—	Newburyport	6	1
Boston	226	50	Revere	3	1
Worcester	51	13	Westfield	5	1
Fall River	25	6	Woburn	3	1
Cambridge	17	5	Peabody	1	—
Lowell	—	—	Marlboro	—	—
New Bedford	33	13	Attleboro	3	1
Lynn	20	4	Adams	3	—
Springfield	27	4	Clinton	3	—
Lawrence	31	15	Gardner	5	2
Somerville	12	1	Milford	—	—
Brockton	18	5	Watertown	1	0
Holyoke	21	7	Plymouth	—	—
Malden	14	2	Southbridge	1	1
Chelsea	13	1	Weymouth	—	—
Newton	—	—	Framingham	3	1
Salem	13	5	Wakefield	—	—
Haverhill	9	1	Webster	3	1
Fitchburg	—	—	Arlington	3	1
Everett	4	1	Greenfield	1	—
Quincy	—	—	Methuen	1	—
Taunton	10	3	Winthrop	—	—
Waltham	8	2			

Original Articles.

PRINCIPLES UNDERLYING THE STUDY AND TREATMENT OF CHRONIC ARTHRITIS.

BY H. W. MARSHALL, M.D., BOSTON.

THE term "chronic arthritis" brings to mind confused classifications, obscure etiologies and unsatisfactory treatments which justly make it unpopular with practitioners, but joint affections are not rare and patients demand treatment notwithstanding the unattractiveness of their troubles. Definite and, as far as possible, scientific conceptions of chronic arthritis are, therefore, particularly needed concerning the rationale of causes and cures.

With these needs in view the writer has devoted himself almost exclusively for several years to the study of arthritic patients and examination of the writings of past generations of physicians who have struggled with the problem. As a result he believes that he has gained a little better understanding of the subject and one which may perhaps be of interest to those who, while they are confronted with its difficulties and obscurities, have had less time or opportunity for its careful consideration. The present paper deals mainly with the fundamental principles involved, and extended discussions of special methods, examples of actual cases and results of treatment are reserved for future communications.

In his work the author has had the great advantage of the frequent advice and counsel of many physicians and other friends, to all of whom he desires to express his obligations and thanks, and in the preparation of this paper especially to Dr. Theobald Smith, Dr. Wm. H. Howell and Prof. W. T. Sedgwick.

Patients may be grouped for convenience into the following clinical classes. (1) Incipient Cases; (2) Moderately Severe Cases without Joint Destruction; (3) Acute Exacerbations of Chronic Disease; (4) Very Severe Cases with Joint Destruction and Disability.

Well-known and fundamental principles naturally governing the treatment of all of these classes are so easily forgotten or neglected that a brief summary of them at the outset may be useful, for proper treatment can only be secured by thorough comprehension of those normal anatomical and physiological features which control the health and ordinary activity of joints and by clear appreciation of the various diseases that may be accompanied or followed by arthritic phenomena. The Etiology of Chronic Arthritis has already been discussed by the author in a previous paper, to which the reader is referred.[1]

NORMAL PHYSIOLOGICAL CONDITIONS WHICH CONTROL THE HEALTH AND ORDINARY ACTIVITY OF JOINTS.

All healthy joints are constantly being subjected to normal physical, chemical and nervous stimuli through mechanical movements, strains due to body weight, external physical agencies, physical and chemical conditions of the blood, and also to nervous impulses transmitted to and from joints and articular blood vessels through trophic and sensory nerves; and all pathological conditions must arise from departures from these normal relations. Moreover, joints cannot be influenced by any other means than by those just enumerated. The health of all organs and tissues depends upon normal physiological processes going on within tissue cells by which living material is built up from food substances of the blood, energy set free, and waste products eliminated. It varies in degree according to variable combinations of these physical, chemical and nervous stimuli, and it depends also upon the inherent properties of the protoplasms themselves, as protoplasms vary greatly in different tissues and with different individuals.

Individuals may be considered to be "robust" or "delicate" according as the sum total of their various tissue resistances is respectively great or small. Moreover, the interaction of different tissues, each upon the other, which doubtless influences this sum total of cellular tissue resistance and eventually determines to a large extent the general health of the individual, sometimes affords an opportunity for the study of individual organs by observing the effect of the conditions of other organs upon the one selected for study. With joints it is possible to estimate to some extent the various degrees of arthritic resistance and normal activity by observing the pathological conditions in organs that are contributing deleterious substances to the blood stream and thus are affecting articular structures, either directly through chemical and physical stimulation of joint tissues, or indirectly through chemical and physical stimulation of nerve cells in the cord which, in turn, react by transmitting unusual and perhaps undesirable stimuli to joints and articular blood vessels.

We are met at the outset by a significant fact, namely, that with diseases of other organs arthritic phenomena are comparatively infrequent, a fact which must be interpreted to mean that joint resistance is generally sufficient to withstand those abnormal blood states to which joints are frequently exposed. The small percentage of cases of this kind which do display arthritic phenomena must apparently either represent joint tissues of poor resistance or exceptionally abnormal conditions of blood and lymph, or else abnormal conditions in controlling nerve cells. It is a familiar fact that severe infections often occur without any arthritic phenomena, while at other times even mild infections of the same kind may have associated with them severe joint complications. It seems reasonable, therefore, to conclude that, while the joints, as a rule, are peculiarly healthy and resistant, they may occasionally be weakened or non-resistant even to an extreme degree.

As will appear later, this idea of variable resistances in the cell protoplasms of various tissues or organs, including, of course, the joints, coupled

[1] Etiology of Chronic Arthritis, Johns Hopkins Hosp. Bull., July, 1910.

with the idea of variability in stimuli from without, is of fundamental importance in scientific diagnosis as well as in prognosis and rational treatment. Again, it must not be forgotten that the former, cell resistances, are particularly obscure and are dependent upon the stimuli from without and upon congenital peculiarities of the protoplasm.

DISEASES ACCOMPANYING OR ASSOCIATED WITH JOINT LESIONS.

Diseases which occasionally may influence the health and behavior of joints comprise a long list that includes nervous, infectious and constitutional affections, the more important of which will now be mentioned, because they must not be forgotten or overlooked when seeking for the causes involved in any given case.

Acute articular rheumatism, gout, rheumatoid arthritis, osteo-arthritis, influenza, scarlet fever, typhoid fever, bacillary dysentery, amebic dysentery, malaria, pneumonia, septicemia, tuberculosis, gonorrhea, syphilis, tonsillitis, oral and nasal sepsis, otorrhea, pulmonary abscess, gastro-intestinal disturbances, diseases of thyroid gland, spleen, lymph nodes, infections of the gall bladder, kidneys, male and female genito-urinary tracts, hemophilia, scurvy, anemias, lead poisoning, syringomyelia, tabes dorsalis, paralysis agitans, congenital heart disease, puberty, pregnancy, menopause, erysipelas, furunculosis, psoriasis, osteomyelitis and chronic suppurative conditions. (See Arthritis Deformans, R. Lewellyn Jones; and Bulletin of the Committee for the Study of Special Diseases, T. S. P. Strangeways, for statistics of relative frequency of associated diseases.)

Sometimes only one focus of infection contributes its products to the blood stream, but sometimes several foci may exist. At times one cause may initiate the arthritis and other causes perpetuate it. Sequence in time of development of several questionable factors, therefore, should be considered, as the oldest lesions may be primary causes and others be merely accompaniments that are cured with removal of the primary trouble; but these secondary accompaniments contribute their pathological products to the blood also and may thus exert an influence upon the joints. Gastro-intestinal toxemias resulting from the inactive life of patients often seem to be grafted on to the original process, and perhaps sometimes perpetuate it.

As might be expected, common diseases appear more likely to be common causes of joint disease than rare disturbances of internal organs which some investigators would invoke to explain obscurities associated with arthritis. According to the writer's experience, while the latter may indeed be very rarely contributing factors, the commonest causes are apparently bacterial infections, digestive disturbances, abnormalities in metabolism associated with puberty, pregnancy and the menopause, and unstable conditions in nerve cells controlling the joints.

METHODS OF TREATMENT OF CHRONIC ARTHRITIS.

Methods of treatment consist in application of appropriate remedies, and in attempts to restore physiological relations in joints; to repair defects due to strains, traumata and excessive mechanical irritation; to overcome abnormalities of the blood and do away with harmful exposure to climatic influences; to rectify, as far as possible, derangements of the nervous control and to thus increase health and resistance of the joint tissues.

Some remedial measures act locally, others are employed in treatment of diseases of organs when these stand in causal relationship with joint disease; and there are also general hygienic measures to be applied.

Local treatments are applied to lessen excessive mechanical irritation, increase or diminish blood supply, alleviate pain, prevent and correct deformities, restore mobility and remove pathological tissue, hypertrophied villi, joint mice, loose cartilages, etc. These objects are attained by orthopedic apparatus, plaster casts, splints, bandages and strappings; by hot and cold applications, bakings, Bier's passive hyperemia, massage exercises, electricity and operations of various kinds.

Diseases of other organs standing in causal relationship to joint diseases can exert their influence directly upon joints only through the blood, and indirectly through the action of blood upon nerve cells with production of unusual nervous stimuli, as already explained. Blood presumably owes any irritating qualities to the presence of particular toxins, to undue accumulations or deficiencies of normal products of metabolism of tissue cells, and probably also to its mere physical properties. Nervous stimuli depend upon the state of the blood and upon inherent peculiarities of nervous tissues, just as joint conditions depend upon these states of the blood and inherent peculiarities of joint tissues; and when nerve cells are robust and healthy the nervous element in joint disease is at a minimum; when they are weak or diseased, the nervous factor becomes of greatest importance. Irritants circulating in the blood stream are most obscure in their nature and are called toxins, metabolic products and internal secretions, but comparatively little is known of the chemical constitution or molecular grouping by which they exert their influence upon joint structures. Bacterial toxins, which are among the best recognized of these complex organic bodies, can be identified only by their therapeutic effect upon animals, although it is possible to cultivate them outside the body *in vitro*. The precise chemical nature of metabolic products of organ activities are quite as poorly understood. In gout it is known that sodium mono-urate circulating in the blood is somehow concerned with the pathological process, but physiologists are still discussing whether gout represents defective diminished elimination by the kidneys, excessive production by the body tissues or faulty processes in liver associated with conversion of purin bodies of the food, or whether various factors are combined. Variability in vital resistance of joint tissues has

to be considered in gout as in other types of arthritis, but the exact chemical reaction upon joint tissues of the soluble urates in the blood is not well understood.[2]

In lead poisoning the metallic element gets into the circulation presumably as some organic combination of the proteid molecule and exerts its selective action especially upon nervous tissues whereby arthritic pains are occasionally an accompaniment of this disease, but here again the exact chemical substance which reacts upon nervous tissues is unknown.

Products of bacterial activity in the intestinal tract are absorbed into the blood and in cases of acute ptomaine poisoning make their influence very evident; also there is absorption of products from bacteria habitually present in the intestinal tract which may accumulate in the blood from over-production, or possibly through diminished elimination by the kidneys, and these are capable, apparently, of producing joint changes much as excess of uric acid derivatives in the blood may produce arthritis when patients have susceptible joints; but the exact chemical nature of these bacterial products has not been determined.

Relations between joint diseases and lesions of uterus, thyroid gland, spleen, lymph nodes, lungs, heart, kidneys and formed elements of the blood itself undoubtedly exist, yet it is not well understood whether such joint lesions are induced by bacterial infections, disturbances in metabolism of tissue cells, reflex nervous derangements or combinations of these; for blood conditions always are obscure, and although it may contain irritants, yet routine blood examinations offer little aid in explaining the existing states.

Control of the properties of blood which are so vital to health of joints, therefore, must be made by search for, and treatment of, different organic diseases and infections; and while it is not possible to enter into details of treatment for all derangements of organs, fevers and foci of infection, yet it is necessary to understand and remember their existence in order to accurately interpret and treat any given case.

General hygienic methods of treatment increase metabolic functions of tissues generally and help to restore depleted conditions such as are frequently observed at the onset of arthritis. Through the action of these general measures the blood becomes altered and contains different proportions of food substances and metabolic products from all tissues, while foci of infection, if they exist, are more successfully resisted, as the protective functions of the tissues against foreign substances are stimulated and blood flowing through joints exerts healthier action. Nervous stimuli presumably also are changed by this altered blood condition and joints are able to perform their physiological functions more perfectly and consequently slowly begin to improve.

General hygienic methods consist in the regulation of personal habits, administration of medicinal tonics and physical therapeutic measures.

[2] A. Magnus-Levy: Uric Acid in Gout. Am. Jour. Med. Sci., vol. cxl, November, 1910, pp. 625–643.

Personal habits should be carefully investigated, occupations inquired into and changed when necessary; diet, sleep, rest and exercise regulated; and mental disturbances and drug habits ascertained.

Medicinal tonics comprise such drugs as strychnine, quinine, iron, arsenic, iodides, phosphates and others which exert their influence more or less upon the protoplasms of all tissues and help to repair defects that each is subject to.

Physical therapeutic measures consist in application of heat, light, mechanical and electrical stimuli in various forms of baths and massage for the sake of their tonic effects. For the various forms of special treatment reference must be made to the voluminous literature upon the subject, as they include sun and air baths; artificial radiant heat baths; hot, neutral and cold water baths, and these are often combined with mechanical friction or electricity and chemical substances in most confusing combinations. The importance of general hygienic measures in treatment of arthritis is here especially referred to as these measures will be frequently mentioned in what follows.

The writer uses for routine treatments at hospital clinics the pharmacopeial preparations, tincture of nux vomica, and elixir of iron, quinine and strychnine phosphates for general tonics, and calomel, magnesium sulphate, sodium phosphate, fluid extract of cascara sagrada, and rectal lavage with warm water at frequent regular intervals to clear the intestinal tract and regulate digestive functions. Usually treatment begins by purging with calomel and magnesium sulphate, and this is followed for several weeks with daily rectal irrigations. Finally the irrigations are given less frequently, and fluid extract of cascara sagrada and sodium phosphate are prescribed to assist evacuation upon days on which irrigations are not used.

Diets have to be regulated in order to prevent reaccumulation of foods in the digestive tract and to avoid continuance in formation and absorption of bacterial irritants from the intestine that injure joint tissues. Diets also must be so regulated as to supply sufficiently large amounts of food materials to maintain the health of other body tissues and to keep up the individual's general resistance and vigor. Accurate rational directions for diet regulation in arthritic disease the writer is unable to give at present, but reliance can be placed upon simple modifications in quality and amount of food until the right diet is experimentally discovered. This important subject of diets in arthritic diseases the writer now has under consideration, and which it is hoped may furnish the basis of a future paper.

Strong hydrotherapeutic measures should not be prescribed for arthritis because this class of patients do not respond well to the more vigorous methods, and the writer is informed by Dr. J. H. Kellogg that he uses only mild ones at Battle Creek Sanitarium, where he has found from his extensive experience that arthritic

patients will not bear strong, continuous stimulations. Sun baths and changes in climatic environment seem especially adapted to arthritic and rheumatic states. Mild irritants that have acted for long periods of time in producing joint lesions should, therefore, be combatted by mild remedies for long periods in order to restore normal functions, and more stimulating measures should be reserved for occasional use to upset recurring lapses into chronic pathological states.

When occupations and circumstances have produced very unhygienic modes of living, simple regulations of personal habits sometimes are sufficient to start patients towards recovery. Inquiry into personal habits is too often overlooked, and not infrequently failures of treatment may be traced to neglect in ascertaining and rectifying simple yet most important errors in habits. Sanatoria and health resorts scattered throughout the country furnish interesting and convincing evidence of the frequent efficacy of simple hygienic measures in cure of diseases. These establishments prosper because they cure patients by correcting defective habits while patients are kept entertained and occupied with a routine which constitutes each particular "cure." These methods are often scornfully regarded on account of their simplicity, yet it is just as well to admit their importance as very many persons are benefited, and the fact that some patients are made worse and that recurrences occur after these simple measures are stopped should not lead us to overlook the fact that many improvements undoubtedly do take place. Instead of underestimating the efficiency of simple methods, it is safer to consider that regulations insisted upon at sanatoria if permanently adopted would very often result in permanent improvements.

INCIPIENT CASES OF ARTHRITIS

Patients frequently seek medical advice for slight pains and stiffness in various joints, and for swellings which make their appearance upon the fingers, in order to learn whether severe arthritis is likely to develop, and what should be done to arrest its progress. It is often impossible to say whether or not there will be serious trouble later, but the best estimate generally depends upon application of such ideas and physiological principles as have been explained, and although diagnosis and prognosis is often impossible at the outset, yet our methods of treatment are sufficiently definite and may result in cure in spite of our ignorance of precise underlying causes.

It is the writer's custom with incipient cases to obtain accurate ideas of patients' past diseases, their inherited and acquired tendencies, occupations and habits of life; and from a complete but rather superficial physical examination to locate gross abnormalities in organs and active infective foci; also to observe at the time the state of the general health as well as mental and nervous conditions. When active pathological processes are discovered, these are immediately treated, but when only indefinite, mildly suspicious conditions are found, as is often the case with this class, then reliance is placed upon general hygienic methods to correct all irregularities, and if cures do not result, further treatment is then instituted as explained under the next section upon moderately severe types of arthritis.

General hygienic measures have been described, and those applicable to incipient cases consist in administrating tonic medicines, as nux vomica, combinations of iron, quinine and strychnia; or iron, arsenic and strychnia; and in correction of personal habits. The latter are not too greatly restricted in these mild cases, but diets are simply modified when they are obviously defective and the digestive tract is emptied and kept cleared by means already described. It should be remembered that digestive disturbances are numbered among the commonest of maladies and are starting points for deviations from the normal processes concerned with elaboration of food materials for the tissues and that, therefore, treatment of digestive abnormalities is a very important means of changing the quality of the blood and of influencing all organs. Gross errors in habits of sleeping and taking exercise are also rectified. Local treatments are of less importance and when needed consist in mild stimulation with radiant heat, high-frequency electrical applications and warm dry protective coverings for the affected joints. Salicylates are also indicated in small doses at times when pain interferes with sleep.

Patients who do not improve are then treated as outlined under moderately severe types of arthritis, but the dividing line between these two types is an arbitrary one and transitional stages occur. This classification is simply convenient for descriptive purposes.

Summary. — Diagnosis in incipient arthritis depends mainly upon personal histories of patients and superficial general examinations; prognosis is very often impossible to determine at the outset; treatment is directed towards undoubted pathological conditions when these exist, and otherwise consists in general hygienic measures.

MODERATELY SEVERE TYPES.

These are most typically represented by chronic, well-developed polyarticular joint diseases in which joint destruction is slight and changes have not gone on that require manipulations or local operations. Monarticular types of moderate severity, however, have also to be considered in this class.

Preferably these patients should be kept in a hospital under observation for a few weeks until all suspicious circumstances revealed by histories and the unusual states found in examinations have been carefully considered, and until interpretation of these data is accomplished and an idea is gained of the relative importance of mechanical and nervous factors, of external influences and influences acting through the blood, after which subsequent treatments may be outlined as seems best.

Questions often arise with regard to what shall be done with patients who have only suspicious conditions in various organs but no well-defined, active lesions. Shall all these suspicious foci be radically treated like well-defined ones on the assumption that they really are the causes, although obscure, and that the arthritic process is likely to continue until they are removed? Concerning this question observation shows that there are occasional patients with obstinate arthritis who have been subjected in turn to many radical operative treatments without relief. Treatment to them has meant unnecessary discomfort and a series of expensive experiences in addition to their arthritic disease; moreover, such examples seem difficult to avoid when patients are plucky and willing to try all remedies, and their arthritis is obstinate, because there is such diversity of opinion among the medical profession regarding causes and treatments. Better understanding of joint diseases is needed, therefore, to avoid injury from attempted treatment of incurable cases as well as to restore health in those who do respond to treatment.

It is well in our present stage of enlightenment to recognize that some patients cannot be cured, although theoretically they should be, because it is a fact that some are not relieved and failures seem due in part to lack of recognition of underlying causes when the disease is in its early stages and can be most advantageously attacked.

Methods of treatment in moderately severe cases of chronic arthritis. — Patients are put to bed and kept out of doors as much as possible; diets are reduced to meet the requirements of the inactive life, and modified as tests indicate. Stomach and intestines are cleared of food accumulations to prevent possible bacterial toxemias; and general medicinal tonics and drugs for relief of pain are used sparingly, the latter only to insure sleep and comfort. Passive movements must be given daily or patients allowed to arise from bed a few hours each day if joints show tendencies toward stiffening, and gentle massage may be used to supplement passive movements. Pathological processes in other organs, if unquestionably active, are treated immediately.

Within a few weeks a considerable proportion of cases will show distinct improvement; others will show very little change; and the remainder will grow worse. Those showing improvement should continue to receive the same treatment, and if suspicious foci have been located in other organs, these should be observed until doubts are dispelled or confirmed. Sometimes these foci disappear under hygienic treatment and at other times they become more definite and localized, requiring attention before complete cure is effected. Cases which show no improvement in the first few weeks should, nevertheless, have their treatment continued unchanged, as general hygienic measures act slowly, while the advantage of removing merely questionable foci cannot be told until the focus is removed, and experience demonstrates that such operations frequently have little effect upon the joints. When the disease does not begin to improve within a few months, or grows steadily worse, decisions have to be made which depend upon the particular circumstances presented by each individual case. The safety, comforts and dangers of neglect of conservative methods; the risks, discomforts, benefits and disappointing results of operative procedures; the rate at which arthritic disease is progressing; the confidence and mental attitude of the patient; the degree of definiteness of suspicious lesions, have all to be considered.

At this stage before radical treatments are instituted upon uncertain grounds attention is urgently directed once more to the nervous control of joints, as it is the writer's belief that many cases are primarily of neuropathic origin, and at the risk of repetition reasons for this opinion will be given.

It should be remembered that the nervous system controls every important organ and co-ordinates all activities as is shown by the general health of the individual; and the influence of nervous control of joints may readily be observed in the very destructive joint changes following spinal cord lesions, as in syringomyelia and tabes dorsalis.

In the more severe cases of rheumatoid arthritis (atrophic arthritis) there have also occasionally been found appreciable pathological changes in spinal cord and meninges when they have happened to be examined.

The physiological relationships between nervous tissues, joint tissues and body tissues may be recalled to make clearer the ideas which follow:

Nerve cells continually influence body tissues (including joints), directly through trophic and vasomotor nerves, and also, by modifying metabolic activities of different tissues in varying degrees, indirectly influence all tissues through interactions among the latter. Conditions of the blood stream are changed and proportions of metabolic products from each tissue vary as the result of nervous stimulation and activity.

Nerve cells are continually affected by sensory nervous impulses, by the metabolic products of organ activities and food products, and occasionally by the metabolic products of bacterial activity in the blood when infective foci are present.

Joint tissues and all body tissues, as explained, may be influenced through trophic nerves, metabolic products of organ activities, food products and occasionally bacterial products in the blood.

Nerve cells, joint tissue cells and all body tissue cells exhibit variable degrees of vitality, all may be robust or delicate, and many theoretical combinations are possible. For example, lung tissues may be delicate and other tissues vigorous in one individual; kidneys alone be defective in another; liver and gastro-intestinal tract exhibit abnormalities in a third; and *delicate joint and nerve tissues* be the most pronounced defects of a fourth. The latter theoreti-

cal possibility is the one to which attention will be directed, and evidences for its existence sought in pathological changes which can be anatomically demonstrated as well as suggested by functional abnormalities that may be clinically observed.

Evidence to be readily accepted must rest upon a visible or recognized basis; biological principles and physiological laws are more likely to be stigmatized as too theoretical; but so many conditions depend upon invisible physical and chemical processes going on within tissue cells that it is unwise to ignore these biological and physiological principles as they constitute the only adequate means of interpreting invisible metabolic disturbances of cell activities. Neuroses belong especially to this class of disturbance having no visible anatomical basis, and lesions in rheumatoid arthritis seem to be just at the transition line between visible and invisible processes, as some of the severest cases exhibit visible changes in spinal cord substance, peripheral nerves and diffuse patches of spinal meningitis while mild cases do not show any visible lesions.

(Reference should be made to the chapter on morbid anatomy of rheumatoid arthritis in R. Lewellyn Jones' book, "Arthritis Deformans," for an admirable presentation of anatomical changes observed in that disease.)

Gross pathological evidence will be disregarded in this article and attention directed to those functional disturbances in various organs which may possibly signify abnormal metabolic processes taking place in their controlling nerve cells. In rheumatoid arthritis (atrophic arthritis) muscular atrophy often occurs so rapidly and to such extreme degree that it cannot be satisfactorily explained by atrophy from disuse; moreover, special muscle groups are usually affected; cutaneous pathological changes include pigmentation, sweating and, in later stages, dryness and harshness, with desquamation and thinning of the skin; local circulatory disturbances are seen in the waxy white fingers and cyanotic appearance of the extremities. Sensory disturbances are observed in premonitory sensations of tingling and numbness, stinging and burning feelings, soreness, streams of pins and needles and muscular cramps. Tendon reflexes are increased. Visceral disturbances are represented rarely by gastric crises, and frequently by light or severe abnormalities in digestive functions.

The following case typically illustrates many of these points.

Single woman, thirty-seven years of age. Arthritis developed at three years of age; five severe acute attacks up to eighteen years of age with complete restoration in function after the first ones. Continuance of attacks of greater severity involving all joints with permanent impairment in joint function until patient became confined to wheel chair or bed. This disabled condition she has now been in for several years. She was a delicate child and had scarlatina, measles, pleurisy, influenza, carbuncles and tonsillitis, also a nervous collapse which lasted two years; and further injured her health from study when at college. She is a small, slightly built woman with lively tendon reflexes and wonderfully good mental development, and her readiness to try new remedies has resulted in operations upon tonsils, nose, mastoid, joints and gall bladder, besides various physical therapeutic treatments. No very definite infective foci have been discovered by any of the competent physicians who have treated her, and she has progressively grown worse. Remedies which have temporarily arrested the disease have been a quiet life out of doors with attention to simple hygienic measures, and these restored her health from a bedridden state to one in which she could walk again, although with difficulty. Continued overexertions brought on another acute attack from which recovery was very slow until she was again sent to a quiet country place and kept out of doors with only sufficient entertainment to insure contentment; and again the joint pains lessened, muscular spasm relaxed and joint motion appreciably improved.

With each attack there has been excruciating pain, fever, extremely rapid muscle atrophy, cutaneous disturbances and periods of indigestion, and each recovery has been characterized by restoration of muscles, return of normal digestion and subsidence of muscle spasm, articular pains and cutaneous disturbances. When the patient had an acute mastoid infection of great severity, there was marked diminution in arthritic pains and increased mobility of the joints which persisted for a month or so afterward. The bacterial toxins of the mastoid infection did not increase joint symptoms, as might be imagined they would do if articular structures were susceptible to bacterial poisons. Their toxins, however, produced fever and accelerated tissue metabolism, so that the blood temporarily was changed and presumably acted in different manner upon all tissues, *including joints and nerve cells controlling the affected joints.*

Similarly there has been noticed in this patient very abrupt cessation of articular pains and increased mobility of joints following ether anesthesia. The effect was very striking and transformed excruciatingly painful joints immediately into much more comfortable ones as soon as recovery was made from the anesthetic. Relief from symptoms in this instance lasted nearly two weeks before pains and spasm slowly returned. Ether anesthesia is known to increase metabolism of the tissues, also exerts profound influence upon nerve cells, and while nothing can be proved by these observations, yet the unusual response of nervous tissues may indicate pathological processes in them.

Another point in favor of nervous instability in this patient is shown by gastric disturbances noticed when arthritic pains are worst; and these visceral manifestations have caused so much discomfort that cholecystotomy was performed, but only an inflammatory state was discovered. Bacteriological examination of stools and chemical examination of the urine have shown exceptional freedom from intestinal putrefactions. Relief afforded by salicylates, tonic hydrotherapeutic baths and electrical treatment harmonizes with the idea that the nervous element is a very important one in this instance, and absence of any definite focus of infection after prolonged search and failures of radical treatments strongly help to confirm it, as does also the long course of arthritic disease beginning in early childhood.

These data probably will not seem convincing as they are read for the first time, but deliberation and attempts at other explanations of these clinical facts strengthen the plausibility of the neuropathic theory,

which has very many adherents among those who are best informed.

The writer wishes to point out that many elements enter into the etiology of each case of arthritis and that nervous influences are constantly at work, sometimes in a normal, unobtrusive manner and sometimes in obvious pathological ways; and that when the degree of nervous derangement is great, arthritis may properly be considered of neuropathic origin.

Summary. — It is always impossible to understand exactly the complex relations that exist between body tissues, the endless series of influences that are exerted to and fro continually between every organ upon every other one, by means of nervous stimuli and shifting states of the blood. Such interactions, however, obviously do exist, and it seems reasonable to suppose that when nerve centers which control joint structures directly or when nerve centers which control other organs indirectly influence joints through the blood, if these nerve centers are seriously defective, then prognosis for joints is poor, irrespective of the question whether such nerve cells are congenitally weak or have acquired defects from injuries sustained in severe infectious fevers, because normal metabolic function of nerve cells can be restored with difficulty when they are once seriously injured.

Estimation of the nervous factor in the etiology of any given case of arthritis can be made only imperfectly by the personal history and suggestive physiological manifestations in various organs, and the practical effect upon treatment is simply to delay radical measures still further and to encourage continuance of general hygienic treatments which are often efficient means of restoring the health of nerve tissues as well as of all other tissues. But if improvement does not occur, operations will probably be resorted to sooner or later whether they are beneficial or not, on account of the doubts and differences of opinion which must necessarily arise.

Vaccine treatment should be given a trial while conducting hygienic treatments and before operative procedures are instituted, because injection of bacterial cultures after the living organisms have been artificially destroyed has frequently been tried upon infectious arthritis with some temporary improvement of arthritic conditions.

Such bacterial products undoubtedly cause a general reaction in the tissues and there are temporary improvements corresponding to temporary altered states of the blood whereby local infections are more successfully resisted for the time, but joint conditions which have come on and become chronic from long residence in the tissues of resistant bacteria are much less favorably influenced by inoculations of bacterial products than acute infections which have already been successfully resisted and localized by the individual. In the latter conditions injection of bacterial products is frequently followed by rapid clearing up of infective foci, and the inoculation reaction appreciably accelerates the mastery over the parasitic micro-organisms.

In the writer's limited experience there have not been very many permanent benefits observed that can be definitely attributed to vaccine treatment, but investigators who have had more experience are confident that considerable benefit is derived not infrequently, and it is conceivable that bacteria in the tissues in chronic as well as acute states occasionally exhibit sufficiently low degree of resistance to enable the general tissue reaction from inoculations to just turn the balance in favor of the individual and to overcome the parasitic bacteria.

Operations upon other organs include removal of tonsils and teeth; operations upon nasal bones and sinuses; curettage and drainage of osteomyelitic foci in many localities, curettage of uterus; salpingectomies, hysterectomies, colostomies, cholecystotomies and operations for suppurative conditions in various organs. Special indications cannot be given, as each depends upon the special circumstances which exist in each individual case, and some of them, as, for example, hysterectomies, have not been done for arthritis alone, but because local disease of the uterus demanded its removal, yet in these cases severe arthritic disease which existed simultaneously has been permanently cured.

Local treatment in moderately severe types which show no serious joint destruction consists of protective or stimulating measures. Normal muscle balance tends to be destroyed by atrophies, also by spasms in various muscle groups, and joint contractures consequently tend to occur and may be treated by local stimulation of affected muscles, massage and electricity. Normal position may be retained with aid of orthopedic apparatus and plaster casts. Synovial membrane hypertrophies due to excessive mechanical irritation require measures to restrict and minimize motion, by bandages, adhesive strappings and plaster casts.

Local measures include bakings, hot and cold applications, dry and moist applications, chemical counter-irritants, massage, passive motions, Bier's passive hyperemia, various forms of electricity and radiant heat; and all are rather indiscriminately used to combat pain and swelling. Some cases are benefited temporarily and others are not influenced, but prediction cannot be made what the effect will be in many instances until trial is made. High-frequency electrical treatment relieves arthritic pain often in atrophic arthritis and gout. The physiological action of local measures usually is a double one through direct stimulation of joint tissue cells and by modifications of blood and lymph supply to the parts. When there is reason to suppose the blood is at fault, caution should be exercised not to wear out the tissues that are already struggling with unfavorable conditions by over-stimulating them with therapeutic agents. Protective methods used for various joints will not be described in detail, — the strappings and supports for feet; strappings, bandages, casts, iron braces for knees, hips and spinal column; plaster jackets, corsets, collars, shoulder braces, cuffs, gloves and other appliances used by orthopedic surgeons.

From what has already been said concerning normal physiological factors that control health of joints it will be evident that local measures are of secondary importance and palliative in cases

not produced by mechanical and external agencies, but nevertheless are useful. Mild treatments should be tried first and their results closely watched, as mild irritants have acted for long periods of time to produce the pathological conditions, and restoration can be brought about best through similar mild prolonged treatments.

ACUTE EXACERBATIONS OF CHRONIC ARTHRITIS.

These are treated by the same principles that are used in chronic processes, but require modifications on account of their severity. Acute exacerbations of chronic rheumatoid arthritis (atrophic arthritis), acute onsets of arthritis due to bacterial infections, acute gouty attacks and acute rheumatic fever are confused because they are often much alike in their arthritic manifestations and require similar local treatments. Underlying immediate causes of acute attacks are obscure, perhaps being due to sudden entrance into blood stream of irritating substances in unusual amounts or of unusual toxicity; or perhaps are caused by the sudden breaking down of cell resistances in joint or nerve tissues. These suppositions are supported by recognized facts. Showers of uric acid in the urine accompany acute exacerbations of gout; rapid development of bacterial infections are followed by abrupt onset of arthritic symptoms as soon as joint resistances are overcome. Joint and nerve tissues react variably according to the severity of stimuli which are acting upon them and according to the resistance of their cell protoplasm; and premonitory symptoms and abrupt onsets of arthritis so often observed can be easily understood upon this biological basis. When irritants in the blood are of moderate severity and joint cell resistances are of moderate degree, slight premonitory symptoms occur and subside as the tissues react successfully at first before they finally break down in their normal function, but when weak tissues are overwhelmed with irritants of greatest toxicity, they succumb with surprising abruptness. Abrupt onsets of nervous symptoms, as, for example, delirium and mania, probably are manifestations of similar overwhelming conditions that suddenly destroy the physiological balance in nerve cells, and nerve cells which control joints and articular blood vessels show pathological conditions suddenly arising in them by suddenly producing arthritic lesions. The actual case cited in this article is an example which the writer believes to have an important neuropathic element and exhibits at times sudden onsets of arthritis with extreme symptoms of prostration, fever, sweats and involvements of all joints in an exquisitely painful process.

Underlying causes of acute cases must be sought by methods which have already been described, and methods for local treatments also remain unchanged, but are applied with greater vigor. Inflamed joints are kept perfectly quiet by means of splints or plaster casts, thus entirely removing mechanical irritation; gouty attacks in which subsidence can soon be expected may properly be treated by active local stimulation of the joint tissues with electricity to temporarily increase cell resistance and metabolism, and some gouty patients find they are thus able to avert milder attacks if such electrical treatment is taken immediately when first symptoms become evident. With other patients such active local stimulation seems inadvisable when the blood is likely to contain irritants for a considerable time, and stimulation then may aggravate instead of ameliorate local joint conditions.

Variations in external physical influences should be prevented by dry protective coverings applied to the affected joints. Increasing the blood supply sometimes means increasing the amount of toxic influence, while decreasing the blood supply means diminution in necessary food products of the blood and perhaps an inadequate removal of waste products. The best circumstances in each instance can only be determined experimentally, and in practice thermal measures of heat and cold may be tried cautiously, and if improvement occurs they are persisted with, but abandoned if no relief is afforded.

Drugs are almost always given to control pain and are justifiable on account of the important influence pain has upon the resistance and total metabolism of the individual.

VERY SEVERE TYPES OF ARTHRITIS.

These fall into three groups; those in which mild irritants have acted for a long period and caused slow disintegration of joint structures; those in which severe bacterial irritants cause more rapid destruction of the joints, and those due to mechanical and traumatic causes. Conditions seen in gout, certain cases of rheumatoid arthritis (atrophic arthritis) and osteo-arthritis (hypertrophic arthritis) represent the first group, and bacterial infections with organisms themselves growing in joint tissues are examples of the second class.

Treatment of the first class consists principally in correction of deformities and in restoration of joint motion. Attitudes habitually assumed during acute stages of the disease often result in permanent deformities, as, for example, the forward bending of the cervical spine due to propping the head up with pillows, and the stooping attitude of such patients from fixation of the vertebræ by bony overgrowths when in improper positions in bed. Faulty attitudes lead to faulty physiological functions, and bony overgrowths in joints of the extremities often require operative measures to remove obstructing bony tissue and to restore motion. Osteotomy of the femur is a familiar operation in treatment of ankylosis of hip with deformed position, and this procedure helps to restore the normal attitude and muscle balance, thus preventing secondary deformities, and consequently assists in maintenance of the individual's normal physiological functions.

The second class, tuberculous, gonorrheal, pyogenic and other infections of the joints, require aspirations, arthrotomies for washing out joint cavities and for removing necrotic material. Various injections have been employed; for

example, oils to prevent post-operative adhesions and oxygen to inhibit growth of anerobic micro-organisms. Frequently arthrotomies are performed for other reasons, to remove hypertrophied synovial membranes and loose cartilages, but none of these methods will be discussed and are simply mentioned to complete the outline of clinical classes proposed at the beginning of the paper.

RÉSUMÉ.

An attempt has now been made to describe as exactly as possible how joints may be influenced by normal physiological factors; mechanical, nervous and external stimuli; and by physical and chemical properties of the blood; and to enumerate the different diseases that may alter normal nervous control of joints and normal states of the blood.

Physiological pictures of metabolic activities going on in all living tissues, and the ways by which different ones react upon each other, have been described, because normal states of the blood and of nervous tissues depend upon normal functions and reactions of every individual organ.

Attention has been called to the fact that vital processes going on within tissue cells cannot be accurately measured at present by chemical or physical means, and in early stages of many diseases intracellular pathological processes leave no visible anatomical evidence of their abnormal action, notably in nerve cells which produce abundant physiological evidence of deranged function but only meager visible proofs of it, so that physiological effects produced upon other organs furnish the only adequate means of recognizing and estimating the intensity of these invisible, intracellular pathological processes that act through nerves and blood.

All manifestations of arthritic disease, including joint defects, lesions of other organs and all clinical symptoms can be more readily understood upon this physiological basis as representing departures from normal conditions that exist in healthy states.

Description of methods of examination and special methods of treatment have purposely been avoided as much as possible, and confusing nomenclatures have also been kept in the background in order to make clearer the importance of these principles; yet it should be recognized that adequate examinations and skill in application of special methods contribute as much as general conceptions to success in treatment. The latter, however, are so easily forgotten or neglected, and their neglect is responsibile for so many failures, that they are here emphasized. Application of these principles will establish their value in determining why some patients are curable and others are non-curable.

Permanent cures of arthritis depend upon permanently removing the causes which are producing the disease, and this is possible, first, when infective foci are present which may be completely removed by surgical means; secondly, when arthritis is produced by acute infectious fevers which subside and no longer exert their influence; thirdly, when defective metabolic processes in tissue cells can be permanently altered into healthy activity, and, finally, when defective personal habits and unhygienic occupations are recognized and may be regulated.

Infective foci may be permanently removed when they occur in tonsils and teeth, and when chronic suppurative conditions elsewhere can be radically treated or removed. Obstinate cases of fecal impaction may cause severe arthritis, and permanent cures are possible when such unsuspected intestinal conditions exist that may readily be prevented from recurring. Operations upon the gastro-intestinal tract which restore normal relations in it and prevent bacterial toxemias theoretically also may permanently cure arthritis.

Defective metabolic processes in tissue cells that are independent of bacterial action often are difficult to permanently restore to a normal state, and success in treatment here depends at present mainly upon early applications of simple hygienic measures before metabolic abnormalities have become too extensive or too chronic.

Regulation of defective personal habits and unhygienic occupations are the simplest, also one of the most important and most efficient, means of increasing the number of cures of all types of arthritis.

Incurable cases of arthritis are represented by bacterial infections of vital organs that cannot be operated upon and which are resistant to general hygienic measures. Examples are also seen in nervous maladies in which there are serious defects of nerve cells that cannot be reached; and as already mentioned, also in patients whose unhygienic occupations and faulty habits must be continued for financial reasons. Some patients are born with such non-resistant joints that they are almost certain to become impaired in spite of treatment, by repeated attacks of arthritis in acute fevers and infections, and these patients also are likely to become incurable.

Paul Ehrlich's apparently successful treatment of syphilis by means of an arsenical chemical compound which destroys the spirochetes of that disease in the tissues without injuring the tissue cells of the host arouses the hope that he may be able to prepare other chemical substances in the same purposeful manner that he has done with syphilis, that will be specific for other parasitic cells, common pyogenic micro-organisms and others. Such specific chemical substances would be of inestimable value in combatting bacterial diseases of inoperable vital organs, and would appreciably lessen the numbers of incurable arthritic patients. Theoretically, such chemical substances exerting their toxic effect directly upon foreign parasitic cells in the tissues seem much more likely to be efficacious than injections of bacterial toxins that produce a general protective reaction of the body tissues and indirectly exert greater inhibiting influence upon local foci of infection through temporary changed conditions of the blood.

Conception of arthritic disease as being either self-limited or incurable is erroneous and unjustifiable upon theoretical grounds and also is unsupported by actual evidence furnished by patients who have been permanently cured. All degrees of acuteness and chronicity of arthritis can be observed, and anatomical changes range from perfectly normal to completely disintegrated pathological states.

Statistics of cures may always be questioned when many influences are acting, but prompt restoration of normal health and function of diseased joints occurs so frequently as soon as rational treatments are instituted that no reasonable doubts exist of their important influence, although absolutely incontrovertible proof seems likely to be an impossibility for an indefinite time to come.

The writer's experience with arthritic patients for several years, therefore, has led him to the following inferences:

(1) The causes of chronic arthritis are many, and arthritis must be considered a symptom of many diseases rather than an entity that is produced always by the same specific cause.

(2) Causes generally are common diseases of other organs, common infections and ordinary defects of personal hygiene rather than obscure and rare diseases.

(3) The most severe deforming types of arthritis that stubbornly resist treatment and the mildest kinds that are easily controlled and permanently cured have similar origins. They differ only in the degree of severity with which the underlying causes act.

(4) Arthritic disease in every stage may often be modified by treatment, sometimes only slightly, and sometimes to a great degree, permitting permanent cures not infrequently.

(5) The best period to initiate treatment is in the incipient and early stages before chronicity is established, although the later stages also must be attended to when the disease has progressed to that degree.

(6) Diagnosis and treatment of incipient and early arthritis depend upon thorough knowledge of physiological conditions that control health and normal activity of joints, and cures result when defects in these conditions can be recognized and remedied.

(7) Proper application of simple hygienic measures and correction of defective personal habits are the most adequate means of treatment in the early stages.

(8) Increased efficiency in treatment depends upon greater clearness in understanding of normal physiological conditions that control health of joints, and also upon increased skill in treating diseases of other organs and infections that act as causes; and such knowledge of physiology and increased skill in treatment should be strongly advocated as well as search for new methods and new causes, for obscure conditions generally may be explained more satisfactorily as confusing combinations of common causes than by assumption of unknown rare pathological processes.

(9) New methods for treatment of chronic arthritis are likely to consist of very dissimilar ones, special drugs, organ extracts, vaccines and physical therapy applied to diseases of different organs and to infections; and better comprehension of physiological conditions governing the health of all organs may also be advantageously emphasized.

(10) Future advances in treatment of arthritis, as in pulmonary tuberculosis, appendicitis and some other diseases, probably will be towards prevention of extensive pathological changes by early recognition of the disease, and treatments will tend to become comparatively simple ones that prove themselves to be efficacious in these incipient stages.

RADIUM THERAPY.*

BY LOUIS WICKHAM, M.D.,

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CHARACTERISTICS OF RADIUM.

RADIUM emits three kinds of rays, the so-called alpha, beta and gamma. The alpha and part of the beta (the soft) forms have but slight penetrative power, while certain of the beta and all of the gamma are capable of exerting influence deep within the tissues. In therapeutic work the alpha and the soft beta rays are employed where superficial results are wanted, as in diseases of epidermis and upper corium, or again where caustic action is needed, but as a rule other modes of destruction can be employed which are cheaper and more rapid in their effects. It is the deeply penetrative action of the hard beta rays and of the gamma rays as a whole which gives radium its most practical value.

The power of penetration of these rays is indeed extremely great, but the depth at which these rays act therapeutically depends not only on this penetrative power alone, but also on the number of the rays which attack a given point and on the susceptibility of the given tissue.

This really great penetrative power is illustrated by a recent experiment in which a cancer of the breast 15½ cm. in width was treated for forty-eight consecutive hours with the enormous dose of 19 cgm. of pure radium sulphate spread on shields 28 cm. square. During this exposure an electroscope and a screen of platino-cyanide of barium were held on the opposite side of the breast, and both instruments showed the influence of radium emanations, the former in eight to nine seconds.

Before this exposure the breast was a hard, bosselated, homogeneous mass, but sixteen days later it had shrunken 1 cm. in width, and palpation revealed a series of nodules. The breast was then amputated, and on section one could see that the portion of the tumor lying directly in the path of the rays differed totally from the remoter zones.

* The salient points of a lecture delivered at the Boston Medical Library at the request of the Surgical Section of the Suffolk District Medical Society. This paper is compiled by Dr. Charles J. White, from data left in his hands by Dr. Wickham.

The former area was divided into several smooth, hard, white, scirrhous nodules, while the latter regions were irregular, pink and encephaloid.

Macroscopically we have just described the results of radiation. Microscopically we shall now see how the rays affected the structure of the epithelial and the stroma cells.

Action on the epithelial cells. — This action is destructive, and this destruction is produced by a form of cellular degeneration appearing exclusively in the neoplastic elements, an elective necrosis so to speak, one affecting the whole cell, body, nucleus and nucleolus. The cell becomes enormous and its acidophile protoplasm is condensed into a peripheral membrane. In this mass one sees often pseudo-parasitic or fuchsinophile bodies. The huge nucleus, filling at times almost the whole cell, is irregular, budding, pale or highly colored, and the nucleoli are also greatly hypertrophied. The chromatine appears either in its usual clear, well-defined, filamentous form, or becomes diffuse, the nucleus coloring homogeneously. Or again the chromatine is scattered through the cellular protoplasm, suggesting rupture of the nuclear membrane (karyorrhexis); or the nucleus disappears entirely, leaving visible only its membrane (karolysis).

Action on the stroma. — This action shows itself around the islands of pathological epithelial cells by the presence of young connective tissue very rich in cellular elements which penetrate and break up the tumor mass. This tissue will bring about the cicatrization following the necrosis and disappearance of the cancer cells. This infiltrate of vasculo-connective buds is composed principally of young fibroblasts and lymphocytes, surrounding the newly formed capillaries. There are also at times masses of plasma cells, and again one finds at rare intervals cells to which one attributes the function of phagocytosis, i. e., polynuclear leucocytes, neutrophiles, large mononuclears and giant cells.

Disappearance of neoplastic elements and subsequent cicatrization — this is the apparent action of radium.

Looking more closely into the details of the penetrating power of radium we find at a depth of 1 to 6 cm. a region of connective tissue, a region where scar tissue is in the making or is complete — the zone of cicatrization. At a depth of 6 to 9 cm. we note degeneration, not complete, but well under way — the zone of degeneration. Below this comparatively great depth there is evidence of change and pathological unrest, but these disturbances are too delicate to describe.

A very interesting and valuable characteristic of radium is its selective action, a quality inherent in x-rays also. Both of these forms of energy act primarily on the more highly organized animal tissues, and it is the epithelial structures first which feel the influence of both of these rays. Not only is this true, but it can be demonstrated that the most actively growing epithelial cells are influenced even before their more normal brothers. Thus radium can modify cancerous cells and arrest their malignant evolution without producing any changes in the surrounding or adjacent epidermic cells. We base this assertion on positive microscopic facts.

Referring once more to these sections of skin subjected to the enormous dose of 19 cgm. of radium we find that sebaceous and sweat glands lying between the skin and the underlying cancer were hardly affected, while the deeper cancer cells were actually destroyed. This power of selection is all the more striking in this instance when these cells were lying directly in the path of the most intense action of the radium.

Another quality of radium or, more properly speaking, an absence of quality, is its strictly local action. With x-rays observers have noted that after radiation of a given plaque of psoriasis, or of eczema, other affected regions at any distance will clear up. This quality is unhappily not present in radium. Exposure to radium means the amelioration of that particular area treated. This is strictly true, at least in cancer, for neighboring glands remain as before, and metastases are wholly unaffected.

METHODS OF APPLICATION.

Radium may be applied in the form of tubes when it is intended for cavities, and is spread on cloth, inserted in a glass capsule of any given shape and then surrounded by a given envelope of lead, aluminum or other metal, depending upon the degree of filtration deemed proper.

When not intended for deep sites, radium may be applied on metallic or cloth bases.

The metal base is usually of copper sufficiently thick to be rigid and bearing a roughened face to which the radium varnish may adhere. The form of this base may vary in size and shape, depending upon the region of the body to be treated. These bases should vary in size from 1 to 30 cm. square. Concave bases are useful in the case of eyelids, cheek bones, etc., convex when treating the naso-malar or naso-palpebral regions. When intended for cavities, canals, folds, fistulas, etc., the metal base is usually cylindrical, and, of course, varies in diameter and length. Laminated bases are a useful form to insert behind eyelids, into the nasal cavity, etc.

The cloth bases need no elaborate description. They are simply constructed of cloth of varying size and shape, and are especially useful when large surfaces are to be treated with comparatively weak preparations, the forearm with chronic eczema, for example.

On these metallic or cloth bases we spread a varnish, permeable, solid and resistant, in which we incorporate our radium.

SCREENS.

In the beginning we stated that the three varieties of radiations possessed different penetrating power. To produce deep reactions we depend for the most part on the gamma rays; but one method of preventing the superficial caustic action of the alpha and of the beta rays is essential, and this is safeguarding of the surface, accomplished by the interposition of certain sub-

stances which check the alpha and beta rays. There is a tendency, nowadays, however, to employ certain of the beta as well as the gamma rays in therapeutic work. For this purpose one can employ absorbent cotton, rubber, tin, mica, gold, silver, copper, lead or aluminum, but of all of these substances, lead and aluminum are perhaps the best.

Aluminum possesses many advantages as it can be rolled out into sheets as thin as $\frac{1}{100}$ mm., but the most practical thicknesses vary between this extreme and $\frac{5}{100}$ mm. The malleability of lead, on the other hand, is limited for practical uses to $\frac{1}{10}$ mm., and although it has the great superiority of pliability, still its weight, its uncleanliness and its lesser permeability render it less valuable than aluminum for filtration purposes.

Thus far we have considered the application of radium to surfaces of the body or to recesses and canals already existing anatomically, but a still greater scope is given to radium therapy by calling to our aid surgical measures. First, we can ask the surgeon to introduce our applications into more inaccessible parts, the esophagus, the rectum, the bladder, etc., or again we may ask him to make deep incisions in tumors, or to open the thoracic or abdominal walls; and by such procedures the applicability of radium becomes universal. By such surgical interference we have been able to treat large tumor masses of the surface, cancer of the pylorus (gastric fistula), of the uterus, bladder, rectum, larynx, etc.

Many therapeutists have been content to treat their cases from one point of attack only, but an enormous advantage accrues by allowing rays to penetrate simultaneously from several directions, and from the whole surface, and even from the interior as well, if it is thought advisable. This is our method of "cross-fire," a method which materially reduces the time of exposure and greatly enhances the value and enormously increases the scope of radium therapy.

DISEASES AMENABLE TO RADIUM THERAPY.

Carcinoma.

First in importance from a therapeutic point of view come the various types of carcinoma.

It is well understood that superficial epitheliomata yield in 95% to the action of radium, but from our point of view the surgeon can accomplish this same result in a much shorter space of time by simple excision. There are, however, certain sites on which cancer may grow and from which an excision may produce poor cosmetic results. Such unfavorable seats are represented by the nostrils, the mucous membrane of the nose or mouth, the conjunctivæ, the eyelids and the ears, and here we are much inclined to favor the use of radium, which will cure in these foci as often as the knife, and in accomplishing the parallel result not demand disfiguring and permanent loss of tissue.

If, however, the patient is one who has an ingrained aversion to the knife or to anesthetics, we may rely upon radium to remove vegetating, ulcerating or nodular cutaneous cancers in the great majority of cases. Or if there has been a previous operation and one or more subsequent recurrences, the patient may prefer to try something else besides surgical interference.

In malignant cancer of the rest of the body we must regard radium merely as an adjunct to the surgeon. Operation and excision should always come first, if possible, and a radiologist who ignores this viewpoint renders himself culpable in the eyes of the best modern medical thought. Per contra, the surgeon who is ignorant of, or blind to, the possible therapeutic aid of radium treatment, errs equally toward his patient. Experience shows that radium, applied by the most modern methods, is capable before an operation of delimiting the new growth and revealing more clearly to the surgeon his field of operation. Manifold experience has demonstrated that radium is often capable of holding in check further rapid extension or recurrence even of cancers previously operated upon once or oftener. Experience again has taught us that radium may prove of inestimable value in alleviating pain, and in drying up and deodorizing the foul, ulcerating, inoperable or recurrent cancers of the uterus, bladder, rectum or other parts of the body.

Leucoplakia.

Leucoplakia, recalcitrant to all forms of treatment, may yield to the influence of radium.

Hypertrophied Scars.

Cheloids following sinapisms, burns, operations or ulcers in certain peculiar individuals have usually proved a stumbling block to medical or surgical treatment. The disease known as dermatitis papillaris capillitii (acne keloid) and the disfiguring fibrous bands following scrofuloderma of the neck have likewise been a source of worry to the medical world. Radium seems to have an especially favorable action on these hitherto distressing, often painful and always obstinate affections.

This amenability of cheloidal tissues to radium is due to the fact that the rays can exercise on them a special action which causes them to disappear by simple absorption and by gradual regression without exhibiting the least revulsion or clinically visible inflammation. In order to produce this selective action it is sufficient to use doses which are not strong enough to create surface irritation.

Angiomata.

Vascular naevi, considered from the radium therapeutic point of view, may be divided provisionally into four groups:

A. Flat angiomata, superficial and level with the skin.

B. Flat angiomata, level with the skin but deeply invading the cutaneous and subcutaneous tissue and mucous membranes.

C. More or less raised angiomata with smooth or papillated surface.

D. Soft and pulsating angiomata in fluctuat-

ing areas, and erectile angiomatous tumors situated under the skin or on the mucous membrane.

We all know what a puzzle these varieties of vascular tumors have been in the past from a therapeutic point of view. Electrolysis, caustics, x-rays, knife and CO_2 snow have been our chief weapons in the past, but radium offers us to-day a means, and perhaps the best means, of ridding the patient of these disfiguring birthmarks.

The "cross-fire" method of application finds its most accurate and useful employment in the treatment of angiomata. By combining it with weak or medium filtering it considerably increases the intensity of the most deeply penetrating (*surpénétrant*) rays, whilst allowing some action to those of medium penetration.

Pigmentary Naevi.

The pigmented moles and birthmarks offer rather an unfavorable target for radium. There is no specific influence exerted in this tissue, that is, there is no selective action, and to accomplish results one must produce inflammatory reactions. But even by this method, which we have learned is fortunately unnecessary in vascular new growths, we may accomplish often striking results. On the other hand, it is best not to treat by radium, hairless, slightly *café au lait*, superficial patches. The resulting chalk-white scars and the frequently resulting telangiectases produce a disfigurement greater than the original lesion.

Hairy Naevi.

Radium has a distinct action on the pilo-sebaceous glands, and depilation is not a difficult process by this means. The cosmetic result is good, and we have not to fear the ugly and numerous small scars which follow the destruction of hairs by the x-rays.

Tuberculosis Cutis.

The various forms of tuberculosis of the skin may be treated by radium, but the rays have no selective action on tuberculous tissues, and to accomplish results one must employ the emanations as a destructive agent. This treatment requires powerful action, both wide and deep, and long-continued and careful supervision of the resulting scars. Tuberculosis of the mucous membranes can, however, be improved without any perceptible reaction. As to the permanent value of the results in the treatment of tuberculosis, they are inferior in every way to those obtained in carcinoma, angioma and keloid.

Miscellaneous Diseases.

In the course of our work we have been led to try the therapeutic power of radium on various recalcitrant diseases, and it is interesting to record varying favorable results in obstinate cases of psoriasis, angiokeratoma, linear ichthyosis, several forms of dyskeratosis and hyperkeratosis, lichen planus, acne rosacea, rhinophyma and certain types of papilloma. We do not wish to consider radium as the first therapeutic choice in all these various diseases, but simply ask you to bear in mind that, when other and more accessible means have failed to produce cure or alleviation, that as a last resort radium may accomplish the desired curative results.

ANALGESIC EFFECTS OF RADIUM.

There can be no doubt of the power of radium to relieve congestion, and this ability and the alterative qualities of the emanations have proved of great service in relieving the pains of certain epitheliomata and carcinomata and of numerous keloids. We are able to record also relief in many cases of neuralgia, including that accompanying and that following herpes zoster, neuritis, gonorrheal and rheumatic arthropathies and iritis, and other experimenters have gained frequent favorable results in the deeper-seated pains of gastritis, tabes dorsalis and sciatica.

Such favorable experiences led us to try the effects of radium in the pruritic diseases of the skin, and as a result we have met with decided success in the relief of pruritus ani, with and without accompanying hemorrhoids, pruritus vulvæ, neuro-dermatitis, lichenification and chronic eczema. We have accomplished these results by the use of rays of weak and medium penetration which seem to have a selective action on pruritus and produce their favorable results without concomitant inflammatory reaction.

Our method of procedure in the treatment of such necessarily large surfaces, as occur in chronic eczema of the arm, for instance, is to apply the radium in the form of a varnish spread on linen. Our technic in combating these disturbances of nervous origin is to employ large apparatus with powerful radio-activity; to make short exposures with intervals between them; to use weak and medium rays in as large numbers as possible; and to avoid superadded inflammation.

[*Note.* — A large part of the evening was devoted to the exhibition of lantern slides illustrating graphically the truth of Dr. Wickham's spoken words, and the audience seemed much impressed by the modesty and sincerity of the speaker. — C. J. White.]

THE CARE AND MANAGEMENT OF THE TABETIC BLADDER. II. ETIOLOGY.

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(From the Genito-Urinary Out-Patient Department, Massachusetts General Hospital.)

In a previous paper (Boston Medical and Surgical Journal, Dec. 22, 1910) the writer discussed the signs and symptoms of tabes dorsalis. I will now attempt to explain their causation.

At the outset I would say that this is a matter of some difficulty. This is owing to the fact that not only is the anatomy of the urinary mechanism, especially the sphincter apparatus, still in more or less dispute, but the nervous control of the bladder functions is even more a matter of controversy. Such a state of affairs exists in spite

of innumerable researches, both clinical and experimental.

The muscular structure of the bladder proper is clearly described. It consists of three coats of unstriated muscle: an outer, whose fibers are chiefly longitudinal in direction; a middle, the direction of whose fibers is mainly circular or transverse; and an inner, arranged more or less longitudinally like the outer coat, but with many of the muscle bundles obliquely disposed. The latter is usually incomplete, being found only on the inferior wall, and to some extent on the superior wall. It is not found on the base of the bladder. No sharp line of demarcation exists between the different layers. This is especially true at the neck of the bladder, where all the coats are more or less intermingled. The so-called "detrusor urinæ" is generally considered to consist of the longitudinal fibers, with or without the circular fibers. Thus, broadly speaking, when we say "detrusor," we refer to the bladder muscles as a whole.

Many writers deny the existence of a true internal sphincter of the bladder. Without going into a discussion of the merits of the arguments, I will say at once that, according to the best of evidence, such a sphincter does exist. Further, all are agreed on the presence of an external striated sphincter. The bladder outlet is, therefore, guarded by two sphincters, an inner of smooth muscle, and an outer of striated muscle. The latter is often referred to as the urethral sphincter, or by the familiar names of "cut-off muscle" or "constrictor urethræ," as it divides the membranous from the bulbous urethra.

For an account of these sphincters I shall draw freely from the recent description given by Albarran and Noguès. The smooth muscle fibers of the anterior urethra, scattered throughout its length, join in forming a more or less complete ring at the peno-scrotal angle. This, however, plays no part in urination. These fibers extend upwards in two layers, an inner longitudinal and an outer circular, to surround the membranous and prostatic urethræ (Fig. 1, 9 and 10). At the neck of the bladder there is the internal sphincter of smooth muscle, formed by a continuation of the fibers already described into those of the inner (Fig. 1, 14) and middle coats (Fig. 1, 15) of the detrusor muscle. It is the middle (circular) layer of the latter, thickened at the bladder neck, and continuous with the outer circular coat of smooth muscle fibers surrounding the urethra, which is called the internal or smooth sphincter (Fig. 1, 8). It is the tonicity of this sphincter which prevents involuntary evacuation of urine.

Around the membranous urethra there is found a powerful external sphincter of striated muscle, which prolongs itself upwards like a horseshoe with the opening posterior, along the whole anterior aspect of the prostatic urethra, external to the prostrate itself, up to the bladder (Fig. 1, 7; Fig. 2, *A*, *B*, *C*, *D*, 3). When the prostatic urethra and the neck of the bladder are removed, as in total perineal prostatectomy, incontinence does not occur. This is due solely to the presence of the striated sphincter surrounding the membranous urethra.

In the female, the anatomy of the external sphincter is identical with that of the male, except for the interposition of the prostate in the latter. Owing to this, and to the presence of the vagina, the striated external sphincter of the female completely surrounds the urethra at the bladder neck, while below it is open behind. Its relation to the urethra is thus reversed in the female.

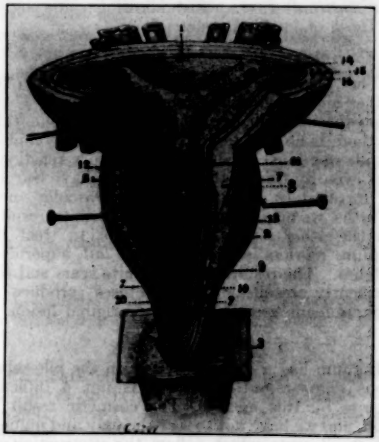


FIG. 1.—Longitudinal section showing, 1,1', Bladder and trigone. 2, 13, Prostate. 3, Triangular ligament (inferior layer). 4, Neck of bladder. 5, Verumontanum. 6, 6', Prostatic and membranous urethræ. 7, External striated sphincter. 8, Internal smooth sphincter. 9, Longitudinal smooth fibers of urethra. 10, Circular smooth fibers of urethra. 11, Urethral mucosa. 12, Vascular coat. 14, Internal muscle coat of bladder. 15, Middle muscle coat of bladder. 16, Outer muscle coat of bladder.

The accompanying illustrations, photographed from those in Testut's "Traité d'Anatomie Humaine," show the anatomy of this region very well. Fig. 1, with its explanatory legend, will make clear the appearance of the two sphincters in longitudinal section. It also shows the relation of these sphincters to the three layers of the detrusor muscle. For the appearances of the two sphincters in cross-section the reader is referred to Fig. 2 and its appended description.

It was stated above that the tonicity of the internal sphincter alone prevented involuntary micturition. As evidence of this, Albarran and Noguès recall the fact that when the prostatic urethra is divided, incontinence does not occur, although striated muscle is not found in this location. The tonicity of this sphincter has also been amply demonstrated by the experiments of Courtade and Guyon. They found that even without any nervous excitation the

internal sphincter will resist a pressure of 12 or 15 cm., occasionally 20 cm., of water.

On the other hand, the resistance of the external sphincter has been shown by these investigators to equal a pressure of from 70 to 100 cm. or more of water. It is thus seen that the presence of two distinct sphincters has been well demonstrated on both anatomical and physiological grounds, and it has also been shown that each sphincter offers its own special resistance to pressure.

In considering the nerve supply of the bladder and sphincters, we find ourselves at once in a bewildering maze of theory and fact. According to Courtade and Guyon, the nerves of the bladder, including the internal sphincter, come from the hypogastric plexus, situated in the loose connective tissue on both sides of the middle part of the rectum. This plexus receives its fibers from two sources, — from the sacral nerves (usually the third and fourth), and from the inferior mesenteric ganglion. The branches from the sacral nerves running to the plexus are two or three in number and are known as the nervi erigentes. They run straight to the plexus without passing through the sympathetic chain. There is also evidence (Guyon, Albarran and Testut) that in the course of these nerves, and even in the detrusor muscle itself, there are numerous ganglia. Their presence is not as yet fully demonstrated, and their action is far from clear. The external sphincter is supplied not only by branches from the hypogastric plexus, but also by a branch from the internal pudic nerve.

The vesical spinal center is said to be on a level with the third and fourth sacral segments of the spinal cord (Frankl-Hochwart), although it is fair to say that its precise location is still in doubt. Another center is found in the medulla. Also, according to Frankl-Hochwart, there is evidence to show that in the brain there is a center in the motor area of the cortex, and a subcortical center in the striate body, and probably also in the optic thalamus. Impulses for urination are believed to travel along the lateral pyramidal tracts.

To quote Albarran and Noguès, "All organic functions are the result of a reflex, and micturition offers no exception to the rule. In every reflex three things are necessary, — sensory nerves, a center and a motor nerve. The sensory nerves transmit the excitation to the center, which transmits it in its turn to the motor nerve."

As regards the action of these nerves and the particular part supposed to be supplied by each, I will give briefly the results of the experiments of Guyon. The latter, working with Courtade in 1895, showed conclusively that the sacral nerves act only on the longitudinal fibers of the bladder, while the hypogastric nerves act only on the circular fibers. As the longitudinal fibers are the ones chiefly concerned in the evacuation of the bladder, they concluded that the act of urination depended almost exclusively on the nerves coming from the medulla by the intervention of the sacral plexus. Further experiment in 1900 led Guyon to conclude that the nervi erigentes were at the same time the sensory and motor nerves of micturition.

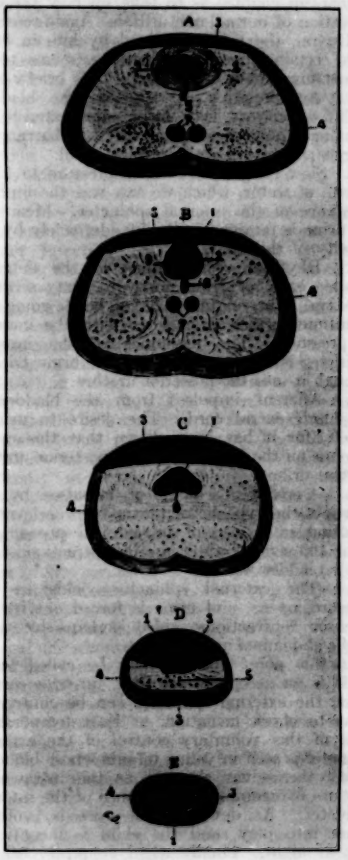


FIG. II. The external urethral sphincter seen in cross sections of the prostate. *A*. 6 mm. below the bladder neck. *B*. 15 mm. below the bladder neck. *C*. 20 mm. below the bladder neck. *D*. At the apex of the prostate. *E*. Behind the membranous urethra. 1, Lumen of urethra. 2, Internal smooth sphincter. 3, Striated external sphincter. 4, Prostatic capsule. 5, Central portion of prostate. 6, Verumontanum. 7, Ejaculatory ducts. 8, Uterus masculinus. 9, Vascular layer of urethra.

Guyon showed, in 1901, that, after section of the nervi erigentes and injection of an irritant (silver nitrate) into the bladder, the latter would still contract and expel a part of its contents. From this he concluded that the tonicity of the bladder muscles was in certain conditions independent of all medullary and even of all extra-

vesical nervous influence. This is also the opinion of Hirt, Orth, Kocher, Bernheim, Ehrlich and Brieger, Von Zeissl, Henle, Goltz, Bernstein, Dubois and Landois.

The foregoing description of the anatomy, nerve supply and physiology of the urinary mechanism enables us to take up now the consideration of normal micturition. Again referring to Guyon, the theory evolved by him in 1887, with certain minor modifications, seems to be almost unanimously accepted. It is briefly this:

1. Accumulation of urine in the bladder. "The tonicity is very feeble, the extensibility great and the contractility small" (Albarran and Noguès). Intravesical pressure is nil.

2. Slow rise of intravesical pressure to 15 or 20 cm. of water, which we saw was the limit of resistance of the internal sphincter. Meantime the urine is retained in the bladder solely by the tonicity of this sphincter.

3. Rhythmic contractions of the detrusor muscle, each of from forty to sixty seconds' duration (Sherrington), have been going on meantime, increasing in force with the increase of pressure. The resistance of the internal sphincter is overcome and a little urine trickles through it into the posterior urethra.

4. Afferent impulses from the bladder to the lumbo-sacral cord. The desire to urinate is felt, for it has been shown that this desire depends on the irritation of the posterior urethra by the urine.

5. A reflex discharge of impulses by the nerves of the hypogastric plexus (nervi erigentes), resulting in a rise of intravesical pressure to 70 or 100 ccm. of water, and a contraction of the whole bladder wall.

6. The external sphincter yields to this pressure, opens, and urine is forced out by the detrusor contractions, aided perhaps by those of the abdominal muscles.

At this point volition may be called forth, for it is an accepted fact that, up to a certain point, the external sphincter can be contracted so as to check urination, at least temporarily. Lack of this voluntary control of the external sphincter is seen in young infants whose bladders empty themselves as soon as the intravesical pressure overcomes the resistance of the internal sphincter. As development proceeds, volition comes into play, and the child is incontinent only at night. Finally when voluntary control of the external sphincter is fully established, the desire to urinate is under practically complete mastery, as in the adult, and urination can then be started or stopped at will. It is the result of an automatic natural reflex acquired by education.

Howell states that Mosso and Pellacani have shown that the bladder is very sensitive to reflex stimuli. Psychic and sensory stimulation may cause contraction or increased tone of the organ. It is thus subject to constant change in size from reflex stimulation, and the intravesical pressure will then depend not only on the quantity of urine, but also on the tonicity of the detrusor itself. At a certain pressure stimulation of the sensory nerves occurs, and under normal conditions urination ensues. This will explain how, in conditions of emotional excitement, there may occur a strong desire to urinate with only a little fluid in the bladder.

It was seen in my first article that in tabes we have certain signs and symptoms referable to the bladder. The signs are trabeculation, residual urine and anesthesia of the bladder neck. The symptoms are difficult urination, incontinence, dysuria, urgency, frequency, retention and absence of the desire to urinate. These must all be explained, and the explanation must find its basis, in the description already given of the anatomy and physiology of the urinary mechanism.

I, therefore, offer the following explanation of these signs and symptoms. It is largely a theory built up from the evidence at hand. Were there any definite statements of the condition of the nerves controlling the urinary function in tabes, this theory might be placed on a sure pathological basis. So far as I know, the nerves supplying the bladder have never been studied in tabetics.

Painful micturition and irritability of the bladder neck (seen in certain cases) I consider to be a hyperesthesia, analogous to that seen in diseases of the peripheral nerves in other parts of the body.

Frankl-Hochwart, Bierhoff and Böhme think that the urinary disorders seen in spinal cord disease are a question of true, tonic spasm of the external sphincter, and inability of this sphincter to relax, a weakness of detrusor contraction, or possibly of all three factors.

We can eliminate at once an impairment of detrusor contraction, for it has been shown by many able observers that the activity of the detrusor muscle is a pure reflex, independent of all medullary and extravesical nervous influence. If this reflex contractility does not occur, how, then, can we account for the trabeculation, which is found before any symptom or other sign of bladder disturbance, and which we also saw was, primarily at least, a result of increased work on its part? Now the cause of this extra effort is an obstacle to the stream of urine offered by the failure of the external sphincter to open. Normally when the urine is forced against this sphincter, by the contractions of the detrusor muscle, the latter, together with the presence of urine in the posterior urethra, cause a discharge of reflex impulses and the external sphincter opens. In the tabetic this sensation is dulled or absent, as shown not only by the failure of the external sphincter to open, but also by two other factors. One is the complete lack of sensibility of the posterior urethra which enables the cystoscope to be passed without the least sensation on the part of the patient, even without cocainization. The other is the lack of normal desire to urinate, so frequently seen in tabetics. Some patients lack this sensation to such an extent that they empty their bladders only once or twice in the twenty-four hours, and then more from a sense of duty than of necessity.

When, however, the patient does urinate, the striated sphincter cannot be fully relaxed because of an increased tonicity, or because of paralysis. These factors are difficult to determine because this sphincter is believed to have two kinds of motility, reflex contractibility and voluntary relaxability (Hirt). The brain does not receive in due time the sensation from the bladder. Meantime the climax of the detrusor contractions has been reached, and the tabetic empties his bladder on the downward wave of these contractions (Rehfisch, experimental). Thus the stream is slow and small. As this condition becomes more marked, the patient begins more and more to exert pressure on the bladder by the contraction of the abdominal muscles, thus aiding the action of the detrusor.

But before even the patient has any hint of it, the same difficulty of micturition has been going on in a mild form. The detrusor has been working against an unyielding sphincter and as a result of this extra effort trabeculæ are formed. At first the detrusor can compensate for this obstruction, and, by hypertrophy and hard work, empty the bladder completely. In the course of time this compensation fails, even as heart compensation fails, and we find residual urine. We saw that some patients said they did not feel as if they emptied their bladders. This, then, accounts for this sensation.

To proceed with our theory, nocturnal incontinence occurs from a lack of sensory stimuli from bladder to brain. The bladder fills, contractions occur, the external sphincter is either forced by unusually violent contractions of the detrusor or is reflexly relaxed by them. During the day incontinence occurs less often, or not at all, because with the faculties alert the patient either perceives the desire to urinate and thus contracts his external sphincter voluntarily, or its reflex contraction is unconsciously increased.

Incontinence in tabetics is usually the overflow from a full bladder. It is generally spoken of as ischuria paradoxa. The bladder reaches a certain degree of pressure; this is sufficient to force the external sphincter by the violent detrusor contractions. A little urine escapes, thus lowering the intravesical pressure. Leakage then ceases, until, by the further accumulation of urine, the intravesical pressure is again raised to a point where the external sphincter is once more forced or relaxed and the incontinence recurs.

In somewhat the same way the momentary incontinence occurring with coughing, sneezing or any sudden muscular effort may be explained. The bladder is full, detrusor contractions are going on, the diaphragm becomes fixed, the abdominal muscles contract and compress the bladder. Aided by this pressure the detrusor is able to force a little urine through the external sphincter. This momentarily lowers the intravesical pressure, the brief contraction of the abdominal muscles ceases and leakage stops.

Finally, we must not forget the important factor of incoördination. This occurs in the muscles of locomotion; why not, therefore, in those of urination? It will aid us greatly in explaining wholly or in part the intricate puzzle before us. As Hirt says, "The necessary gradation of dosage of innervation for normal effect is destroyed." The sphincter does not open at the right moment, or with the poor "team work" it closes before the urine has had time to escape. Further evidence of the factor of incoördination is found in the educatability of the muscles concerned in urination, which I shall show later.

Still another factor must be considered in the explanation of these symptoms, namely, urinary infection. It was seen that this occurred, with a concomitant cystitis, in over 50% of cases. We also know that such an infection will cause irritability of the bladder and urgent urination in any individual. Therefore, when the symptoms of bladder infection are superimposed on those caused by the nerve and cord lesions in tabes, we find a doubly complex picture. It may help to explain certain symptoms on the one hand, but *per contra*, it makes the explanation of other symptoms more difficult.

In conclusion, I wish to call attention to the "exhaustion theory" of Edinger, as set forth by Adami and Nicholls. The reparative processes in the specific cells are impaired as a result of some toxin circulating in the system. The neurones which are normally most active, or are most constantly at work, are those which suffer. These are the sensory nerves from the muscles which play an important rôle in the regulation of muscular contraction, and are constantly submitting those stimuli by which we become aware of the condition of our muscular system. The purely sensory nerves which are constantly submitting sensations from the mucous membranes would be likely to suffer and give rise to sensory disturbance. In this way the bladder disturbances may be explained as the result of a destruction of sensory impulses, which that organ is constantly transmitting.

Briefly summarizing the above remarks it can be said that,

1. The bladder is guarded by two sphincters, an internal of smooth fibers, and an external of striated fibers, of which each has its special power of resistance.

2. The function of urination is controlled by branches from the hypogastric plexus (nervi erigentes).

3. The detrusor muscle may contract reflexly without connection with the central nervous system.

4. The urinary disorders of tabes are dependent on, (*a*) a disturbance in the transmission of sensory impulses from bladder, (*b*) incoördination of the muscles of micturition, (*c*) urinary infection.

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A BIOGRAPHY OF CHARLES SPON, M.D.*

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CHARLES SPON, the son of Mathieu Spon, and Judith Bernard, his wife, was born at Lyons on Dec. 25, 1609. Little is known as to his early education, neither of his life up to 1620, at which time he was sent to his uncle, Charles Spon, at Ulm. His biographers declare that he was particularly fond of Latin poetry, so that his professors already foresaw in him the ingenious author of the "*Myologia heroica carmine expressa.*" His familiarity with the French language, as well as the intellectual midst in which he passed his childhood, undoubtedly contributed to give him his great facility in the study of Latin. However this may be, he preserved during his entire life his great aptitude for this dead language.

He did not remain for any length of time at Ulm, and in 1625 he was in Paris as the disciple of the philosopher, Rodon, whom he left in 1627 to study physics in the Collège de Lizieux. In this institution, which was under the direction of the celebrated Guillaume Mazure, physics and natural sciences were taught under the name of physics. Taking all things into consideration, the preliminary studies in Spon's time were practically the same as they are to-day in the European universities, namely, the study of Latin and letters, philosophy and the natural sciences, only after which could one matriculate in the Faculty of Medicine.

Spon remained at Paris until 1632. He was fortunate enough to study under a coterie of eminent masters. He became especially intimate with Cousinot, who, at that time, had emitted his opinion on the two great medications of the period, namely, diet and bleeding, in the two following works: *Non ergo phlebotamia die critico crisin imminentem remoratur*, Paris, in 4, 1623, and *Ergo dieta plenior securior*, Paris, in 4, 1624. This friendship was of benefit to him inasmuch as when, later on, Cousinot became the first physician to Louis XIV, he obtained letters patent for his former student as quarterly physician to the king. Among other noted men who taught at Paris at this time may be mentioned Pyart, Merlet, Perreau and Charpentier.

* As Guy Patin's letters have long been consulted by both historians and physicians, it was thought that a biography of one of his most constant correspondants, Charles Spon, might be of interest, as little has been published about him. C. G. C.

In 1632 Spon went to Montpellier, where he became on intimate terms with Courtaud, the future adversary of Guy Patin, and with him he admitted the theories of Harvey. After a few months he took the bonnet of doctor and returned to Lyons, but he did not immediately commence to practice there.

His sojourns in Paris and Montpellier revealed to him the rivalry which then existed between the two Faculties, as well as between the theories taught and those who upheld them. This rivalry continued up to the end of the last century and contributed not a little to a wise reserve and a prudent skepticism on the part of the physicians of Lyons. The majority of them, like Spon, had studied at Paris, but, for some unknown reason, most of the degrees were taken at Montpellier, a fact that is made evident when one consults the works published at this time, because one meets, under the name of the author, D.M.M., more frequently than D.M.P.

Although Lyons, at this time, had no university, it possessed, on the other hand, a College of Physicians, whose reputation dated back many years, and although somewhat of a digression, a few words relative to this institution do not seem out of place, and what is to follow regarding it is quoted from Brossette's work entitled, "*Nouvel Éloge de la ville de Lyon*," which was published in 1711.

"The college of medicine of Lyons is illustrious, not alone because of its antiquity, but also on account of several learned physicians who have belonged to it, among which, without speaking of Abascantus, praised by Galen and Andromacus, one may mention during the latter centuries Gui de Chauliac, Simon de Renodis or of Pavia, François Rabelais, Henri Corneille Agrippa, Michel Nostradamus, Joseph Duchesne, known under the name of Quercetan Jacques Daléchamp, Charles and Jacob Spon and several others."

"Physicians who wished to enter this college must give proof of their capacity by public examination, which is carried out with much exactness and severity, so that it frequently happens that certain candidates are refused, although they may have obtained the degree of M.D. from some university. The physicians of Lyons take the title of professor, because they give public lectures on anatomy, surgery and pharmacy. We have several excellent works on medicine as well as on other subjects composed by the physicians of Lyons belonging to the college."

In point of fact, the College of Physicians is not as ancient as Brossette would lead one to believe, its foundation, in all probability, only dating back to 1540. In 1576 this institution was chartered by Henry III, while its statutes were confirmed in 1577. In order to become a member, it was not alone enough to pass the examinations, but the candidate must have shown that he had practiced for two years in some village in the neighborhood of Lyons. Spon, consequently, submitted to the rule and commenced practice at Pont-de-Vesle, a small town situated about a league from Mâcon.

In July, 1635, Spon came to Lyons and, on Aug. 7, in the same year, he was admitted to the learned assembly. It was from the time of his entrance into the College of Physicians that Spon commenced his true career. Favored by a large practice, which later on he confided to his son, Jacob, and one of his nephews, Charles, he received in 1645 letters patent as quarterly physician to the king. This distinction, much more honorary than beneficial in its pecuniary aspects, was accorded him, as we have already said, through the efforts of his former master, Cousinot. The care of his patients did not take up so much of his time as to prevent him from giving up several hours each day to his correspondence and to the publication of his many works which saw the light of day at Lyons. As a bibliophile he also exercised considerable influence.

The certificate of the "bourgeosie" which the consulate conferred upon him at the commencement of 1639 also contributed to increase his notoriety and facilitated his relations with the celebrities of his time. Above all should be mentioned the friendship which united him to Guy Patin, and it is by the intermediary of the latter that it has been made possible to penetrate a little into the private life of Spon. Spon's wife was greatly admired by Patin; she belonged to a Protestant family for a long time established at Lyons, her maiden name being Marie Seignoret. One of her brothers was a minister of the Reformed Church. She married Spon in 1643.

From 1645 Spon's life continued without any incident worthy of note. However, his nomination to the title of "vice decanus et procurator inclyti collegii medicorum lugdunensium" should be mentioned. The word "vice" is there merely to save appearances, because, being a Protestant, Spon could not be dean, and he did not feel that he could give up his religion simply for the title in full, but it may be said that he fulfilled his functions in a manner satisfactory to all. There exist several letters addressed to him in which he is given the full title of dean.

In spite of all these honors, the latter years of his existence were passed in sadness. His relatives and friends in Germany were ruined by war, while those of his own religion in France were closely watched. His son returned after a long absence in foreign lands, where he had left both his health and his fortune. All these circumstances undoubtedly contributed to hasten his death, the cause of which is unknown, but in a letter written to Abbé Nicaise, his son, Jacob, refers to the death of his father in the following terms: "He died universally regretted by all the good people and mourned by the poor, to whom he never refused his help. Ill for four months, he only took to his bed in the beginning of January. God preserved his mind up to his last breath."

He died on Feb. 21, 1684, as is shown by the following document: "1684, No. 1797. Charles Spon, Doctor of Medicine, died at Lyons on Feb. 21, 1684, and was buried the 22d of the same month at l'hôpital du pont du Rhône, the ordinary cemetery for those of the reformed religion, in presence of M. M. Brière, Seignoret, and Louis Gérard."

Although this biography is extremely short and undoubtedly far from complete, it is made so simple because only what is authentic of Spon has been given. This distinguished physician certainly played an important part by his writings and correspondence in the medical history of Lyons, as well as by his character and personal qualities.

Although Spon passed his life among savants, he never lost his love for Latin poetry and many admirable verses have been penned by him. In 1636 he commenced to write the maxims found in the Aphorisms of Hippocrates, but having discovered that others before him had had the same end in view, he never published this work. In 1661 he transposed the same author's book on Prognosis into Latin verses, publishing it under the title of "*Sydilla medica.*" Another work which had quite a success is his "*Myologia heroica carmine expressa.*" This work, upon which he worked during his entire life, would probably never have been printed if his son, Jacob, had not given the manuscript to Leclerc and Manget, and these authors, who published the well-known classical work in two volumes, entitled "*Bibliotheca anatomica,*" included this work among others by celebrated men. The work was published at Geneva in 1699.

This poem on the anatomy of the muscles is divided into two parts, the first being an enumeration in hexameters of all the muscles belonging to man, while the details are given in the second part, entitled, "*Musculorum microcosmi origo et inscrito,*" this being divided into twenty-three chapters. In this second part the author adopts the rhythm found in certain of Horace's Odes. As an example, his description of the muscles of the forearm may be given:

Est supinantum radios duplex pars
Longius necnon brevius duplexque
Diga pronantum puta tetragonus
Atque rotundus.
Musculas pronans radium rotundus
Condyli interni interiore ab ora
Brachii surgit mediaque radique
Parte quiescit.

Another work by Spon entitled "*Recueil de constitutions médicales*" contained his experience in the practice of medicine, but the manuscript, which had not been published up to the time of his death, fell into the hands of his son, Jacob, and was lost along with the letters comprising the correspondence of both the father and son.

Spon rendered great service to science by giving his attention to the publication of medical works printed at Lyons, particularly Sennert's letters, the observations of Schenkius, and, above all, Cardano's works. Schenkius, who was professor at Freiburg, and died in 1598, had published his works in the first place at Basle and at Freiburg, respectively, in 1584 and 1597, the whole comprising seven volumes. They were again published

at Frankfurt in 1600 and at Lyons in 1644, under the care of Spon.

As has already been said, he also edited Sennert's work. This writer enjoyed a much greater renown than Schenkius. He was born at Breslau in 1572, receiving the degree of doctor at Wittemberg in 1602, and later became professor of medicine at this university. He is supposed to have died in 1637 from the plague. His writings are of particular interest because he was the first to introduce chemistry into medical studies and endeavored to conciliate the principles of Paracelsus with those of Galen. The third author whose works were published by Spon was Cardano. The Lyons' edition, published by Spon, is dated 1663, and has for title: "*Cardani Hieronymi Opera omnia, cura Caroli Sponii Lugduni sumptibus Joannis Antonii Huguetan et Marci Antonii.*"

Lastly is to be mentioned a volume entitled: "*Appendice chimique à la pharmacopée de Lyon.*" This work, which was published under the auspices of the College of Physicians, in 1628, bears no author's name, but a second edition appeared in 1674 under the following title: "*Pharmacopea Lugdunensis reformata mandato et cura inclyti collegii medicorum Lugdunensium Lugduni Gallorum MDCLXXIV, Ejusdem collegii sumptibus excusa, typis Jacobi Faeton.*"

The last section of this pharmacopoea is, "*Appendix de medicamentis chymicis,*" and this appendix was written by Spon himself. This appendix was also printed in the first edition, but it consisted of only three short chapters. The fourth chapter, *De calcibus*, etc., was entirely due to Charles Spon.

To give a description of Charles Spon's correspondence and the influence that it had upon medical science of the time would be far too long, although full of interest.

In closing, however, one name among Spon's correspondents which has become almost inseparable with his should be mentioned, viz., Guy Patin. It is most curious to see the physician of Lyons united in friendship with two men who passed their lives in opposing each other as did Courtaud and Patin. The latter, with a mind filled with preconceived ideas and an open enemy to all progress, would hardly appear the sort to be a confidant of a man as liberal as was Charles Spon. Chance had brought them together in Paris and they continued their relations formed there by an active correspondence. The letters of Charles Spon have unfortunately been lost, but Patin's have luckily been preserved. From 1642 to 1664 the latter did not cease to write his friend.

Courtaud was born at Montpellier and received the degree of doctor in 1611. Being the nephew of Heroard, chief physician to Louis XIII, he received letters patent as quarterly physician to the king, but for reasons which need no discussion here he was obliged to sell his position and establish himself at Montpellier. Renowned for his polemics, Courtaud should more particularly be known for the service that he rendered in the teaching of medicine at Lyons, because it was through him that Charles Spon received his knowledge of the works which appeared at the time and was informed of their good qualities and defects. Courtaud was extremely learned and, consequently, was well placed to instruct Spon in the value of many medical works.

Clinical Department.

A CASE RESEMBLING MYOTONIA OCCURRING IN AN ADULT, DUE TO THE TRICHINA SPIRALIS, WITH THE PATHOLOGICAL FINDINGS IN THE MUSCLES.*

BY ISADOR H. CORIAT, M.D., BOSTON.

THIS case is reported rather fully because of the occurrence in an adult of a symptom-complex which is usually found only in childhood, of certain difficulties in diagnosis and finally of the interesting histological findings.

The patient, a healthy man seventy-one years of age, was referred to me by Dr. Metzger, of Lynn, Mass., for a peculiar stiffness of the leg muscles which interfered with his ability to walk. It is stated that the father of the patient, who was a blacksmith, developed an atrophy of the arm and hand muscles following a period of overwork at his trade, the condition persisting until his death, at the age of seventy-two. This localization of the muscular atrophy is an intersting confirmation of Edinger's theory of over-exertion. It appears, however, that the muscular atrophy in the father was a mere coincidence, as the type of disorder found in the son was distinctly non-hereditary, a pure myopathy, due to a specific infection and not to any atrophy of the motor cells of the spinal cord. Eight years before coming under observation there was a history of a severe gastro-intestinal attack. Shortly afterwards a stiffness was noticed in the right leg, followed by a weakness of the muscles of the right foot. Finally, the left leg and foot were likewise affected. There was usually no difficulty in starting to walk, but after a short time, or in excessive fatigue, there arose a sensation of tightening in the calf muscles which made further walking impossible. A short rest, however, restored the contractile ability of the muscles. In bicycle riding the same difficulty took place; he was able to go only a short distance, when further pedalling became impossible.

The neurological examination showed the following. The calf muscles were thin and flabby, the measurement for the right calf being 29 cm., for the left calf 30 cm. Occasional fibrillary twitchings were noticed in these atrophied muscles. The foot could be extended and flexed rapidly and easily, but after a few minutes these movements became slower and more difficult and then almost ceased, the calf muscles at the same time becoming hard and rigid. After walking a few steps the gait became stiff and the phenomenon of rigidity of the calf muscles was again found to take place. This rigidity disappeared in about a minute after the contractions had ceased. There was no difficulty in starting to walk or in the initiative voluntary movements. He could also arise quickly from a sitting posture. There was no overdevelopment or hypertrophy of the musculature. The bladder and rectum, the muscular movements of the upper extremity, the facial muscles,

* Read before the Mt. Sinai Hospital Clinical Society, Oct. 13, 1910.

the muscles of mastication and the ocular muscles were unaffected. It will be noticed that the muscular rigidity took place only after a number of muscular contractions and not at the beginning of voluntary movements, thus partially differentiating the condition from myotonia congenita (Thomsen's disease).

It was not a true intention rigidity and, therefore, this portion of the symptom-complex was only partially allied to a genuine myotonia. Further clinical investigation, however, brought out a more marked resemblance, particularly concerning the nature of the electrical reactions and the muscular contractions after mechanical stimulation.

On striking the calf muscles briskly with a percussion hammer, the muscular contractions were seen to spread slowly in waves from bundle to bundle. According to Jensen, who made myographic studies on the nature of this phenomenon, the myotonic muscles very slowly relax, the process consuming more than eight seconds, while the relaxation of normal muscles consumes only about 0.2 of a second. All the calf muscles (gastrocnemei, solei, peronei and anterior tibial group) reacted only to a strong faradic current. The contractions, however, were slow and sluggish, and after removal of the electrodes a long undulating contraction, spreading from one muscle bundle to another, remained for several seconds (Erb's myotonic reaction). Electrical stimulation of the nerve trunks in the popliteal space produced the same slow contraction waves in the calf muscles.

The knee-jerks were somewhat exaggerated, the plantar reflex normal and brisk, there was no ankle clonus and no Babinski. The Achilles jerks were absent. The pupils and ocular movements were normal. There was no nystagmus. Sensory disturbances were absent. An examination of the blood showed the percentage of eosinophiles to be normal.

Under local anesthesia a small piece of muscle was removed from each calf. The pieces of excised muscle were hardened in Zenker, imbedded in paraffine and stained with the connective tissue stain, hematoxylin-eosin and osmic acid. With the latter, no fatty degeneration of any of the muscle fibers could be made out. The connective tissue stain revealed encapsulated larvæ of the trichina spiralis.

The most interesting histological findings were in the muscle fibers. In my study of the muscles I compared the condition with some of the most recent advances in muscle histology, particularly the work of Meigs. These muscle fibers were in all stages of progressive degeneration. They seemed to fall into several groups: A few normal fibers, hypertrophied fibers with some increase of nuclei, progressive increase of nuclei with diminution of sarcoplasm and finally only a sarcolemma sheath enclosing a mass of nuclei. With a high power these latter were seen to be round mononuclear cells, containing a small nucleus and a large amount of protoplasm.

In these cells, mitotic figures could be seen. Because of their infiltrating and invading character, being found in largest number where the destruction of the sarcostyles was the greatest or where only a sarcolemma sheath remained, these cells were probably of the nature of scavenger cells (phagocytes), myophages they might appropriately be called. These cells seem to be different from the normal, spindle-shaped muscle nuclei, as these latter lie directly and singly beneath the sarcolemma sheath, whereas the scavenger cells were scattered in clumps all over the muscle fibers. In some of the muscle fibers which were cut transversely nothing could be seen but a hollow ring with a few fibers at the periphery. In the hypertrophied fibers the sarcostyles were found to be thickened and swollen, whereas in the atrophied fibers the sarcostyles were thin and very indistinct. Within the sarcolemma sheaths, masses of broken up sarcostyles were found, or sometimes the sarcolemma sheath was empty except for masses of scavenger cells. With a high power and a dim light the cross striations could be clearly distinguished even on the degenerated and atrophied sarcostyles, while in the hypertrophied sarcostyles the cross striations had entirely disappeared, the fibrils were swollen and took a faint, diffuse stain, resembling the condition seen in acute and subacute myositis. Occasionally other cells were seen, sausage-shaped, filled with dark granules and containing two or three nuclei. These were probably mononuclear cells in a process of rapid division. Eosinophile cells were absent, but these seem to have been found only in the acute and subacute conditions and not in the chronic stages of the disease.

The pathogenetic agent in the condition and the cause of the pathological findings in the muscles was undoubtedly the trichina spiralis. It is well known that the encysted larvæ of the parasite may remain in the muscle for years. Our case showed the typical gastro-intestinal disturbances as a premonitory symptom of the disease, and closely on this, the peculiar muscular stiffness followed, resembling a genuine myotonia.

The trichina spiralis occurs in three stages: The adult, which is found only in the intestine or its lymphatic spaces; the embryo, which wanders from the intestine (where the females deposit their young) either through the lymph or blood to the striated muscles and, finally, after the embryo enters the muscle fibers, it develops into an encysted larva. When muscular invasion occurs, the parasite then excites its irritative action and causes the fiber degeneration and nuclear proliferation. Not only may the skeletal muscles become involved, but the heart muscles as well, producing an acute myocarditis, the so-called trichinosis heart.

Other reported cases of muscular invasion by the trichina spiralis, when the muscles were examined, have shown similar findings. Histological studies of the muscle changes in chronic trichinosis are rather rare, however, as compared with the investigations on the acute type.

Even in Stäubli's extensive monograph on trichinosis, there is no description of the muscle findings in the chronic or quiescent stage of the disease. Neither has the literature furnished any description of the resemblance of the muscle phenomena in quiescent trichinosis to certain symptoms of the pure myopathies, such as myotonia.

Lorenz has reported three cases in various stages of the disease. He found, in the acute and subacute condition, cellular infiltration and a marked increase of sarcolemma nuclei, the formation of vacuoles, diffuse muscle degeneration, sometimes fatty changes and eosinophile cells. There was no fragmentation of the sarcostyles. In what he terms obsolete or quiescent trichinosis there was also found an increase of the sarcolemma cells, atrophy and degeneration of the muscle fibers and, in addition, granulation of the protoplasm and fragmentation of the fibrillæ.

In acute experimental trichinosis, Soudake-

witch found an increase of nuclei in the muscle bundles, while the sarcostyles retained their striated structure. If the process was allowed to progress, however, it was found that the muscle striations disappeared, while the number of nuclei increased. He refers to this increase of nuclei as muscular phagocytosis.

Ehrhardt has also studied the histological findings in experimental trichinosis. He found marked changes in the nature of the protoplasm, as shown by the microchemical reactions, fatty, granular and waxy degeneration, swelling of the fibers and an enormous increase of sarcolemma nuclei, in some cases with mitotic figures. The voluntary muscles of man showed less fatty degeneration and less mitoses of the nuclei than those of rabbits.

Brown studied four acute cases of trichinosis, and in addition to the marked eosinophilia in the blood he described the following changes in the muscles. There was marked fragmentation of the muscle fibers, which may break up in the long axis of the fibers into separate fibrillæ or into bunches of fibrillæ. Sometimes the fragmentation was transverse, thus splitting the muscle into distinct disks. Whether the fragmentation took place at the membrane of Krause or at the plane of Henson could not be determined. There was slight thickening of the sarcolemma and marked nuclear proliferation even where no parasites were seen. There were many polymorphonuclear cells between and within the fibers, and many cells whose protoplasm showed a marked affinity for the eosin stain. While these cells were probably phagocytic in nature, yet no ingestion of rod-shaped bits or disks could be seen.

Without again going into detail, it will be noticed that the muscle findings of the various observers corresponded almost exactly with the results of the examination in our case. We refer particularly to the degenerative changes in the fibers, the presence of large numbers of foreign cells, probably phagocytic in nature, and the marked increase of the sarcolemma nuclei. The nuclear degeneration and the cellular proliferation is undoubtedly caused by invasion with the larva of the trichina spiralis, the latter being a pathological process analogous to the lymphoid and giant-cell formation of the tubercle bacillus. In fact, many cells in our case were sausage shaped and showed many nuclei, resembling the giant cells in tubercular processes.

This infiltration and increase of nuclei has also been found in other pathological conditions where the muscles were affected. The condition is the same either in the pure myopathies or where the muscular changes are due to trophic influences from the central nervous system.

In subacute polymyositis, granular degeneration of the muscle fibers with great increase of nuclei has been found. This increase of nuclei and muscular degeneration has also been pointed out as occurring in amyotonia congenita or Oppenheim's disease (Collier, Holmes, Wilson, Skoog), in some cases of progressive neural muscular astrophy (Cassirer and Maas), and in Thomsen's disease (Schiefferdecker and Schultze). In fact, Dejerine and Sottas claim that the first phenomena of Thomsen's disease is a hyperplasia of the nuclei, probably due to a disease of the sarcoplasm. The mixture of atrophied and hypertrophied muscle fibers in our case is of interest as many of the pure myotonias have also shown a transition into muscular atrophy. In fact, such cases have been reported by Frohman and Hoffman in certain infantile hereditary forms of progressive muscular atrophy. It would seem from this fact alone that we can no longer interpret the myotonias as diseases of metabolism caused by toxic products, from changes in the parathyroid glands or from kreatinin poisoning, as Bechterew and Lundborg have done. They are rather pure myopathies due in one case to a specific irritative agent like the trichina spiralis, in the other to an unknown pathogenesis probably of a trophic nature, which acts on the primitive sarcostyles of the muscle tissue. In conclusion I wish to thank Dr. Leary, of the Pathological Department of Tufts College Medical School, for the preparation and staining of the specimens, and also for many valuable hints on the histopathology of muscle fiber.

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Reports of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

THIRTY-SECOND ANNUAL MEETING, HELD IN WASHINGTON, D. C., MAY 3, 4, 5, 1910.

JAMES E. LOGAN, M.D., *President.*
JAMES E. NEWCOMB, *Secretary.*

(Continued from No. 25, p. 958.)

THE TUBERCULIN TREATMENT OF PULMONARY TUBERCULOSIS IN OFFICE AND DISPENSARY PRACTICE.

JAMES ALEXANDER MILLER, A.M., M.D., of New York.

Tuberculin is now generally regarded by physicians who have had sufficient experience with it as a valuable aid in the treatment of pulmonary tuberculosis if used

in connection with other accepted methods. The method of administration is the so-called "clinical method" of producing tuberculin tolerance, the aim being to gradually accustom the patient to increasing doses of tuberculin, beginning with a very small amount easily tolerated and proceeding over a long period of time to large doses without the production of any reaction.

There is no material advantage in any one of the usual preparations of tuberculin, the active principle apparently being the same in each.

In selecting suitable cases for this treatment in the dispensary, it should be borne in mind that for incipient cases sanatorium treatment is always advisable and hospital treatment for advanced cases.

Tuberculin finds its widest usefulness in the intermediate cases for whom there is no adequate institutional provision. As the treatment is one of active immunization, it requires an ability to respond on the part of the patient, so that it should never be used in cases where the general condition is very poor or where there is fever.

A preliminary rest treatment, in order to build up the general condition of the patient, is almost always desirable, and throughout the treatment every effort must be made to carry out the general principles of the hygienic and dietetic treatment. Injections are given twice a week on an average, and the beginning dose varies from 1-100,000 mgm. to 1-10,000 mgm., and the progression of dosage depends on the clinical symptoms. The highest dose to be given depends upon the needs of the patient, in many cases reaching as high as 1 gm., with many others getting as good results from 1 mgm.

The time element is important, at least six months and often eighteen months being necessary to complete the course of treatment.

Often repeated courses of tuberculin are necessary in chronic cases. The results obtained in seventy cases treated at least three months in dispensary and private practice in New York City showed that 51.4% were either cured or their disease arrested, and that although these cases were treated over a period of five years, 58.5% of them are now well and in active life. This is especially suggestive as 87.2% were advanced cases.

With sufficient experience and proper precaution tuberculin treatment can be carried on quite as satisfactorily in the dispensary as in the sanatorium.

H. M. King, M.D. Results seem to justify further efforts in this direction.

Dr. Solis Cohen, Philadelphia, said that he had a very prolonged experience with tuberculin, and gave the first injection of tuberculin before his class at the Jefferson Medical College in Philadelphia in the early eighties, upon a patient with advanced tuberculosis of the larynx. Ten years ago the man was well and was a successful ranchman in Wyoming, but he has not heard from him since. Another patient treated fifteen or sixteen years ago for ulcer of the larynx had his disease arrested after several months of treatment, and two years later had his life insured in the Mutual Life Insurance Company of New York for $100,000. Other cases are still living at different periods of five to fifteen years or more, and doing well. He generally used the old tuberculin of Koch, beginning with minute doses, generally increasing them, as described by the last two speakers, and studying the patient rather than the disease. When he studied medicine some fifty-five years ago, it was the custom to apply fly blisters as near as possible over the site of the lesion of phthisis. Nothing was known of the bacillus tuberculosis at that time, but many of these cases improved, and since the tuberculin and serum treatment have been applied he has thought that possibly the absorption of some of the serum raised by those blisters was beneficial in the same manner as the serum when injected under the skin; acting on this principle it has been his custom with many patients to blister the chest below the clavicle, taking care that the blister shall not burst, so that the patient's own serum may be absorbed on the same principle as the autogenous methods, and he wished to give testimony as to the advantage of this method in properly selected cases and under proper precautions.

Dr. Bowditch, Boston, ranked himself in the class spoken of by Dr. Miller who tried it immediately after it was given to the public, and then abandoned it, being impressed by the statement that there was danger of causing disseminated tuberculosis. In recent years, feeling that possibly he might be withholding the treatment from some who might be benefited, he, in association with Dr. Griffin, applied the treatment on some patients, who were not progressing under the usual treatment, and the results were so startling that now in addition to beginning on patients who were not doing well under dietetic and hygienic treatment, he begins on the incipient cases also. At present he is greatly impressed with the value of tuberculin.

Dr. Griffin, Sharon, Mass., cited two cases in which Dr. Bowditch and himself had used tuberculin treatment, and briefly reported on twenty-eight cases which have had this treatment at Sharon and have now been discharged for more than a year. Of these twenty-eight patients, six have died, — two were really too far advanced to warrant advising it, but took it at their own request; four others were advanced cases and were treated as a forlorn chance, and four others are not doing particularly well. This leaves eighteen out of the twenty-eight cases which are doing well, which seems to be a comparatively good record, especially when it is considered that all were more than incipient cases. It is well known that the tuberculin will do no harm, and it frequently will do good.

Dr. Nagle, Boston, did not wish to be considered too enthusiastic about vaccine therapy, but believes that it is a valuable adjunct in treatment, and laid emphasis on the importance of the proper preparation of the vaccines and the proper method of giving them.

Dr. Minor, Asheville, N. C., considers tuberculin valuable when used selectively, but all cases do not do well on it, and some cases with the greatest care are unable to take it. He advised great care in the selection of cases, and warned against its dangers when used promiscuously.

Dr. Johnson, Paterson, N. J., said that he would judge that tuberculin has been successful in a number of cases, but the important consideration to the otologist is what can be done with the autogenous or stock serum for the destruction of bacterial elements which enter into ear diseases. Few of the cases which have come under his observation have been successful. While not wishing to deprecate the value of experiments in this direction, he is still waiting and hoping for reports of results which will seem to make it desirable for these agents to be used more generally.

Dr. Casselberry, Chicago, was impressed with Dr. King's statements in regard to the pronounced favorable effects of tuberculin on laryngeal conditions in pulmonary tuberculosis; if in tuberculin we have a remedy which will have in any considerable percentage of cases such effects as reported by Dr. King, a great advance has been made. He was also impressed with Dr. King's statement that in cases where he got very pronounced reactions from a larger dose than was intended, the effect was good. He had observed this himself in making the tuberculin test when it was given for the purpose of producing a general reaction —

weeks and even months afterward there had been marked improvement in the larynx. He had observed this, but did not trust to his own observation, and gave the credit to other circumstances. Dr. King has attributed the improvement to tuberculin, and there seems reason to believe he is correct. If the men who treat large numbers of pulmonary cases would always take note of the conditions of the larynx and the effects on conditions there produced by tuberculin treatment, much benefit would doubtless result.

DR. DUNN, Asheville, N. C., said that it is just such good conservative papers as those presented which help. The tuberculin cause has been more damaged by optimisms than by anything else. He always examines the larynx, and has been particularly impresed with the improvement taking place in distinct laryngeal involvement; this is not so striking in advanced cases where there are marked destructive changes. He has watched for the reactions, and has in so many instances seen the beginning of the improvement in the laryngeal reaction that he is convinced of its association with the reaction. He has used various forms of tuberculin, but the immediate results have been practically the same with all. He is very conservative in regard to the value of tuberculin and does not consider that sufficient time has elapsed to form a positive opinion regarding it, but at present he considers it a more or less valuable adjunct to treatment.

DR. I. H. HANCE, Lakewood, N. J., cited an abstract from an article written by a Frenchman which was in line with what had been said about auto-inocculation — in treating pleuritic effusions he withdrew some of the serum and re-inoculated the patient, and had treated five or six cases in this way. This seemed to be in accord with what Dr. Cohen had said about leaving the serum under the blister for reabsorption and auto-inoculation that way.

XII. TRANSPLANTATION OF A RIB CARTILAGE INTO THE NOSE IN A CASE OF NASAL DEFORMITY.

D. CROSBY GREENE, JR., M.D. Read by title.

In the correction of deformities of the nose, characterized by sinking and flattening of the bridge, there is a useful field for the transplantation of cartilage. It has been demonstrated that unless cartilage is transplanted with its perichondrium, it does not grow in the locality, but becomes gradually absorbed. For this reason the material derived from submucous resection of the septum is not usable. Costal cartilage may readily be obtained without injury to the individual, and was used in the case reported. A young man of twenty-two had received an injury in football eight years previously. The nose was struck by a blow across the bridge, which drove in both nasal bones, flattening them. This was followed by an abscess of the septum, with almost complete destruction of the cartilaginous septum. The result was a symmetrically flattened broad nose, with a membranous septum anteriorly. At operation, a chamber for the introduction of the cartilage was prepared by an intranasal incision of the mucous membrane of the septum, parallel to and just behind the muco-cutaneous junction. Through this incision the layers of membranous septum were separated, both in front and behind. The chamber thus formed was enlarged backward and upward over the nasal bones. Simultaneously with this operation, the cartilages of the eighth and ninth ribs were exposed by an oblique incision over their distal ends, and carefully freed from their attachments of muscle and fascia. The size and shape of the piece of cartilage to be used were determined by first fitting into the chamber made in the nose a piece of sterilized leather. This leather was trimmed to the desired shape, and then a piece of rib to match it was removed and placed in the nasal chamber. The wound was closed with a single suture. Four months after operation there was no evident tendency of the cartilage to become absorbed.

No discussion.

XIII. SYPHILITIC STENOSIS OF THE OROPHARYNX.

By J. M. INGERSOLL, M.D., Cleveland, Ohio.

The difficulty in preventing the contraction of syphilitic scar tissue is well known. Syphilitic stenosis of the oropharynx tends to interfere with respiration and deglutition.

In the case reported by the author, the syphilitic scar tissue extended across the oropharynx, uniting the lateral and posterior walls of the oropharynx with the tongue. About in the center of this scar tissue there was an opening ½ cm. in diameter through which the inspired air and food must pass. The opening was so small that it was impossible to secure a view below it. The breathing was labored. The patient had been losing flesh constantly and was quite weak and emaciated.

Incisions were made through the scar tissue at various times and bougies and specially prepared metal tubes were given to the patient to use in preventing the contraction of the scar tissue. The patient, however, failed to carry out the dilatation regularly and there was a constant tendency for the original condition to return.

Similar cases reported by Dr. B. F. Curtis, Dr. G. A. Leland, Dr. C. K. Briddon and Dr. W. H. Battle were cited.

A bibliography was also given.

DR. JOSEPH H. BRYAN, Washington, said that these are the most troublesome cases that the rhinologist has to deal with and that he has never had a successful case; every one has had recurrence of the adhesions, and it seems impossible to give the patients any complete relief from their troubles. He has had cases go along for six or eight months, possibly a year, and still contraction has taken place and the conditions have been almost as bad as they were originally. He had tried the flap operation, but the result was not very satisfactory.

XIV. REPORT OF THREE CASES OF LYMPHOSARCOMA OF THE NASOPHARYNX AND TONSILS, WITH RESULTS OF OPERATIVE AND MEDICINAL TREATMENT.

By CLEMENT F. THIESEN, M.D., Albany, N. Y. Read by title.

In one of the three cases, that of a boy aged fourteen years, the growth was primary in the nasopharynx. Diagnosis confirmed by laboratory examination of pieces removed under cocaine. Nasopharyngeal growth removed under ether. No recurrence in nasopharynx, but soon after operation growth of left tonsil developed with a large rapidly growing metastasis in left side of neck. Boy died several months after operation.

In second case, a man aged forty-eight years, the growth was apparently confined to the left tonsil, a large nodular mass. Laboratory diagnosis — lymphosarcoma.

Operation under cocaine anesthesia; growth including the tonsil dissected out. Not much bleeding. No return in site of operation, but growth in larynx six weeks after operation with great dyspnea. Tracheotomy performed. Patient now in good condition.

Growth in larynx not increasing in size. Full doses of arsenic internally apparently having good effect.

In the third case, the sarcoma was confined to the right tonsil. Patient, a man aged thirty-two years.

Laboratory diagnosis — lymphosarcoma. Growth including tonsil dissected out. Patient in good condition at present writing. Apparently no involvement of glands of neck.

XV. OBSERVATIONS OF THE VARIETY OF GERMS PRESENT IN WOUNDS FOLLOWING OPERATIONS ON THE FAUCIAL TONSILS.

By Alexander McCoy, M.D., Philadelphia. Read by title.

In order to see at first hand if there were any predominating organisms in the pseudo-membranes which form over the exposed surfaces after tonsillotomies and tonsillectomies, cultures and smears were made from these membranes in twenty cases operated upon in the last few weeks. These cases were operated upon in groups of from three to six. Many of them had been associated in the same ward for two or three days before operation. The others were brought to the hospital the morning of the day that they were to be operated upon. They were kept in the hospital on an average of about five days. The cultures were taken by drying the area to be cultured with a sterile cotton swab; then, quickly applying a second sterile cotton swab, turning it once or twice and pushing up part of the pseudo-membrane, this was cultured on Loeffler's blood serum media and incubated twenty-four hours. Smears were immediately made from this same swab. In a number of the cases cultures and smears were made from both sides of the pharynx. Five of the cases were cultured on the first day after operation, nine on the second day, four on the third day and two on the fourth day. The smears all showed the usual polymorphonuclear and epithelial cells. The bacteria were numerous and very variable. In all the smears there were cocci. In two spirochetes and long thin fusiform bacteria were seen, and in two irregular bacteria with beadings resembling polar bodies were present. There were in most all a number of the varied forms of mouth bacteria not in such numbers as to have any definite significance. The cultures showed nothing significant between those taken early and those taken on the third and fourth days, and there was nothing definite between those from the children that had played together for a few days previous to operation and those who were not in a ward together until after operation. Two of the cultures were mostly streptococci. Nine were mostly streptococci and staphylococci. One showed the predominating organism to be a short stout spore-bearing bacillus. In another the predominating organism was a short stout unidentified bacillus singly and in pairs. In nine of the cultures there was no predominating organism, but colonies of cocci and bacilli common in the mouth. In four of these, however, a large diplococcus was found, and in two, irregular beaded bacilli. In one culture there were proteolytic colonies which digested the blood serum. In none of the cultures were Klebs-Loeffler bacilli found. From the cultures of these twenty cases we conclude that there is no predominating organism in the pseudo-membranes; that the ordinary mouth bacteria are to be found in all of them in variable quantities, the cocci being most numerous, and that the cultures will more often show staphylococci and streptococci, probably due in part at least to their greater hardiness on artificial media.

XVI. REPORT OF A FATAL CASE OF ASPHYXIA DUE TO PRESSURE ON THE TRACHEA AND BROUGHT ABOUT BY A TUBERCULOUS MEDIASTINAL GLAND.

Cornelius G. Coakley, M.D.

Dr. D. Bryson Delavan, New York, cited his experience with a similar case. The patient was a beautiful well-nourished child who had been seized with so severe a dyspnea that tracheotomy had to be performed. The tracheotomy had not been very well done and had not succeeded in relieving the breathing, which was possibly excusable under the conditions under which it had been performed. Under anesthesia a very careful examination was made, and an obstruction was found in the middle part of the trachea. There had been severe spasm of the larynx in addition to the pressure on the trachea. Of course the tracheotomy relieved the laryngeal obstruction. The child had a high temperature following the operation and died eight days later. Autopsy showed a tuberculous lymph node pressing on the trachea.

Dr. Chevalier Jackson, Pittsburg, said that the case was an exceedingly interesting one. We seem to be gradually eliminating, one after another, the things which used to be classified as status lymphaticus. These conditions are now being analyzed, and so work as Dr. Coakley had done is going to discover their causes. He also cited the case of a child in which a tracheotomy had been unsuccessful, and in which autopsy showed that both lungs were tubercular. In this instance a lymph gland had broken down and burst into the bronchus. It was a very unusual case. With such men as Coakley and Halsey working along these lines these cases will be differentiated.

Dr. Ingals, Chicago, said that the case recalled to his mind one which, although not exactly apropos, not being tubercular, yet had many of the symptoms of Dr. Coakley's case. The child was brought to the city with an almost typical history of foreign body in the bronchi, a sudden paroxysm of cough coming on at irregular intervals, the child almost suffocating at times. Nothing was shown by the x-ray. The child was placed on the table and ether started with a view to bronchoscopy, but the breathing stopped and the child could not be resuscitated. Later a post-mortem was secured, and a large thymus was found, part of which was adherent very low down, which was evidently the cause of the trouble.

Dr. Solis Cohen, Philadelphia, reported a case which had been referred to him, after examination by another laryngologist, who reported it to be a tumor lymphaticus. He saw a tumor, but as the child was not suffering much at the time, he gave it a placebo and made arrangements for more complete examination the next day, but it was seized with another attack and died. He asked Dr. Coakley to describe the character of the pressure. He had seen some cases of thymus gland pressure where as soon as incision was made the relief was so great that the dyspnea ceased.

Dr. B. W. Shurley, Detroit, said that the case interested him from another point of view. Before the days of bronchoscopy it occasionally happened that one saw cases of apparent laryngeal dyspnea with a long series of intubations where the tube was passed with absolutely no relief. All are familiar with such cases, yet the textbooks scarcely mention the presence of mediastinal disease in children. The presence of lymph nodes can sometimes be determined, but it is exceedingly difficult. Some diagnosticians can classify these cases in children quite frequently, but he himself had not been able to do so.

Dr. Price-Brown, Toronto, asked if this could not be applied to adults as well, and cited a case in which he had been called upon to treat a man who had suffered from difficult respiration for some time. Intubation gave no relief; tracheotomy gave relief for some hours, but then he died. There was no pressure, no diagnosis of any disease, yet the result was fatal.

Dr. Coakley, closing the discussion, said that he had been much interested in what Dr. Jackson had

said about status lymphaticus. He had always questioned why these cases of sudden death should occur where no pathological lesion could be found. In the case he had reported, the first report was status lymphaticus; the second, occlusion by tubercular nodule, the thymus being rather large in size. It was very interesting from the pathological standpoint.

Dr. Cohen had asked about the dyspnea. When the child came to his office, its color was at first perfectly normal, and he saw no indications of any such conditions as the parents described. There was a very slight roughness, and a little dyspnea, but after the child walked up and down across the floor there was considerable dyspnea and moderate cyanosis; it was apparently inspiratory and expiratory, but with the expiratory more marked than the inspiratory. Dr. La Fetra, who has had a wide experience with children, declared that it was an absolutely normal condition to him. There was absolutely no cough, no temperature, nothing to go by.

XVII. ESOPHAGEAL DIVERTICULA, AND REPORT OF A CASE.

EMIL MAYER, M.D., New York.

The difficulties in the way of diagnosis, as well as the question of treatment, were, in the speaker's opinion, sufficient to warrant the presentation of this subject. He emphasized the need of great care in the use of instruments until the nature of the disease was sufficiently known to make their use reasonably safe; disastrous results might follow instrumentation when aneurysm was present. Routine methods should be employed, including ballooning the esophagus, and the esophagoscope should be employed last of all. In the case presented, the x-ray picture was made after a soft rubber tube filled with shot had been inserted. This gave a picture that required no interpreter. His final conclusion was that modern surgery offers much hope for these sufferers.

DR. CHEVALIER JACKSON, Pittsburg, said that he would rather as the first procedure have Dr. Mayer pass the esophagoscope gently and see what he was doing than to have the bougie passed blindly. That seems a much more dangerous procedure than a skillful esophagoscopy.

DR. T. GORDON WILSON, Chicago, reported a unique case of diverticula which occurred in a young lion twenty months of age, showing that diverticula can occur without the age limit. He has observed that as age proceeds one can notice a thickening of the lower walls, but this case showed that the same thing can occur in youth. Another point is that there is a thickening of what Killian called the sphincter muscle of the esophagus.

DR. MAYER, closing the discussion, said that if any of his patients were going to Dr. Jackson or Dr. Mosher, he would wish these gentlemen to examine them any way they liked, but a warning should be sounded for those who have not special skill, and their attention should be called to the possible harm that may be done even by the esophagoscope, which is perfectly safe in trained hands. For this reason, speaking generally, he would advise a routine method of examination.

(*To be continued.*)

Book Reviews.

Diseases of the Stomach and Upper Alimentary Tract. By ANTHONY BASSLER, M.D. Philadelphia: F. A. Davis Company. 1910.

This volume constitutes a very valuable work on the anatomy, physiology, chemistry, nosology and therapeusis of the upper alimentary tract. This includes essentially the esophagus and stomach; diseases of the mouth are but briefly considered, and although duodenal ulcer is included, diseases of the pancreas are omitted as belonging more properly with those of the biliary passages. The book is "copiously illustrated with numerous half-tone and line text engravings and fifty-six full-page plates (with nearly one hundred figures, plain and in colors, from original photographs and drawings)." Among the best of these illustrations is a series of fifteen x-ray plates representing various pathologic, gastric and esophageal conditions. The chapters on methods of physical examination seem particularly pertinent and well written. The volume should be useful to internists and general practitioners as well as to specialists in gastro-enterology.

The Diseases of Infants and Children. By EDMUND CAUTLEY, M.D. Cantab., F.R.C.P. Lond., Senior Physician to the Belgrade Hospital for Children; Physician to the Metropolitan Hospital; formerly Casualty Physician and Assistant Demonstrator of Physiology at St. Bartholomew's Hospital. Pp. 1042. New York: Paul B. Hoeber. 1910.

In the preface the author states that this book is written for the general practitioner rather than for students. In consequence, description of some common ailments have been curtailed and more attention given to rare and more recently recognized maladies. Illustrations and charts have been omitted because the author believes that this "kindergarten method of teaching" is a disadvantage to the practitioner "in that the expectation of seeing the typical cases of pictorial illustration increases the danger of overlooking those early stages in which disease is amenable to treatment."

It is, of course, impossible to review in detail a book of over one thousand closely printed pages. The book contains an immense amount of material which is not very well arranged. There are many things in it which are not found in most textbooks, such as a description of the theories of heredity, a chapter on the anomalies of growth, and one on disorders of the higher faculties. The author, evidently, does not appreciate in any way the real meaning and purposes of percentage feeding, and is seemingly unaware of the recent work of German authorities on the disturbances of digestion and metabolism. It seems strange to an American pediatrician to see so much drugging recommended in the treatment of diseases of infancy and childhood. It seems to us that much of the treatment mentioned is irrational and more unnecessary. The book is especially interesting in that it gives the English point of view of pediatrics, which is different from either the American or the German.

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101 Tremont Street, Boston, Mass.

CHRISTMAS AND THE PHYSICIAN.

The annual recurrence of the Christmas season affords the physician many objects of interesting contemplation and reflection. Apart from sporadic instances of gastronomic indiscretion, it usually brings a lull in his work, for every one is too busy to pay much attention to the ordinary physical ailments. This is true at hospitals as well as in private practice: every patient, except the sickest, has a cheerful look and the wards assume an unwonted holiday atmosphere. Probably the latter phenomenon is largely produced by the Christmas decorations which modern charity spreads with a lavish hand through so many institutions. There is a therapeutic magic about the holly, even when it is artificial, or, as one might say, synthetic; and its little red berries, like many other boluses, do more good by suggestion than much medicine that is swallowed. Then there is the Christmas tree, which every hospital, great and small, has nowadays, often with an attendant Santa Claus. The children's hospitals are the places to see the Christmas tree in its perfection, for here the tinsel and spangles, the candles and stars, find their most appreciative and unsophisticated enjoyment. The toys of nowadays are likewise wonderful to contemplate, — the ingenious mechanical engines, the fluffy cats and rabbits, and the woodenly expressive "dux" animals. Children easily forget their troubles in joy over such as these. Nor are we much unlike them: after all, life consists of caring for and playing with one toy after another. Perhaps this is the chief secret in the spell of Christmas, that for a time it conciliates all ages on a common meeting-ground of happiness. It is a spell that extends beyond the day and through a whole week, till New Year's comes to symbolize the beginning of life and work anew. Our Christmas, like all else in civilization, like man himself, is a "piebald miscellany," a fantastic mixture of pagan and Christian, of Scandinavian, Teutonic, Celtic and Latin customs, superstitions and observances. It is the truce of the old year, which for a time opens the barriers between earth and Olympus, that the Olympians may descend. The physician must see much of the tragedies of life; let him appreciate also this time of human reconciliation that heals diseases which are beyond his cure with the immemorial anodyne of peace and good-will.

REPORT OF THE SURGEON-GENERAL OF THE NAVY.

The annual report of the Surgeon-General of the United States Navy, dated Aug. 23 last, but just received from Washington, describes "the operations of the Bureau of Medicine and Surgery for the fiscal year ending June 30, 1910, and the health and sanitation of the Navy and Marine Corps for the calendar year 1909." The data of this report present many valuable and interesting statistics, which, with the comment and discussion of Surgeon-General Stokes thereon, make very profitable and instructive reading.

Among the points to which especial attention may be directed is the table showing the relative importance of causes of death. Of 286 deaths in the Navy and Marine Corps in 1909, 51 were due to drowning, 40 to tuberculosis, 19 to pneumonia, and 17 each to typhoid fever and gunshot wounds. That tuberculosis should kill so many men leading a supposedly healthy outdoor life seems surprising until one considers the large part probably played in this disease by predisposition and the fact that conditions aboard a modern warship are far different from those on a sailing vessel; but that more men should die of drowning than from any other cause is unnecessary and preventable. It is proverbial that sailors do not know how to swim. No doubt the percentage of swimmers among sailors is as high as among landsmen, but their opportunities for falling into the water are much greater. To prevent the waste of life consequent upon this deficiency, Dr. Stokes recommends that instruction in swimming be made part of the training of every officer and man, and that his "demonstrated ability to swim a substantial distance, say, 300 yards, and to sustain the head above

water for fifteen minutes in the presence of a light breeze," be made one of the first requirements for his being allowed to remain in the service.

Another point upon which especial emphasis is laid is the maintenance of general physical efficiency in the navy. With the change from sailing to steam vessels, with the specialization instead of general training required of different members of the crew, this has become more and more difficult to secure. Dr. Stokes believes that the present annual physical test does more harm than good, since it puts upon the individual a sudden strain for which he is often unprepared. He therefore recommends the substitution for it of "more recreative and continuous athletic exercise, and for the younger personnel the adoption of the Swedish system of physical training" instead of the present setting-up exercises.

The problem of venereal disease is always one of the gravest among sailors, as indeed it is in civil life. Its importance is indicated by the fact that in 1909 gonorrhea alone constituted over a sixth of all the cases of sickness in our navy, more than any other one disease; and gonorrhea, chancroid and syphilis together comprised over a quarter of all cases. During the same period disability resulting from syphilis was the reason for more discharges from the service than any other one cause. As a means of combating this "greatest damaging disease group," Dr. Stokes urges the enforcement "throughout the entire service, ashore and afloat," of a system of venereal prophylaxis such as has been adopted and practiced with considerable success in the Asiatic and Atlantic fleets. Details of this system are not stated in the present report, but its employment certainly seems to have been of some value.

Finally, in discussing the relatively high incidence of typhoid fever in our navy, the Surgeon-General says: "English, German and American military statistics and experiences point with increasing certainty to the advisability of adopting typhoid vaccination for the protection of persons likely to be exposed to infection," and recommends the extension of compulsory anti-typhoid vaccination "to the entire personnel under the age of fifty years."

These are merely topics selected for comment from among many of equal value and interest which make this report worthy of careful perusal by physicians and sanitarians throughout the country.

STANDARDS IN SELECTION OF RECRUITS FOR THE ARMY.

A RECENTLY published report of the Secretary of War presents significant data relative to causes of rejection of recruits for the United States army. Of 100,996 candidates examined during the past year, only 19% were accepted. The rejections, however, were not all on physical grounds, since a considerable number were for lack of requisite mental, moral or technical qualifications. The standard of physical efficiency required in the army is doubtless very high, and the failure of so many to attain it does not necessarily indicate physical degeneracy among the people. Incidentally, the theoretical selection of the physically fittest to constitute the army of a country illustrates the fallacy of war, since it condemns to celibacy and exposes to disease and death during their years of greatest vigor many of those who should be doing the work and increasing the numbers of the nation. In a large country like ours, with a small army in times of peace, this disadvantage is negligible and is probably more than offset by the gain in discipline of those who serve a limited period. But in countries with a relatively large army and in times of war, as in our Civil War, the fittest are selected to perish, and the less fit physically survive to propagate the species.

SOME GENEROUS PUBLIC BEQUESTS.

THE will of the late Mrs. William O. Moseley, of Newburyport, Mass., which was filed for probate on Dec. 22 in the Essex County Probate Court at Salem, Mass., made public bequests amounting to $370,000. To the Anna Jaques Hospital, Newburyport, is given the sum of $200,000, to be divided into two equal funds, the income only of which is to be used respectively for regular expenses of the hospital and for the maintenance of free beds. A further sum of $10,000 will revert to the hospital after the death of one of the private beneficiaries. Sixty thousand dollars are left to Harvard University "for the establishment of two fellowships to enable medical students of marked ability to pursue their studies abroad." The Moseley Professorship of Surgery was established some years ago in the Harvard Medical School by a gift of $50,000 from Mrs. Moseley's husband. Mrs. Moseley's will further contains bequests of $5,000 each to the Convalescent Home of the Massachusetts General Hospital, the Massachusetts Charitable Eye and Ear Infirmary, and several

general charitable or religious institutions. Mrs. Moseley had also been a liberal donor in charity during her life. Her generous legacies will preserve the memory of these benefactions and increase the debt of gratitude already owed her by the community.

THE RETIREMENT OF DR. JELLY.

The resignation of Dr. George F. Jelly from the various activities with which he has long been identified should not pass unnoticed. Since 1869 he has been closely associated with work in connection with the insane, first as assistant and later as superintendent of the McLean Hospital, and since 1879 as a practitioner in this city, specializing from the first in psychiatry. It is not, however, to his wide recognition as a practitioner in this difficult field that we desire to call attention, but rather to his broader service to the public as examiner for the Registration Department of Boston, a position which he held for thirty years, and as an active member of the State Board of Insanity, of which he was chairman for ten years. In these posts he has always been known as a man of exceptional judgment, combining with a wide and well-considered experience a degree of common sense and wisdom not often seen in dealing with the intricate and far-reaching problems of insanity. These qualities have made him an expert witness sought and trusted in these days of over-refined knowledge on the one hand and of unscrupulous ignorance on the other. In the retirement of such a man from public life, the city, which he has so well served, loses an influence which has always worked for exact justice and fair dealing in a field of endeavor in which firm opinions are alike difficult to form and to maintain. What Dr. Jelly represents is an invaluable asset to any community. His place will be difficult to fill.

MITIGATION OF DROUGHT IN NEW ENGLAND.

In the issue of the Journal for Dec. 15, we commented editorially on the continuance of drought in Massachusetts, and the seriousness of the situation thereby induced in several New England towns. During the succeeding weeks, the shortage of water became even more acute. The supply at West Springfield, Mass., was entirely exhausted, so that drinking water had to be obtained through a temporary line of hose across the toll bridge from Springfield. At Worcester, Mass., the available supply was reduced to one fifth its normal amount and water famine seemed so imminent that all hydraulic elevators and public watering-troughs in the city were cut off. In Connecticut, the cities of New Haven, Norwich, Hartford and Waterbury were all much reduced in water supply. At Greenwich, Conn., the supply fell so short that schools and factories were closed and steam furnaces put out. There was similar shortage in the adjacent villages of Portchester and Rye in Westchester County, New York. Happily, however, the extensive and heavy rain of Dec. 24 has relieved this situation to a considerable extent, and the thaw associated with it has added still more to many reservoirs. The water supply in numerous localities is still scanty, notwithstanding, and, in the absence of further rain, there is likely to be a recurrence of the recent scarcity before the end of the winter.

MEDICAL NOTES.

Birth of Quadruplets. — From Dunellen, N. J., is reported the birth on Dec. 25 to Mrs. John Cortright, of Sebring's Mills, N. J., of quadruplets, three boys and a girl, at her first pregnancy. The children are said to be all living and apparently healthy. Their weights are not stated.

Institute of Dental Pedagogics. — The annual convention of the National Institute of Dental Pedagogics has been held in Washington, D. C., on Dec. 27, 28 and 29 of this week. It was attended by deans of dental colleges throughout the United States and by other official delegates. The subject for discussion by the convention was "The Methods of Teaching Dentistry."

Hookworm in Alabama. — It is reported from Montgomery, Ala., that a recent investigation by Dr. H. G. Perry, a state field agent of the Rockefeller Hookworm Commission, shows that 70% of the schoolchildren of Dothan, Ala., and 75% of the rural population of Houston County in that state, are infected with uncinariasis. These figures corroborate previous estimates of the extent of hookworm infection in the South and of the magnitude of the task of its eradication.

Abatement of the Cholera Epidemics. — During the week ending Dec. 24, only 9 new cases and 3 deaths of Asiatic cholera were reported from Italy, as against 22 cases and 7 deaths during the preceding week.

Report from Lisbon states that the cholera epidemic in Madeira is also decreasing. On Dec.

19 the Portuguese cruiser *Almirante Reis* was dispatched from Lisbon to Funchal with a number of physicians and marines and with fresh supplies of medicine and food.

A CENTENARIAN. — Mrs. Margaret Cassidy, who died on Dec. 24 at the House of the Good Shepherd in Philadelphia, was said to have been born in Scotland in 1805. She was the oldest inmate of the House, in which she had lived for the past thirty years. It is believed that she has no surviving relatives.

TWO OPIUM SEIZURES. — Two large seizures of opium in this country were reported last week. The first was at Buffalo, N. Y., where, in a raid by federal officers, $5,000 worth of the crude drug were seized and ten Chinamen arrested on a charge of preparing it for smoking without paying the internal revenue duty. The second seizure was made at San Francisco by customs inspectors, who found and confiscated 75 tins of opium, valued at $4,000, on board the liner *Asia*.

SEIZURE OF ADULTERATED FOODS. — Last week 350 cases of tomato catsup shipped from Mt. Holly, N. J., were seized by United States officials. The catsup is alleged to contain "filthy, decomposed and putrid animal and vegetable substances." On complaint of the federal pure food inspectors, the United States marshal at San Francisco also seized a shipment of tomato paste from New York, supposed to be similarly adulterated.

BUBONIC PLAGUE IN MANCHURIA AND CHINA. — In last week's issue of the JOURNAL we recorded a temporary abatement of the epidemic of bubonic plague in Manchuria. Recent advices from St. Petersburg, from Pekin and from Victoria, B. C., however, report a recrudescence of the disease in Manchuria, and its extension into Mongolia, an adjacent province of northern China. The situation is complicated by flood and famine. It is stated that in Ankin alone 2,500,000 persons are destitute. Under such circumstances, and with the customary Oriental disregard of sanitation, the spread of the plague may be expected to be very rapid and the loss of life enormous.

AN INSTANCE OF BODY-SNATCHING. — We are accustomed to think of burking and body-snatching as obsolete practices of a bygone day. Report from Montreal, Canada, however, records the recent arrest of a former medical student in Jarvis, Ont., for robbing a grave for anatomic material. The grave was found empty and the body it should have contained was discovered in a local cold storage warehouse in a barrel marked "poultry." There was a time when such zeal in the cause of science would have been almost laudable, but in the present state of the anatomy laws in the Dominion such an occurrence is exceedingly unfortunate, since it will bring only misunderstanding and discredit on the medical profession.

TWO LIVING CENTENARIANS. — Mrs. William T. Temple, of Reading, Mass., is said to have been born in that town on Dec. 20, 1810, and celebrated last week the supposed centennial anniversary of her birth. She has spent her entire life in Reading, and has occupied her present home for the past fifty-seven years. In her youth she was a nurse. She married in 1840, and has had five children, of whom the eldest, a son, and the youngest, a daughter, are still living. Her husband died in 1898. She is very deaf, but is otherwise in excellent health.

James Forbes Foster, who is alleged to be one hundred and seven years of age, has recently been evicted from his home in Kansas City. He was born in Buffalo, N. Y., and has always led a roving life as a mine-owner and adventurer. It seems unfortunate that he cannot pass even his declining years in peace.

VON LEIDEN'S KLINIK. — The report that Dr. Von Leiden's Klinik in Berlin has been closed since his death is apparently incorrect. Our readers may be interested to know that the Klinik at 4a Cornelius Strasse is being continued under the direction of Excellenz Von Leyden's pupil and assistant, Prof. Dr. Paul Lazarus.

DANGERS OF THE MISTLETOE. — It is reported from Blytheville, Ariz., that three small children in the neighboring town of Luxora died on Dec. 25 of acute poisoning from eating mistletoe berries. The berries of English mistletoe are not commonly considered toxic; in fact, among the medieval pharmacologists they used to be employed as an antispasmodic. The external use of the mistletoe is more pleasant, though at times even more dangerous, than its internal administration.

NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL. — The New York Post-Graduate Medical School and Hospital is making arrangements, on the completion of its new buildings, greatly to extend the scope of its laboratory work, both as an adjunct to the increased hospital service, — which will consist of approximately 400

beds, — and as regards departments for teaching pathology, bacteriology and clinical organic chemistry.

In addition to the laboratory for tropical medicine, in collaboration with the medical departments of the army and navy, it is proposed to provide ample space for the separate laboratories for pathology, bacteriology and chemistry under one general direction.

Cats and Tuberculosis. — A physician from Cleveland, Ohio, has recently called renewed attention to the liability of the dissemination of tuberculosis by domestic cats. It has for some time been recognized that cats are particularly prone to tuberculosis, diphtheria and other infections, which they are, therefore, likely to transfer between individuals and from one family to another. The habit of fondling pet animals is always dangerous, particularly on the part of children, whose affections are likely to outstrip their discretion. In other climates, the dog is even more liable to be a disseminator of serious infections, but among us the cat is probably more often a source of disease.

BOSTON AND NEW ENGLAND.

Acute Infectious Diseases in Boston.— For the week ending at noon, Dec. 27, 1910, there were reported to the Board of Health of Boston the following cases of acute infectious diseases: Diphtheria 52, scarlatina 25, typhoid fever 2, measles 37, smallpox 0, tuberculosis 55.

The death-rate of the reported deaths for the week ending Dec. 27, 1910, was 18.36.

Boston Mortality Statistics. —The total number of deaths reported to the Board of Health for the week ending Saturday, noon, Dec. 17, 1910, was 217, against 215 the corresponding week of last year, showing an increase of 2 deaths and making the death-rate for the week 16.79. Of this number 118 were males and 99 were females; 212 were white and 5 colored; 122 were born in the United States, 93 in foreign countries and 2 unknown; 40 were of American parentage, 148 of foreign parentage and 29 unknown. The number of cases and deaths from infectious diseases reported this week is as follows: Diphtheria, 36 cases and 4 deaths; scarlatina, 33 cases and 1 death; typhoid fever, 2 cases and 2 deaths; measles, 26 cases and 1 death; tuberculosis, 62 cases and 24 deaths; smallpox, 0 cases and 0 deaths. The deaths from pneumonia were 34, whooping cough 2, heart disease 19, bronchitis 3. There were 11 deaths from violent causes. The number of children who died under one year was 29; the number under five years 46. The number of persons who died over sixty years of age was 67. The deaths in public institutions were 85. Cerebrospinal meningitis, 1 case and 1 death.

Of the above infectious diseases the following were non-residents: Consumption, 2 cases. Scarlet fever, 2 cases. Diphtheria, 2 cases and 1 death. Measles, 1 death.

Deducting deaths of non-residents, the total is 202 and the death-rate is then 15.63.

Appointment of Chief Veterinarian. — Dr. P. J. Cronon, of Boston, was last week appointed chief veterinarian of the city street department, to succeed Dr. L. H. Howard, the former incumbent, who recently resigned.

Meeting of Army Nurses. — A meeting of the Massachusetts Army Nurses' Association was held in Dorchester last week. This organization consists of the survivors of those women from Massachusetts who served as army nurses during the Civil War. At the meeting there were several addresses, followed by a reception.

Gift to the Deaconess' Hospital. — The gift is announced, from a resident of Concord, Mass., of one hundred acres of land in that town to the New England Deaconess' Hospital, together with $10,000 towards the erection and maintenance there of a new hospital building, similar to the one now in Longwood. This gift, of charity and sentiment, should prove a source both of benefit to the town of Concord and of happiness and satisfaction to the generous donor.

Suspension of Druggists' Licenses. — The Boston Licensing Board has recently suspended until April 30, 1911, the license of two South Boston druggists to sell intoxicating liquor. This action was taken on complaint by the police board that the druggists in question made illegal sales of liquor on Sunday to members of the force. The suspension of their licenses is not only a just punishment, but also will act in the interest of temperance and of police efficiency.

Illegal Sales of Milk and Vinegar. — In the central municipal court last week two milk dealers, of Cambridge, Mass., and Somerville, Mass., respectively, were fined $10 each for having in possession, with intent to sell, milk not up to the standard required by law. Another dealer was fined $10 for selling milk without a license, and a fourth $10 for selling as pure cider vinegar

vinegar that was not such. Another milk dealer, who admittedly sold loose milk from an open receptacle, in violation of the ordinance of the board of health, was fined $10 and appealed his case to the Supreme Court on the ground that in the district which he supplies the conditions are such as to make it impracticable to supply milk as required in sealed receptacles.

REPEATED REQUEST FOR CITY HOSPITAL APPROPRIATION. — In the issue of the JOURNAL for Dec. 15, we noted the recommendation by the trustees of the Boston City Hospital of an additional loan appropriation of $297,800. The request for this appropriation has been repeated, on the ground that there is urgent need of provision for the accommodation of contagious cases which cannot be received at any other large Boston hospital.

THE HARVARD CANCER HOSPITAL. — Work has been begun and is now well under way in the construction of the new Harvard Cancer Hospital, on the corner of Vandyke Street and Huntington Avenue, near the Harvard Medical School; and it is expected that the building will be completed by Sept. 1, 1911. An additional fund of $250,000 is needed as an endowment for its maintenance, and it is to be hoped that generous contributions may complete this sum by the time the hospital is opened.

APPOINTMENT TO THE STATE BOARD OF INSANITY. — On account of ill health, Dr. George F. Jelly, of Boston, recently resigned his position as a member of the Massachusetts State Board of Insanity. As his successor, Governor Draper nominated, last week, Dr. Edward Wyllys Taylor, of Boston, instructor in neurology at the Harvard Medical School, and one of this JOURNAL's editors. Dr. Jelly's years of faithful and efficient service have set a particularly high standard of duty for the office to which Dr. Taylor is called.

CHANGES AT ST. ELIZABETH'S HOSPITAL. — It is announced that St. Elizabeth's Hospital, Boston, has recently acquired a large and valuable tract of land in Brighton on which to erect a new hospital building. Coincident with this announcement is that of the appointment of Dr. William A. Brooks, Jr., of Boston, as chief of the surgical staff, with Dr. Edward A. Supple, of Boston, as his first assistant; and of Dr. Thomas F. Harrington, of Boston, as chief of the medical staff, with Dr. Michael J. Cronin, of Roxbury, as his first assistant. This reorganization of the hospital staff will presumably become operative before the removal of the hospital to its new site.

RELOCATION OF FOXBORO STATE HOSPITAL. — In a recent special report to the Massachusetts Legislature, the trustees of the Foxboro State Hospital for Inebriates recommended the removal of this institution to more suitable and extensive quarters. It is now announced that 648 acres of land in the townships of Norfolk and Walpole, Mass., have been selected for this new site, and will shortly be purchased, with the buildings thereon, from an appropriation available for the purpose. The transfer of patients will not begin until spring and will be gradual. It is intended that the institution, which will be conducted on the cottage system, shall be a model for the rational, scientific treatment of inebriety. "The hospital for men will receive, under the new conditions, patients who come voluntarily or who are committed upon application; young habitual drunkards placed on probation by the court on condition that they spend a specified time at the hospital, and suitable cases transferred on parole from the colony for the detention of chronic drunkards. The hospital for women will receive voluntary and probation cases. The detention colony will receive non-criminal, habitual drunkards from the criminal courts on indeterminate sentence." The old buildings at Foxboro will be held by the State Board of Insanity for use in the accommodation of the insane in Massachusetts.

NEW YORK.

SATURDAY AND SUNDAY ASSOCIATION. — The Saturday and Sunday Association is making an effort this year to secure $200,000 by its annual collection, or about double the amount usually raised. In answering its appeal, Mayor Gaynor, who is, *ex officio*, chairman of its distributing committee, has sent a check for $50 enclosed in a letter in which he commends the purposes of the association to the public.

HUNTING CASUALTES. — In New York state during the recent open season for deer, there were 28 hunting casualties, 3 men were killed and 3 seriously injured through being mistaken for deer. Through carelessness or accident 16 others were killed and 6 injured, and practically all these casualties were in the Adirondack region. Last year the record was much less serious, there having been 15 casualties, of which one third proved fatal.

Verdict against Physicians for Performing an Autopsy. — A verdict for $8,000 was rendered by a jury in the Queens County Supreme Court, Long Island City, Borough of Queens, on Dec. 12, in a suit for $10,000 damages brought against two physicians for performing an authorized autopsy on the body of a patient who died last year in St. Joseph's Hospital, Far Rockaway. The action was undefended, one of the physicians being absent in Cuba and the other denying that he was one of the defendants, and the case will no doubt be appealed. It was stated by the counsel for the plaintiffs, who were the children of the deceased, that this was the first case of the kind ever brought to trial in the state of New York.

Annual Report of Charity Organization Society. — In the twenty-eighth annual report of the Charity Organization Society, just issued, considerable attention is devoted to the subjects of over-work and occupational diseases. In the discussion of the latter it is stated that the existence of a serious form of phosphorus poisoning in match factories in this country has recently been revealed, contrary to popular impression. A bill placing a prohibitive tax on the use of the poisonous but less expensive variety of phosphorus in the manufacture of matches, the report goes on to say, has been introduced into Congress. By this legislation, when secured, the United States will finally take its place on this point with all the other important commercial countries of the world.

An Alliance between the Presbyterian Hospital and Columbia Medical School. — It has just been announced that when the new Presbyterian Hospital, which is to be erected on a site adjoining the Rockefeller Institute, has been finished, an alliance will go into effect between the hospital and the medical department of Columbia University which will correspond with the conditions existing at the Johns Hopkins University and Hospital. While for many years most of the visiting staff of the Roosevelt Hospital have been professors or instructors in the Columbia Medical School, it would appear that there has never been any official connection between the two institutions. Under this new arrangement, however, the appointments to the medical and surgical staff of the Presbyterian Hospital will be under the direct control of the medical school. Through the liberality of the late John S. Kennedy and others the hospital authorities have ample funds for the construction of the new buildings, and now it is stated that the sum of $1,300,000, contributed by Edward S. Harkness and another donor whose name is withheld, is available for carrying out the proposed alliance with Columbia. Among the features agreed upon is a department for research work, which is to be under the control of the university. It is also announced that in addition to his other gift, Mr. Harkness will provide $300,000 for the erection and equipment of a special surgical pavilion at the hospital. The contemplated new buildings of the College of Physicians and Surgeons will no doubt be located in the immediate vicinity of the new hospital.

Increase and Prevention of Insanity. — A campaign for the prevention of insanity in the state of New York, which is to be carried on under the direction of the State Charities Aid Association, was inaugurated on Dec. 23 at the Academy of Medicine, at a meeting held under the auspicies of the Section on Public Health of the Academy. Dr. A. W. Ferris, President of the State Commission in Lunacy, said that the state was now caring for 35,520 mental defectives, of whom 32,658 were insane, a proportion of 1 lunatic to every 289 of the population. Last year 6,400 new cases were admitted to the state hospitals, a net increase of 1,200. The increase of known cases, however, was no doubt due largely to the more accurate methods of diagnosis now practiced, and the more thorough attention paid to the insane. He assigned alcohol as the most prominent cause of insanity, nearly 30% of all the cases under the charge of the state being due to this. Another important cause was too free immigration. The total foreign population was 35%, but the percentage of foreign-born lunatics in the institutions was 45%. Among the measures mentioned by Dr. Ferris which might be adopted are the following: Field work in hospital districts by special physicians attached to the staff; co-operation of physicians and special societies; social service by lay committees; a general campaign of interest and education; special care of the backward or abnormal child. Prof. M. Allen Starr said that he looked upon the campaign most hopefully. Only 30% of cases that reached the insane asylums were of classes not susceptible of preventive treatment; 20% produced by alcohol and drugs are not beyond hope of control, and 50% due to infections, auto-intoxication, emotional strain and overwork are preventable. An address was also made by Homer Folks, Secretary of the

State Charities Aid Association, in which he told how it was purposed to conduct the campaign and stated that already voluntary contributions sufficient to carry on the work for three years had been received.

Current Literature.

MEDICAL RECORD.

DEC. 17, 1910.

1. KAKELS, M. S. *Concerning the Ehrlich-Hata Preparation No. 606.*
2. MOSCHCOWITZ, A. V. *Intussusception of the Appendix.*
3. POTTER, N. B. *Typhoid Spine: Report of a Case, with Radiograms; Completed Bibliography.*
4. ERDMANN, J. F. *A Case of Stab Wound of the Heart.*
5. CHANCE, B. *Spontaneous Rupture of a Glaucomatous Eyeball.*
6. SECOR, W. L. *A Brief Comparative Study of Heart Stimulants used during Fevers, with a Recommendation of the Precordial Compress.*
7. ROBINSON, W. J. *Chancroids Due to a Peculiar Cause.*

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1. ARROWSMITH, H. *Certain Aspects of Rhinolaryngology and Their Relation to General Medicine.*
2. PROESCHER, F. *A Contribution to the Etiology of Poliomyelitis.*
3. BRYANT, W. S. *Epidemic Poliomyelitis.*
4. HARRISON, R. *Report of a Case of Congenital Hypertrophic Stenosis of the Pylorus.*
5. O'MALLEY, M. *A Case of Mixed Cell Sarcoma of the Pituitary Body with Report of the Autopsy Findings.*
6. OTTENBERG, R. *Frochlich's Syndrome in Cases of Pituitary Tumor.*
7. BENEDICT, A. L. *Spontaneous Appearance of Indigo Blue in the Urine.*
8. FRANKEL, B. *Insufficientia Pylori.*
9. KNOTT, J. *Magic and Medicine: A Study in the Borderland of Scientific Light and Darkness.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

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1. LUSK, G. *Metabolism in Diabetes.*
2. WALLACE, G. B. *Recent Advances in the Treatment of Diabetes Mellitus.*
3. WOODYATT, R. T. *Action of Glycol Aldehyd and Glycerin Aldehyd in Diabetes Mellitus and the Nature of Antiketogenesis.*
4. *PRATT, J. H. *Relation of the Pancreas to Diabetes.*
5. HEIDINGSFELD, M. L. *Hairy or Black Tongue.*
6. SKILLERN, R. H. *Comparative Pathology of Hyperplastic and Suppurative Ethmoiditis.*
7. *SEVER, J. W. *Tuberculosis of the Ankle-Joint and Tarsus.*
8. MACLEOD, J. J. R. *Various Forms of Experimental Diabetes and Their Significance for Diabetes Mellitus.*
9. MAGNUS-LEVY, A. *Dehydration by Dietetic Measures, an Interpretation of the Karell, Oertel and Widal Treatment of Circulatory and Renal Diseases.*
10. COHEN, H. *Home Quarantine.*
11. CARREL, A. *Treatment of Wounds.*
12. GWATHMEY, J. T. *Vapor Anesthesia Apparatus.*
13. GOULD, G. M., AND DURAND, A. C. *Eye-Strain a Cause of Exopthalmic Goiter.*
14. RUSS, R. *Elephantiasis of Scrotum and Penis with Operation.*
15. BOESE, W. H. *A Case of Chronic Appendicitis Simulating Neoplasm.*

4. Pratt summarizes his historical and experimental article on diabetes as follows: Despite opposing theories and conflicting observations in regard to the relation of the pancreas to diabetes, some facts have been definitely ascertained. The total removal of the pancreas always leads to a fatal diabetes. Atrophy of the pancreas produced by excluding all the pancreatic juice from the intestine is associated with a marked decrease in the limit of assimilation for sugar. Transplantation of a portion of the pancreas prevents the development of diabetes when the rest of the gland is extirpated. Lesions of the islands of Langerhans are found in most cases of diabetes. They are usually associated with changes in the acini. In the progressive atrophy which follows the occlusion of all pancreatic ducts in dogs and cats, both islands and acini are gradually destroyed. All the islands may disappear, however, without diabetes resulting. The conclusion is justified that the pancreas has an internal function concerned with the metabolism of sugar. The nature of this function, relation of the islands to the acini, the significance of histologic changes in both structures, still await solution.

7. Sever points out that tuberculosis of the ankle-joint and bones of the foot in children is insidious in onset, chronic in its course and attacks usually young children. The expectant or conservative method of treatment is preferable to the operative. Time is saved and deformity less under the conservative than by the operative method. There is also less danger of secondary joint involvement and general tuberculosis by pursuing the non-operative plan. The prognosis is fairly good for hips, but poor for a good ankle-joint in which there is no disability. The results are good for joint motion when the disease affects the metatarsal bones. [E. H. R.]

THE LANCET.

NOV. 19, 1910.

1. LINDSAY, J. A. *An Address on the Prospect before the Medical Student of To-Day.*
2. *FITZWILLIAMS, D. C. L. *Hereditary Cranio-Cleido-Dysostosis, with a Review of all the Published Cases of this Disease: Theories of the Development of the Clavicle Suggested by this Condition.*
3. *LEES, D. B. *Twenty Cases of Pulmonary Tuberculosis Treated by Continuous Antiseptic Inhalations.*
4. JONES, R. *On Fractures in the Neighborhood of Joints.*
5. *TOMBLESON, J. B. *On the Use of Potassium Bichromate in the Treatment of Phthisis.*
6. WILLIAMS, E. K. *Two Cases of Compound Fracture with Tetanic Symptoms; Recovery after Injection of Anti-Tetanic Serum.*
7. MACDONALD, A. *Osteomyelitis of the Left Clavicle.*
8. MASTERMAN-WARD, J. L. *A Case of Uterus Bicornis Unicollis.*

2. Fitzwilliams, in a long and careful article, goes over the entire subject of hereditary cranio-cleido-dysostosis from every point of view and presents in tabular form all the previously reported cases of this rare condition and two cases of his own.

3. Lees reports on 20 additional cases to the 30 he has already described of pulmonary tuberculosis treated by continuous antiseptic inhalations. [Neither this method, nor the number of cases, nor the individual cases, are convincing. — J. B. H.]

5. Tombleson reports six patients with pulmonary tuberculosis who did remarkably well under ½-gr. doses of potassium bichromate t. i. d. p. c. [The remarks made concerning the previous article apply here equally well. — J. B. H.] [J. B. H.]

NOV. 26, 1910.

1. *BASTIAN, H. C. *Observations on Thrombotic Softening of the Spinal Cord as a Cause of So-Called "Acute Myelitis."*
2. BLAND-SUTTON, J. *The Diseases of Elephant's Tusks in Relation to Billiard Balls.*
3. HUTCHINSON, J. *Diffuse Lipoma.*
4. *COBBETT. *The Progress of Infection in Phthisis. Containing a Plea for the Treatment of Early Cases by Absolute Rest.*
5. EMERY, E. *The Preparation of "606": The Treatment of Syphilis by Ehrlich's Method: Indications and Contra-Indications. Observations made in Germany.*
6. HIRSCH, C. T. W. *Motoring Notes.*

1. Bastian first emphasizes the wide discrepancy of the present views as to the pathogenesis of acute myelitis. He then discusses the etiology and pathogenesis of this

condition according to his own views and briefly mentions acute poliomyelitis as an allied condition. He believes that the evidence is overwhelming that in the great majority of cases of acute myelitis and poliomyelitis the affection is caused not by an inflammation, but by thrombosis of some of the vessels of the spinal cord where in the latter disease it is not due to a special degenerative process.

4. Cobbett discusses the question of immunity in tuberculosis and the healing of any tuberculous process by the gradual acquiring of this immunity. He believes that the severity of the disease in any given case is in direct proportion to the number of bacilli present in the body. He believes that immunity can best be acquired by rest, and urges rest as the main feature of the treatment of this disease in its early stages. [This article is written by a pathologist; the sentiments herein expressed hardly accord with those of the majority of clinicians at the present time. — J. B. H.] [J. B. H.]

British Medical Journal.

Nov. 19, 1910.

1. *Morison, R. *An Address on Some Points Concerning Tubercle, Syphilis and Malignant Disease.*
2. Jordan, A. C. *The Röntgen-Ray Appearances of Thoracic Aneurysm.*
3. Elworthy, H. S. *Miner's Nystagmus.*
4. Jeffrey, G. R. *On the Cause of Neuropathic States.*

The British Medical Association.

Section of Pharmacology and Therapeutics.

5. *Grünbaum, O., *et al. Discussion on Lactic Acid Therapy.*
6. Unna, P. G. *New Facts Concerning Chrysarobin.*
7. *Meyer, H. *The Action of Lime Salts.*
8. Miller, H. C. *The Treatment of Morphinomania by the "Combined" Method.*
9. Fortescue-Brickdale, J. M. *Comparative Therapeutic Value of the Organic and Inorganic Compounds of Certain Elementary Bodies.*
10. Laidlaw, P. P. *The Action of Hydrastinine and Cotarnine.*
11. *Wenckebach, K. F. *Discussion on the Effects of Digitalis on the Human Heart.*
12. Dale, H. H. *The Active Principles of Ergot.*
13. *Mathison, A. J. *Treatment of Lobar Pneumonia.*

Section of Laryngology.

14. Tilley, H. *Introductory Remarks.*
15. Von Eicken, C., *et al. Discussion on Direct Methods of Examining Air and Food Passages.*
16. Hett, G. S., *et al. Discussion on the Removal of the Tonsils.*

1. Morison discusses syphilis, cancer and tuberculosis as they simulate each other and as they occur in various combinations. Syphilis and tuberculosis he considers a deadly combination; cancer and syphilis are firm allies; if a person over sixty years of age contracts syphilis, his death from cancer may be anticipated.

5. Grünbaum, Hewlett, Bryce, Harley and others discuss the value of lactic acid as a therapeutic measure as used in sour milk preparations. The general opinion seemed to be that although in certain cases of constipation, rheumatic states, etc., it was of value, as a general thing the same good result could be gained by older and simpler methods. Moderation in eating is much more important than the drinking of sour milk.

7. Meyer believes that it has been clearly demonstrated that lime salts diminish the permeability of the walls of the blood vessels.

11. Wenckebach gives an excellent general consideration of the therapeutic and physiologic effects of digitalis; Mackenzie considers the subject from the clinical standpoint; Turnbull believes in pushing the drug up to full doses in order to get good results. The danger of doing harm is so slight as to be neglected. Raised blood pressure he believes to be no contra-indication.

13. Mathison makes an urgent plea for the use of creosote and potassium iodide in pneumonia. He speaks of a series of 20 cases with no mortality and with abortions in 4 cases. His arguments are not convincing. [J. B. H.]

Nov. 26, 1910.

1. Wright, G. A. *A Clinical Lecture on the Use of Elastic Traction and Elastic Pressure in Surgery.*
2. *Rudolf, R. D. *An Address on High Blood Pressure in Arteriosclerosis.*
3. Lewis, T. *The Reaction of the Heart to Digitalis when the Auricle is Fibrillating.*
4. Penfold, W. J. *Variations of the Fermentation Properties of the B. Typhosus.*
5. Ringrose, E. *A Case of Diaphragmatic Hernia in an Adult.*

The British Medical Association.

Section of Otology.

6. Law, E. *Introductory Remarks by the President.*
7. Bárány, R., *et al. Discussion on the Diagnosis and Treatment of Infective Labyrinthitis.*
8. Howell, M. *Some Remarks on the Connection between Irritation of the Mucous Membranes throughout the Body and Middle-Ear Catarrh.*
9. *Barr, J. S. *Experiments Bearing upon the Practicability of Treating Meningitis (Septic and Specific) by Means of Lavage of the Cerebrospinal and Subarachnoid Spaces.*
10. Yearsley, M. *The Value of Ossiculectomy in Chronic Middle-Ear Suppuration.*
11. Horne, J. *Deafness and Diseases of the Ear in Relation to the Public Services and Insurance, Their Bearing on Forensic Cases and the Choice of a Means of Earning a Livelihood.*
12. Milligan, W., *et al. Discussion on Aural Tuberculosis in Children.*

Section of Laryngology.

13. Fraser, J. S. *Congenital Atresia of the Choanæ.*
14. *Pegler, L. H. *Headaches in Association with Obstruction in the Nasal Passages.*
15. Wilkinson, W. C. *Tuberculin in Laryngeal Tuberculosis.*
16. Birkett, H. S., *et al. Discussion on Vasomotor Rhinitis.*
17. Spicer, R. H. S. *Cancer of the Throat.*

2. Rudolf, in a very practical article, discusses high blood pressure in arteriosclerosis and its treatment. The cause of a high blood pressure in this condition is usually to be classed among one or more of the following groups:

(1) Toxemia of some kind which directly poisons the vessel walls, such as syphilis.

(2) Some toxin which directly raises the blood pressure, as in the case of adrenal tumors.

(3) Compensatory high blood pressure.

(4) Simple nervousness.

(5) Arterial disease alone.

The treatment of this condition he discusses along with the cause. He compares the pressure-lowering effects of nitroglycerine, sodium nitrate, erythrol tetranitrate and mannitol nitrate. The latter maintains its effect even longer than erythrol and is to be preferred. He does not discuss baths, massage and other methods of reducing blood pressure.

9. Barr carried out an interesting experiment on the cadaver in which a lumbar puncture was done and the needle left in. After this a one-half-inch trephine opening was made above and slightly behind the left ear and a canula thrust into the left lateral ventricle. Carmine-colored fluid was then allowed to flow through the needle, which in less than a minute appeared through this canula in the lumbar region. The writer was about to continue this research on animals when a boy came into the hospital with diffuse septic meningitis. All other methods failing, and the boy being in a moribund condition, this operation was performed and large amounts of pus washed out through the lower opening. The pulse dropped and the general condition of the patient greatly improved. He died later on. The diagnosis was confirmed by autopsy.

14. Pegler, in a careful paper, discusses and classifies the various kinds of headaches associated with obstruction in the nasal passages. He presents in tabular form the characteristics of headaches due to other causes and their differential diagnosis from headaches of nasal origin.

[J. B. H.]

DEUTSCHE MEDIZINISCHE WOCHENSCHRIFT. No. 47.

NOV. 24, 1910.

1. HORTSMANN. *Etiology and Treatment of Detachment of the Retina.*
2. *SAHLI. *Further Development of the Sphygmobalometer or the Investigation of the Pulse Energy.*
3. *WEISS, O., AND JOACHIM, G. *Relation of Heart Sounds and Murmurs to the Electro-Cardiogram.*
4. WECHSELMANN AND SEELIGSOHN. *The Effect of Dioxydiamidoarsenobenzol on the Eye.*
5. KRON, H. *Concerning Substitution for Muscle Defects.*
6. JENSEN, V., AND KOCK, A. *A Case of Paratyphoid Periostitis.*
7. JAPHA, A. *Use of Rhythmical Heart Compression in Unconsciousness in Children and Similar Conditions.*
8. RICHTER, P. *Stable Hydrogen Peroxide Preparation Pergenol and Its Use in Dermatological Practice.*
9. SCHOENEN. *A New Inhaling Apparatus.*
10. WALDOW. *A Simple Bandage.*
11. BERG. *Microphotography.*

2. Sahli in the year 1907 described a new apparatus for detecting the energy or working power of the pulse. He has worked over this method and now presents it in full with diagrams of the apparatus and a description for figuring out the energy of the pulse wave. He considers that these determinations will be of considerable value in regard to diagnosis and prognosis.

3. As a result of simultaneous registering of heart sounds and the electrocardiogram the following facts have been established: The first heart sound begins about .05 to .07 seconds after the beginning of the point of the initial rise; the second heart sound about .02 second after the following wave. The systolic murmur of mitral regurgitation begins at the time that the first sound begins in the normal heart, while the systolic murmur of aortic insufficiency begins later by about .06 to .09 second. The diastolic murmur of aortic insufficiency comes at the time of the second heart sound. In mitral stenosis, as a rule, the first sound comes late; the height of the stenosis murmur also comes after the first sound should begin. With reduplication of the first sound the first part is not caused by the auricles contracting. [C. F., JR.]

MÜNCHENER MEDIZINISCHE WOCHENSCHRIFT. No. 46.

NOV. 15, 1910.

1. RUPPEL. *Immunization of Animals against Tuberculosis.*
2. MÜLLER, R. *Arthropods as Transmitters of Disease.*
3. TREUPEL, G. *The Ehrlich-Hata Injection for Lues of the Central Nervous System, Tabes and General Paralysis.*
4. WILLIGE, H. *The Ehrlich-Hata 606 Used for Psycho-Neurological Conditions.*
5. LOEWY, A. *Effect of Pantopon on the Respiratory Center.*
6. BERGIEN, W. *Effect of Pantopon on Respiration and Circulation.*
7. SOHLER. *Trypsin Treatment for Surgical Tuberculosis.*
8. LOELE, W. *Demonstration of an Oxydizing Substance of the Body by Means of a Color-Reaction.*
9. ZWEIFEL, E. *Lumbar Anesthesia in the Gynecological Clinic of the University in Leipzig.*
10. MUSKAT. *Flat-Foot in the X-Ray Picture.*
11. v. METTENHEIMER, H. *Calorimetric Estimation of Infants' Food.*
12. KRAUSS, H. *Treatment of Hemophilia.*
13. LEVINGER. *Multiple Osteoma of the Air-Passages.*
14. BÖHM, F. *Occurrence of Typhoid in Augsburg.*
15. SANDER, H. *A Bandage Cutter.*
16. COHN, M. *The Question of Bolus Treatment.*

No. 47. NOV. 22, 1910.

1. *KREHL, L. *Caution Advised in the Use of Iodine.*
2. *ERB, W. *Intermittent Claudication.*
3. GARRÉ, C. *Etiology of Recurring Hydrops and Neuralgia of Joints.*
4. *STRASBURGER, J. *Influence of the Blood Vessels on the Circulation.*
5. ZIELER, K. *Development and Results of the Modern Treatment of Syphilis with Arsenic.*
6. PASINI, A. *A Simple Method of Injecting "606."*
7. *HAUDEK, M. *X-Ray Diagnosis of Penetrating Sclerosed Ulcer of the Stomach.*
8. JASCHKE, R. T. *The Question of Marriage for Women having Heart Lesions.*
9. CASSIRER, R. *Cyst of the Cerebellum Cured by Operation.*
10. EXNER, A. *Permanent Cure of Cancer by Radium-Rays.*
11. PHILIPPI AND MÜHLE. *Poisoning by Eating the Roots of Hyoscyamus Niger.*
12. GIEMSA, G. *A New Quick Method of Staining with My Azur-eosin Solution.*
13. STEINITZ, E. *The Simplified Wassermann Test of v. Dungern and Hirschfeld.*
14. DRÜNER. *The Operation for Phimosis.*
15. BRÜNINGS. *A Simple Aid to Diagnosis of Cancer of the Esophagus.*
16. TAVEL, E. *The Advantage of Carrard's Patient Lifter.*

1. Krehl says that he has frequently seen symptoms of thyroidism follow the use of iodides, and that these symptoms may be progressive and persistent. He believes that this is more likely to happen in cases having demonstrable disease of the thyroid gland or nervous symptoms suggestive of hyperthyroidism. He, therefore, advises against the use of iodine in all such cases. Cardiac "neuroses," loss of weight, irritability or any one of these complex functional disorders, a variety of minor complaints and even Graves' disease itself may be traced to iodine. The writer has not found that any one preparation is less dangerous than another; neither is he prepared to say in what cases iodine can be used without risk.

2. The evidence presented by the writer in the form of statistics points clearly to excessive smoking as a cause of the arteritis of intermittent claudication. He points out also that when no pulse can be felt in an artery there may be a systolic murmur produced by the passage of blood through it. Another interesting observation is that of 14 cases of claudication who smoked enormously, 12 had general arteriosclerosis. Erb has recently looked for apocamnosis as described by Goldflam and has found it in every case, 6 in all. After a little exercise of the legs and feet, blanching of the skin of these parts occurs.

4. Basing his deductions upon experimental work and observations, Strasburger gives an interesting discussion of the functions of the heart and blood vessels in maintaining the circulation. His arguments are too complex to be summarized briefly.

7. In this article Haudek publishes the results of observations on a much larger number of cases than he had had for the previous paper. He reaffirms and adds to the points which he brought out then, and says that he now believes penetrating ulcers of the stomach to be common rather than exceptional. His success in recognizing such with the fluoroscope is astonishing. The diagnosis was proven by autopsy or operation in most of his cases. [G. C. S.]

BERLINER KLINISCHE WOCHENSCHRIFT. No. 47.

NOV. 21, 1910.

1. WECHSELMANN. *Local and General Hypersensitiveness in the Use of Ehrlich's "606."*
2. ROSENTHAL, O. *Concerning "606."*
3. BAUM, J. *Mercury Reaction in Secondary Syphilis.*
4. KOWALEWSKI, R. *Optic Neuritis as an After-Result of Ehrlich's "606."*
5. NEISSER, C. *The Importance of Germ Carriers in Lunatic Asylums.*
6. WOLFF-EISNER, A. *Concerning Non-Toxic Tuberculin.*
7. MÜNZER, A. *The Internal Secretion of the Generative Glands.* (Conclusion.)
8. *SCHIELE, G. W. *The Treatment of Severe Wounds.*
9. KAISERLING, C. *Proof of the Existence and Importance of the Cell Lipoids.*

8. The author, in discussing the treatment of severe wounds where dirt and infection are ground into the edges of the wound and the tissues torn and bruised, declares that the best treatment is to disinfect by means of the scissors and forceps. Cutting away all torn margins and shreds of tissue he considers of more importance than irrigations or chemical antiseptics. When all the surfaces

of the wound are freshened and cleaned in this way he believes in approximation of the wound loosely so as to allow drainage, but tightly enough to insure first intention healing. [J. L. H.]

ARCHIV FÜR KLINISCHE CHIRURGIE.

VOL. 93. PART 2.

1. KRAUSE, F. *The Treatment of Non-Traumatic Forms of Epilepsy.*
2. *WENDEL. *Surgery of the Esophagus.*
3. MYGIND, H. *Otogenic Meningitis, with Particular Reference to Its Operative Treatment.*
4. SCHÖNE, G. *Experimental Work on Healing of Wounds and Growth of Ulcers as Influenced by Disturbances of Metabolism and Infections.*
5. FISCHER, O. *Uterine Adnexa as the Contents of Inguinal Herniæ in Women.*
6. LUDLOFF, K. *Experiments in Bone Suture.*
7. KÜTTNER, H. *A Critical Examination of Ulcus Callosum Ventriculi, and the Treatment.*
8. BIRCHER, E. *The Operative Treatment of Acute Hemorrhagic Pancreatitis.*
9. PAYR, E. *The Pathogenesis, Pathological Anatomy and Radical Operative Treatment of Gastric Ulcer.*
10. FRANZ, C. *The Explanation of Krönlein's Type of Bullet Wound of the Skull.*
11. BOLJARSKI, N. *Liver Injuries from the Clinical and the Experimental Points of View, with Special Reference to the Use of Isolated Omentoplasty.*
12. v. FEDOROW, S. P. *A Method for Removing Cicatricial Strictures of the Lower Rectum without Resection.*
13. KOHN, W. *The Anatomy and Etiology of Cracking of the Hip-Joints.*

2. In his article on surgery of the esophagus, Wendel writes mostly on the treatment of cancer, but has short sections on the cure of cardiospasm and of diverticula. Wendel himself has attempted radical operation in three cases of cancer, two of which died immediately afterwards. The operation he describes consists of opening the mediastinum, cutting the esophagus just below the tumor, and then, through an incision in the left neck, dissecting free the lower end of the proximal section and removing the cancerous segment. Following this, one of three things is done: The two ends are united if possible, both cut ends are sutured to the skin and connected by a canal of skin or by a rubber tube, or the lower piece is inverted and closed, and a gastrostomy done. The argument for undertaking such an operation lies mainly in the tendency of cancer in this situation to spread only by community, and not by metastasis. If the tumor is low in the esophagus, laparotomy may be combined with thoracotomy. The chief difficulty in the technic lies in the securing of exact closure of the pleura, provided this is torn, and of course some differential pressure apparatus must be used.

As regards cardiospasm, Wendel, in a case undilatable by sounds, performed a cardioplasty as one would a pyloroplasty, with excellent result. He has also done one extirpation of a diverticulum, with good success.

[G. G. S.]

Miscellany.

HARVARD PUBLIC MEDICAL LECTURES FOR 1911.

ANNOUNCEMENT is made of the annual series of free public medical lectures to be given during the first four months of the coming year at the Harvard Medical School by members of the faculty and other instructors. This year the Saturday evening lectures have been omitted, and the present series will be held only on Sunday afternoons at four o'clock. The popularity of these lectures seems now well established, and their possibilities of value in the desirable education of the people in medical subjects are obvious. The announcement of topics for the current season is as follows:

Jan. 1, Dr. R. W. Lovett, "Infantile Paralysis." Jan. 8, Dr. Abner Post, "Syphilis." Jan. 15, Dr. Otto Folin, "The Use and Abuse of Preservatives and Other Chemicals in Food Products." Jan. 22, Dr. S. A. Hopkins, "The Mouth in Its Relation to Disease." Jan. 29, Dr. E. H. Bradford, "Spinal Curvature; What can be Done to Keep Our School Children Straight." Feb. 5, Dr. Charles H. Williams, "The Correction of Blindness, Especially in Young Children." Feb. 12, Dr. Charles S. Minot, "Age." Feb. 19, Dr. Theobald Smith, "The Duties of the Individual in the Maintenance and Improvement of the Public Health." Feb. 26, Dr. E. E. Southard, "Heredity in Mental Disease." March 5, Dr. W. B. Cannon, "Vision and Some of Its Illusions." March 12, Dr. M. H. Richardson, "On Surgical Diseases and Their Mechanical Nature; What the Layman should understand of Their Early Symptoms and Importance." March 19, Dr. L. J. Henderson, "What is Food?" March 26, Dr. Charles V. Chapin, "How the Individual can protect Himself against Infection." April 2, Dr. J. G. Mumford, "The Safety of Surgical Operations." April 9. Dr. C. M. Green, "The Personal Hygiene of Women." (To women only.) April 16, Dr. Franklin W. White, "Indigestion; Its Causes and Treatment." April 23, Dr. Walter J. Dodd, "The Roentgen Ray in Medicine and Surgery." April 30, Dr. Harvey P. Towle, "Some Common Diseases of the Skin."

Correspondence.

ANTITYPHOID SANITATION *vs.* INOCULATION.

BROOKLINE, MASS., Dec. 19, 1910.

Mr. Editor: In your editorial in the JOURNAL of Dec. 8, on "Typhoid Fever Epidemics," you made the following statement: "The continued recurrence of such epidemics serves only to re-emphasize the insidious dangers of typhoid fever and *the seeming impossibility of its extermination by even the wisest sanitary provisions.*" As wise sanitary provisions have been sufficient in certain sections of Germany to prevent such epidemics and practically stamp out the disease, I think the above statement should be amended to read "such epidemics serve to re-emphasize the inefficiency or lack of sanitation in many parts of the United States."

Of the four epidemics to which you refer, three are said to be due to defective water or sewerage systems. As many communities in this country have demonstrated that water and sewerage systems can be provided from which there is practically no danger of typhoid infection, certainly these three epidemics cannot be said to emphasize the impossibility of exterminating typhoid by wise sanitation.

In regard to the fourth epidemic, which was due to infected milk, information is not at hand to show that the infection of the milk was due to the neglect of sanitary measures. The chances are, however, that either the case from which the milk was infected, or some other case in the chain of infection preceding that case, was the result of sanitary negligence. As far as I know, there is no rural district in this country where efficient sanitary precautions are taken to prevent the spread of infection from typhoid patients. Even when a case of typhoid is reported to the local health board, no use is made of the information. Usually, the case is not even visited for the purpose of giving instructions. It is no wonder that typhoid continues to flourish in the country districts and is constantly

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carried thence to the cities, sometimes in sharp epidemics, as in the one at Annapolis, to which you refer.

While I realize, Mr. Editor, that the purpose of your editorial was to call attention to the widening field for antityphoid inoculation, the great value of which has been so clearly demonstrated, I think it should be made very clear that its more general use — that is, outside of hospitals and the army — is advisable, not because sanitary science is unable to control typhoid, but because of our failure to follow the advice of sanitarians. It is much more rational for us to work for improved sanitation as a means of preventing typhoid than for the more general use of inoculation.

Good progress is being made in Massachusetts in improving water and sewerage systems under the able leadership of our State Board of Health, but practically nothing is being done, especially in the country districts, to secure efficient disinfection of the excreta of all known cases and to prevent contact infection. The infection from a case of typhoid fever may extend so far beyond the limits of the town in which it occurs that the precautions which are taken should not be a matter for "Local Option." If we must wait for each local board of health to undertake of itself efficient measures to prevent typhoid infection, it will be years, yes, centuries, before we shall have such control over the disease as has Germany with its centralized sanitary authority. The precautions to be taken by the local boards of health in typhoid should be prescribed by the public statutes of the state, just as vaccination, medical inspection of schools and many duties of local boards of health are at present prescribed, and the enforcement of these measures should be supervised by the State Board of Health. When each case of typhoid is surrounded by the same precautions that we would use for a case of cholera, there would be no need to consider the general adoption of antityphoid inoculation.

Very truly yours,

FRANCIS P. DENNY, M.D.

THE IMPORTANCE OF HUMIDITY IN THE TREATMENT OF COUGH.

CAMBRIDGE, Dec. 23, 1910.

Mr. Editor: The textbooks do not lay particular stress on moisture in the air of the room in treating patients with certain respiratory diseases in which cough is a prominent as well as troublesome feature. Two cases have been brought to my attention where cough was a distressing feature which did not respond to medicinal treatment. The first case was in a child of four years who had a persistent irritant cough after an attack of whooping cough. No result was obtained with medicinal treatment. The father of the child, having expert knowledge of the importance of temperature and humidity, strung several sheets soaked in water in the room at night. This was done several nights in succession and immediate relief followed and later a cure. The second case was in an elderly woman who had "taken cold." After a few days she recovered, although she had a bothersome cough at night. This continued some time notwithstanding treatment by her physician. The physician was advised to try the above treatment, with prompt success.

I now wish to add a third case; a patient thirty years old, living in a steam-heated apratment, with a temperature of an average of 70°, with no system of humidifying the air. I treated the patient for ten days for acute laryngitis with cough a constant accompaniment, and especially troublesome at night. There seemed to be little or no result with various drugs. The temperature, on the two days when the following simple treatment was commenced, hovered around zero. I instructed the patient, who had to this time slept with windows wide open, to close them to an inch, allowing just a moderate amount of air to enter the room. The room's temperature did not exceed 72°. A basin of water and a moistened cloth were then placed in the room. No other treatment was given. This was repeated three nights and days with complete cessation of the cough.

Very truly yours,

JAMES A. HONEY, M.D.

RECORD OF MORTALITY

FOR THE WEEK ENDING SATURDAY, DEC. 17, 1910.

CITIES.	Reported deaths in each.	Deaths under five years.	CITIES.	Reported deaths in each.	Deaths under five years.
New York	1,453	351	Waltham	7	1
Chicago	655	165	Brookline	7	—
Philadelphia	—	—	Chicopee	8	3
St. Louis	—	—	Gloucester	0	—
Baltimore	—	—	Medford	1	1
Cleveland	—	—	North Adams	6	2
Buffalo	—	—	Northampton	8	1
Pittsburg	—	—	Beverly	7	2
Cincinnati	—	—	Revere	4	1
Milwaukee	—	—	Leominster	11	2
Washington	—	—	Attleboro	8	4
Providence	—	—	Westfield	5	1
Boston	217	46	Peabody	6	—
Worcester	46	9	Melrose	4	0
Fall River	33	21	Hyde Park	4	—
Lowell	40	8	Woburn	3	1
Cambridge	31	7	Newburyport	7	3
New Bedford	27	10	Gardner	1	0
Lynn	18	6	Marlboro	5	0
Springfield	31	6	Clinton	2	—
Lawrence	15	8	Milford	—	—
Somerville	22	3	Adams	0	—
Holyoke	18	8	Framingham	—	—
Brockton	14	1	Weymouth	—	—
Malden	11	1	Watertown	3	1
Haverhill	16	4	Southbridge	—	—
Salem	10	4	Plymouth	—	—
Newton	11	3	Webster	8	3
Fitchburg	—	—	Methuen	4	1
Taunton	12	2	Wakefield	—	—
Everett	4	2	Arlington	5	—
Quincy	—	—	Greenfield	3	—
Chelsea	13	2	Winthrop	3	1
Pittsfield	10	3			

PHYSICAL DIRECTOR (MALE).

THE United States Civil Service Commission announces an examination on Jan. 21, 1911, to secure eligibles from which to make certification to fill a vacancy in the position of physical director and assistant disciplinarian at $800 a year at the Haskell Institute, Kansas, and vacancies requiring similar qualifications as they may occur in the Indian Service, unless it shall be decided in the interest of the service to fill the vacancy by reinstatement, transfer or promotion. It will not be necessary for competitors to report at any place for examination. Their eligibility for the position will be determined upon the evidence furnished in application and examination Form No. 1312 concerning their education, training and experience. Applications for this position will be accepted only from men who are graduates of medicine.

RECENT DEATH.

DR. CLARA A. SWAIN, who died on Dec. 26, at Castile, N. Y., was born in Elmira, N. Y., in 1834. In 1870 she went to India as a medical missionary and is said to have been the first woman physician to go to the Orient in that capacity.

BOOKS AND PAMPHLETS RECEIVED.

Abdruck aus dem Anatomischen Anzeiger. By Prof. Dr. Karl von Bardeleben in Jena, 1910. Reprint.

Proceedings of the National Confederation of State Medical Examining and Licensing Boards. Twentieth Annual Convention, St. Louis, Mo., June 6, 1910.

Antiquarischer Anzeiger von Franz Deuticke No. 87. Wien, Germany.

Antiquariats-Katalog No. 85 von Franz Deuticke. Medizin. Wien, Germany.

La jurisprudence des tribunaux en matière de séparation de corps et de divorce et les faits d'ivresse. Par P. Juqueller, M.D., et A. Fillassier, M.D. Bruxelles, 1910. Reprint.

Andreas Vesalius, the Reformer of Anatomy. By James Moores Ball, M.D. Medical Science Press, St. Louis.

The Economic Value of Family Physician Refracting. By Leartus Connor, A.M., M.D. Reprint.